ADVECO
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INSTALLATION, USE AND MAINTENANCE MANUAL

monobloc
Inverter Air to Water Heat Pump Unit

FPI32 - 6
FPI32 - 9
FPI32 - 12

62403861 - R00 12-04-2021_UK

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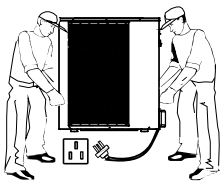
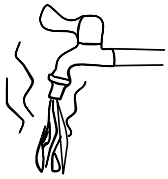
1 - SAFETY INSTRUCTIONS

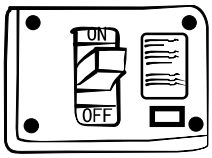
WARNING !!!
The installation, disassembly and maintenance of this appliance must be done by a qualified installer. It is forbidden to make any changes to the structure of the appliance. Failure to comply with these provisions can cause damage to people, animals or things.



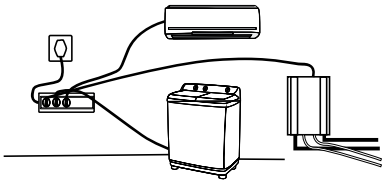
WARNING !!! Disconnect the appliance from the power supply at least one minute before accessing the electrical components. Before touching the electrical components, it is however recommended to measure the voltage across the terminals to make sure it is lower than the safety voltage.



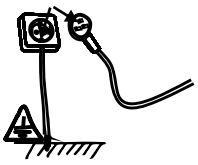
WARNING !!!
A hot water temperature level exceeding 51°C may cause permanent injury/damage to persons, animals and objects. In particular, protect children, the elderly and people with disabilities against any possible risks of scalds, by inserting devices that limit the usage temperature of the DHW to users.



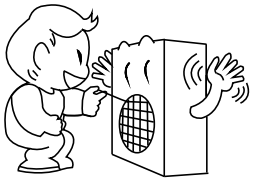
WARNING !!!
Provide a bipolar switch with a contact opening distance of at least 3 mm in the vicinity of the appliance, as required by current regulations.



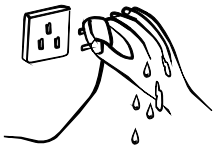
WARNING !!!
Use a dedicated electric socket for this appliance. Failure to do so could cause malfunctions.



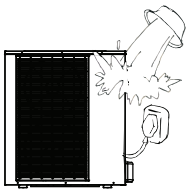
WARNING !!!
The power supply of this appliance must be grounded.



PROHIBITION !!!
Do not touch the air outlet grill when fan motor is running.



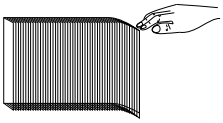
PROHIBITION !!!
It is forbidden to touch the electric plug with wet hands and disconnect the electric plug by pulling the cable.



PROHIBITION !!! Water or any kind of liquid is strictly forbidden to be poured into the product, or may cause electric creepage or breakdown of the product.

WARNING !!!
If the electric cable appears deteriorated or damaged, it must be replaced by a qualified technician.

PROHIBITION !!!
Use the proper fuse and breaker. It is forbidden to use copper or steel wires to replace the fuse or switch.



PROHIBITION !!!
Do not touch the fins of the evapo-condensing battery, they can hurt your fingers.

1 - SAFETY INSTRUCTIONS

WARNING !!!
Read this manual carefully before using the appliance.

WARNING !!! All the drawings shown in this manual relating to electrical, hydraulic or gas installation systems must be understood to be purely illustrative. All the safety devices, auxiliary devices and the diameters of the electrical, hydraulic and gas pipes must always be checked by a professionally qualified technician, to make sure they satisfy the applicable laws and regulations.

WARNING !!!
This appliance contains fluorinated greenhouse gases covered by the Kyoto Protocol: installation must be carried out by an installer / company authorized in accordance with the European regulation EU 517/2014.

WARNING !!!
In case of refrigerant refilling, follow the precautions of the R32 gas safety data sheet. Request this safety data sheet to the refrigerant supplier gas.

1.1 - National installation laws

Respect the national regulations, provisions, directives and laws in force.

2.1 - Overview of models

FPi32

- Refrigerant R32
- Inverter air to water heat pump unit
- 6 = maximum heat output 6 kW;
  9 = maximum heat output 9 kW;
  12 = maximum heat output 12 kW;
- Monoblock air to water heat pump

2.2 - Accessories included

☞ The accessories, in some models, could be not supplied with the appliance.

Quantity	Description	Figure
1	Tw - DHW temperature sensor (already factory fitted in the electrical panel) and extension cable for DHW temperature sensor	
1	Extension cable to remote the display (10 meters)	
1	Condensate drain connection	
1	Condensate drain pipe	

2.3 - Distributor

Adveco Ltd
Units 7 & 8, Armstrong Mall
Southwood Business Park
Farnborough
GU140NR
+44 (0) 1252 551540
https://adveco.co/

WARNING !!!
Electric shock hazard Failure to comply with these warnings may compromise the working order of the appliance or cause serious damage or injury to persons, animals or objects.

2.4 - Key to symbols used

WARNING !!!
Failure to comply with these warnings may compromise the working order of the appliance or cause serious damage or injury to persons, animals or objects.

PROHIBITION !!!
Generic hazard. Failure to comply with these warnings may compromise the working order of the appliance or cause serious damage or injury to persons, animals or objects.

☞ Important indication symbol.

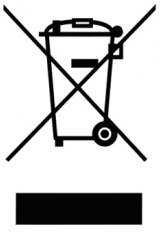
N/A : Not applicable.

2.5 - Maintenance

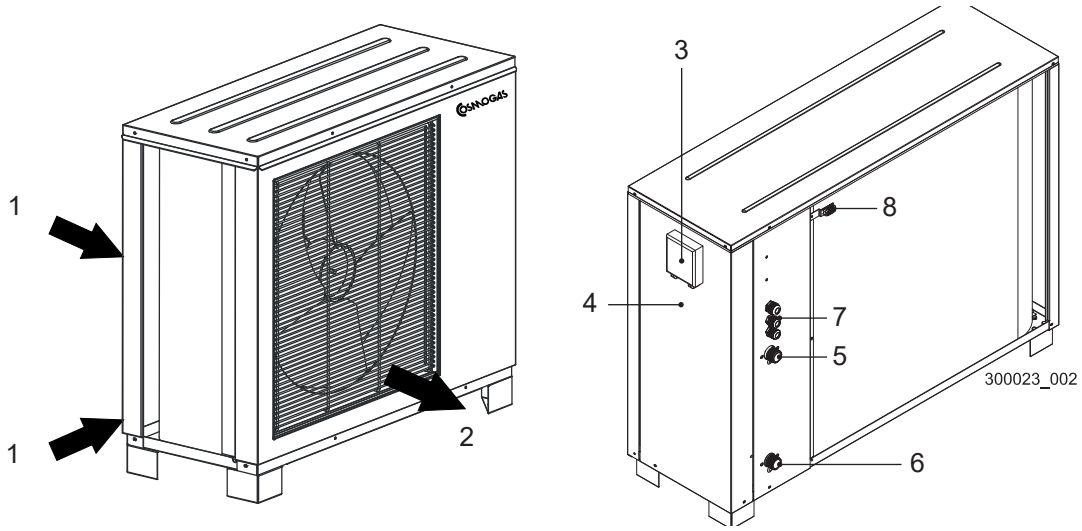
A regular annual maintenance check on the appliance is advised for the following reasons:

- to maintain high efficiency and manage the central heating system economically (with low fuel consumption);
- to achieve a high level of safety operation;

2.6 - Disposal



The crossed wheelie bin symbol means that the product must not be thrown away in the ordinary rubbish bin (i.e. in with “mixed urban rubbish”); it must be dealt with separately, in order to undergo suitable operations for it to be reused or threated, so that any substances that are dangerous for the environment can be removed and safely disposed. This will enable all the raw materials to be recycled. The user is responsible for getting rid of the boiler at the end of its life, delivering it to a recycling centre run by the local authority or city hygiene companies, or, when he/she buys a new appliance, giving the product that has been replaced to the dealer, who is obliged to take it under the terms of EU Directive 2012/19/EU. For further information regarding correct decommissioning of these units, users can contact the public service in charge or retailers.



1 - Air inlet
2 - Air outlet
3 - Display
4 - Electrical connection compartment
5 - Water outlet
6 - Water inlet
7 - Grommets
8 - Outdoor temperature sensor

Figure 3-1 - Main components

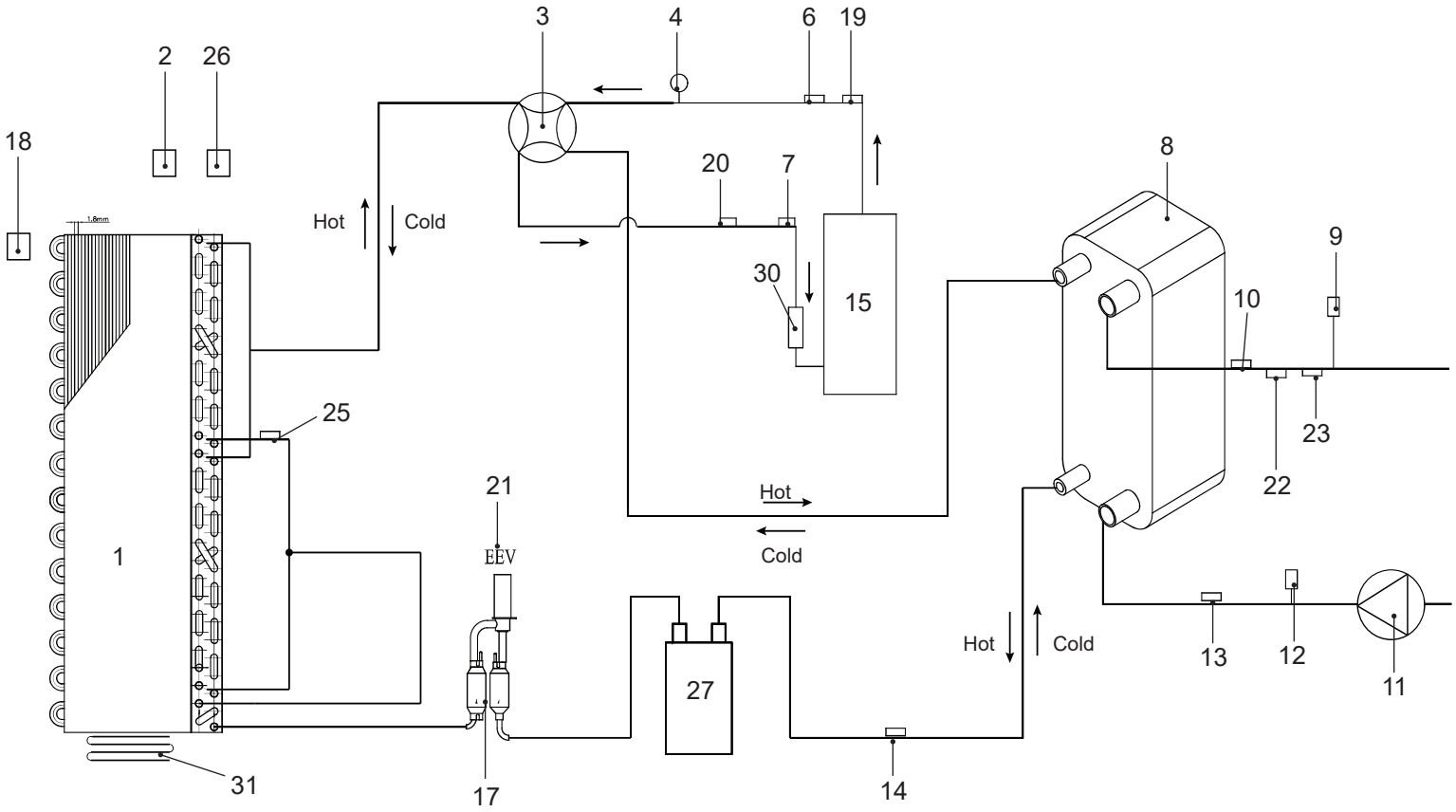
4.1.- Intended use and functions

This product is an appliance designed for the production of domestic hot water (DHW) and conditioning of small and medium-sized civil and residential environments.
It consists of a reversible circuit inside which a refrigerant fluid is contained, which evaporates inside the plate heat exchanger and condenses inside the evapo condensing battery. On the other side of the plate heat exchanger, by means of the pump inside the machine, the water (heat carrier) is circulated, intended for internal users, such as fan coils, underfloor radiant panels, etc.
It is possible to connect an integrative heat source to improve the heat output.
The appliance must operate with a difference temperature of 5 ° C between the supply temperature and the return temperature, which is only guaranteed with a correct sizing of the hydraulic system; the designer will have to evaluate all the pressure drops existing in the system, which must be lower than the available pressure drops (see Figure 5-17) for the water flow rate. An incorrect sizing of the system is one of the cause of the intervention of the low water flow detector.
The evapocondensing battery has the task of dissipating the heat taken from the rooms or absorbing heat from the outside, in the heat pump cycle (HP); for this purpose, the unit must be properly ventilated respecting the installation distances as indicated in section 5.3.
There is only water circulating between the unit and the heat radiators. This ensures greater safety in the unlikely event of a refrigerant gas leak, which in any case is dispersed outside.
The refrigeration cycle inside the air conditioner is activated by the compressor.

- This air conditioner is used to cool water up to a temperature of 7 ° C. In the case of heat pump, it can heat the water up to a maximum of 55 ° C.
- The air conditioner has a compressor that modulates the speed according to the thermal load. However, the maximum speed is only guaranteed for an outdoor temperature below 14 ° C in heating and between 28 ° C and 41 ° C in cooling.
- It must be connected to an heating/cooling system compatible with the characteristics, performance and power of the appliance itself.
- Before installation, it is necessary to thoroughly wash the hydronic system, in order to remove any residues or impurities that could compromise the proper functioning of the appliance.

WARNING !!! Refer to section 5.8 regarding the sizing of the hydraulic system. Failure to comply with this requirement causes malfunction of the air conditioner.

WARNING !!! Refer to section 5.3 as regards the minimum distances of respect. Failure to comply with this requirement causes malfunction of the air conditioner.

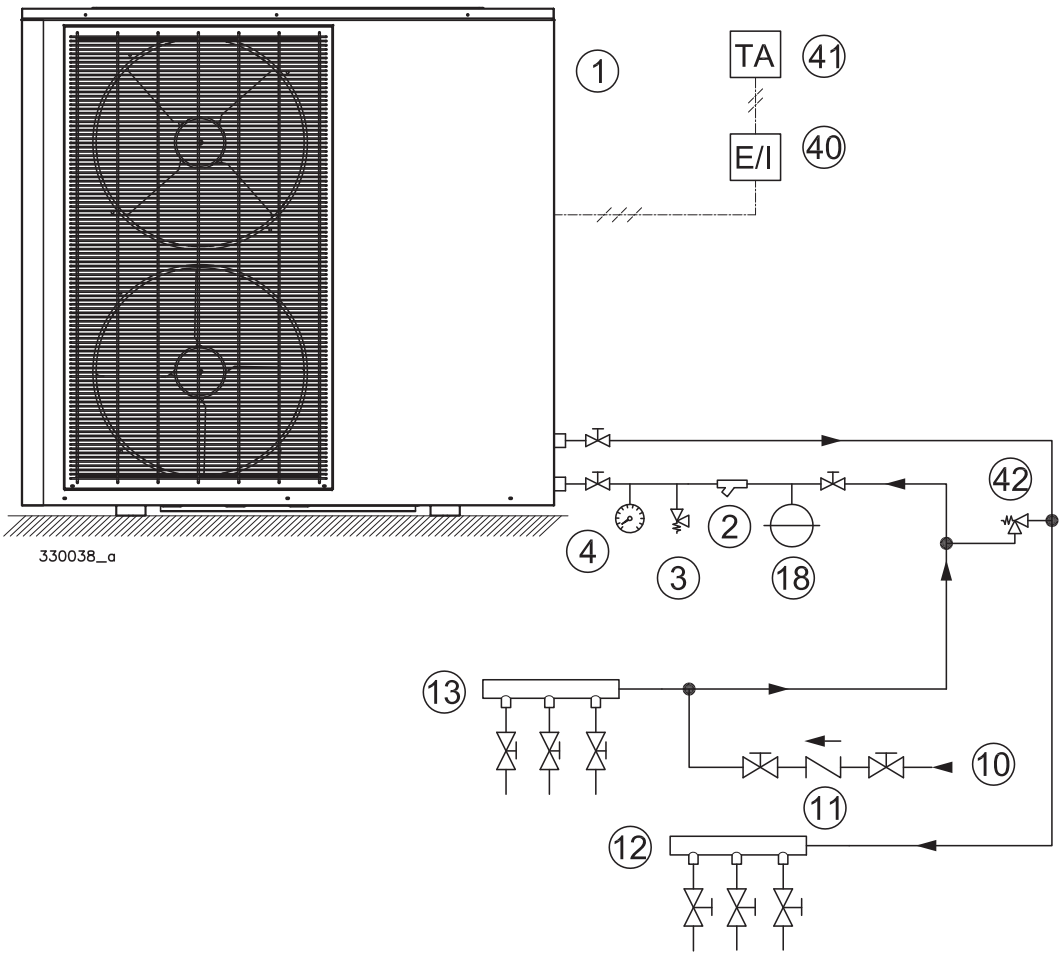


LEGEND of Figure 4-1:
1 - Evapo-condensing battery
2 - Room temperature sensor (N/A)
3 - 4-way valve
4 - High pressure gauge (in some models it may not be present)
6 - Compressor discharge temperature sensor
7 - Suction temperature sensor
8 - Plate heat exchanger
9 - Automatic air vent
10 - Supply temperature sensor
11 - Pump
12 - Water flow switch
13 - Return temperature sensor
14 - Refrigerant temperature sensor
15 - Compressor
17 - Filter
18 - Outdoor temperature sensor
19 - High pressure sensor
20 - Low pressore sensor
21 - Electronic expansion valve
22 - Cooling temperature sensor (Tc)
23 - Heating temperature sensor (Th)
25 - Evapo-condensing battery temperature sensor
26 - DHW temperature sensor (Tw)
27 - Liquid receiver
30 - Liquid separator
31 - Appliance floor wire heater

Figure 4-1 - Functional schematics

4.2 - Installation examples

4.2.1 - Direct connection to the system



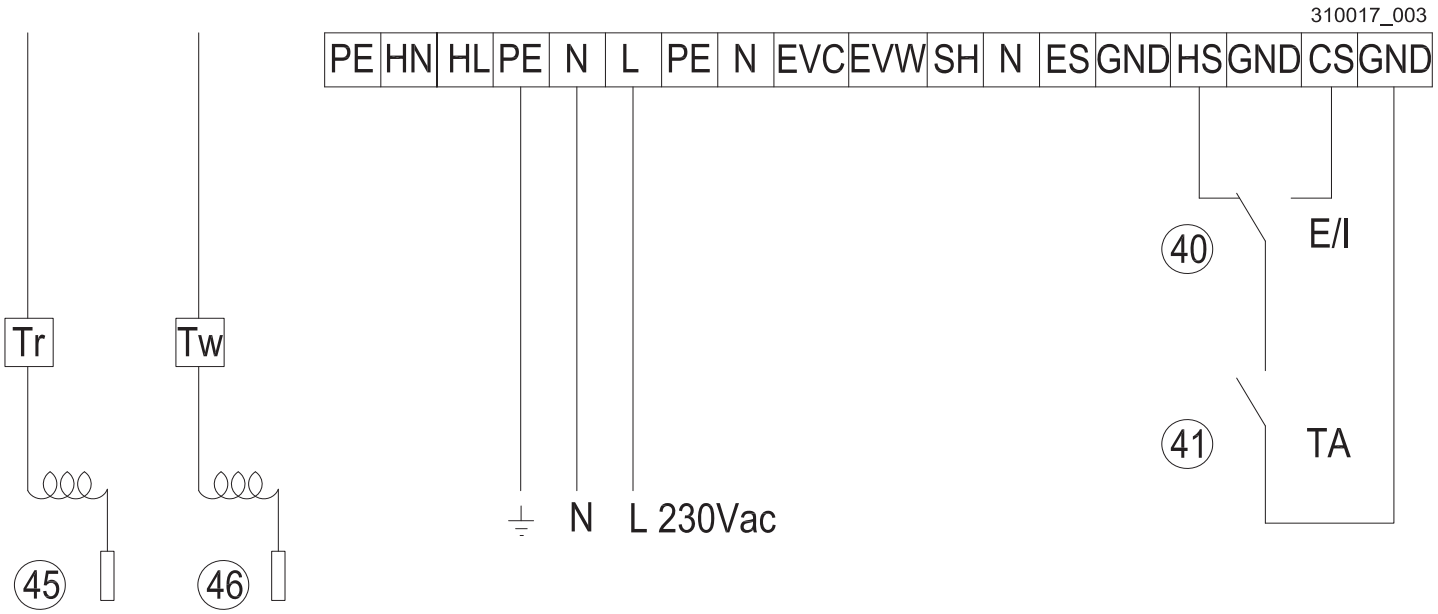
LEGEND of Figure 4-2:

1 - Heat pump
2 - Filter
3 - Pressure safety valve
4 - Pressure meter gauge
10 - System filling water inlet
11 - Non-return valve
12 - Heating / cooling supply manifold
13 - Heating / cooling return manifold
18 - Expansion tank
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
42 - By-pass differential valve

☞ No settings need to be changed for operation with this diagram.

☞ Items “2” to “18” must be field supplied.

Figure 4-2 - Hydraulic diagram with direct connection to the system

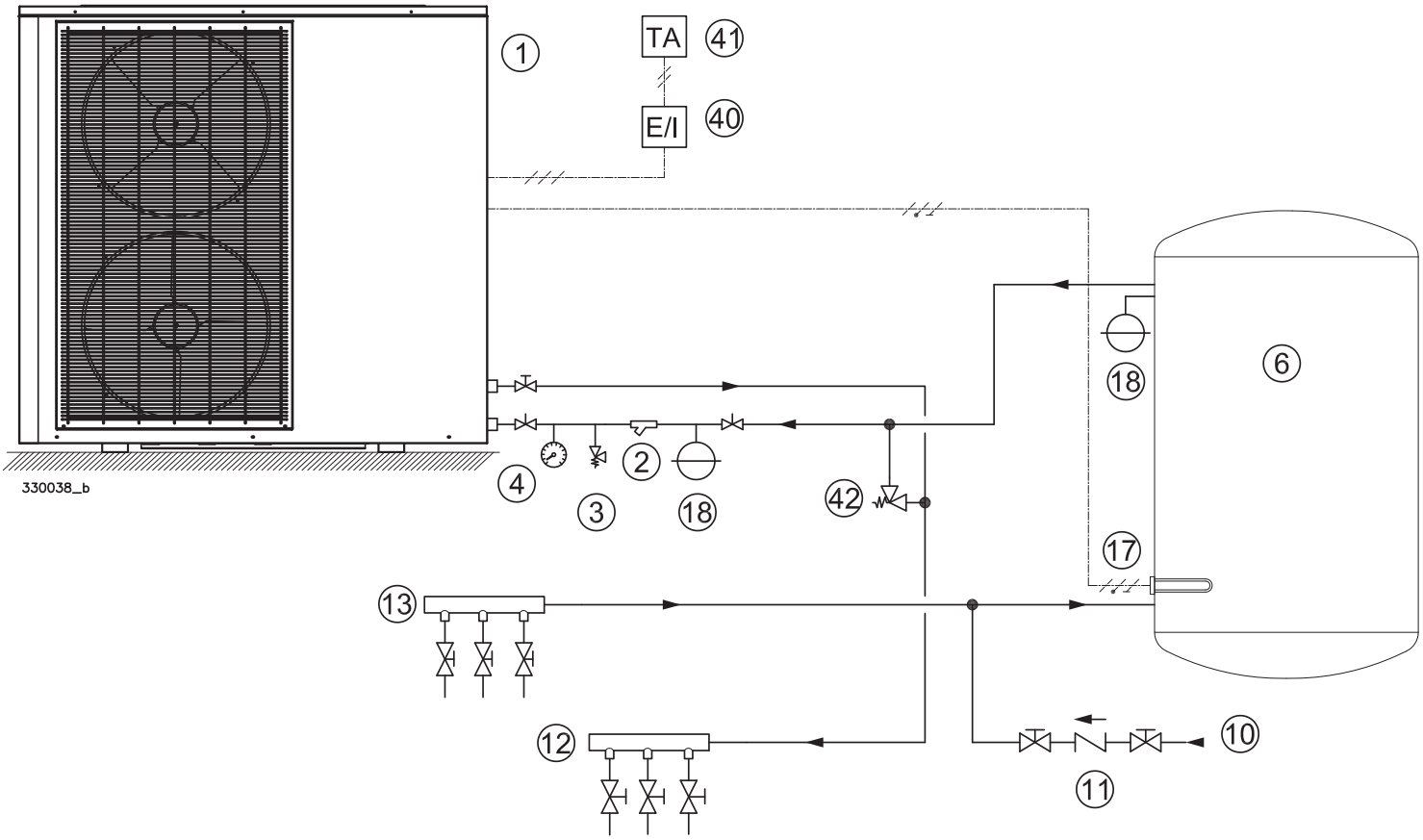


LEGEND of Figure 4-3:

40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
45 - “Tr” temperature sensor (leave inside the electrical box)
46 - “Tw” temperature sensor (leave inside the electrical box)

Figure 4-3- Electrical diagram with direct connection to the system

4.2.2 - Connection with puffer tank in series



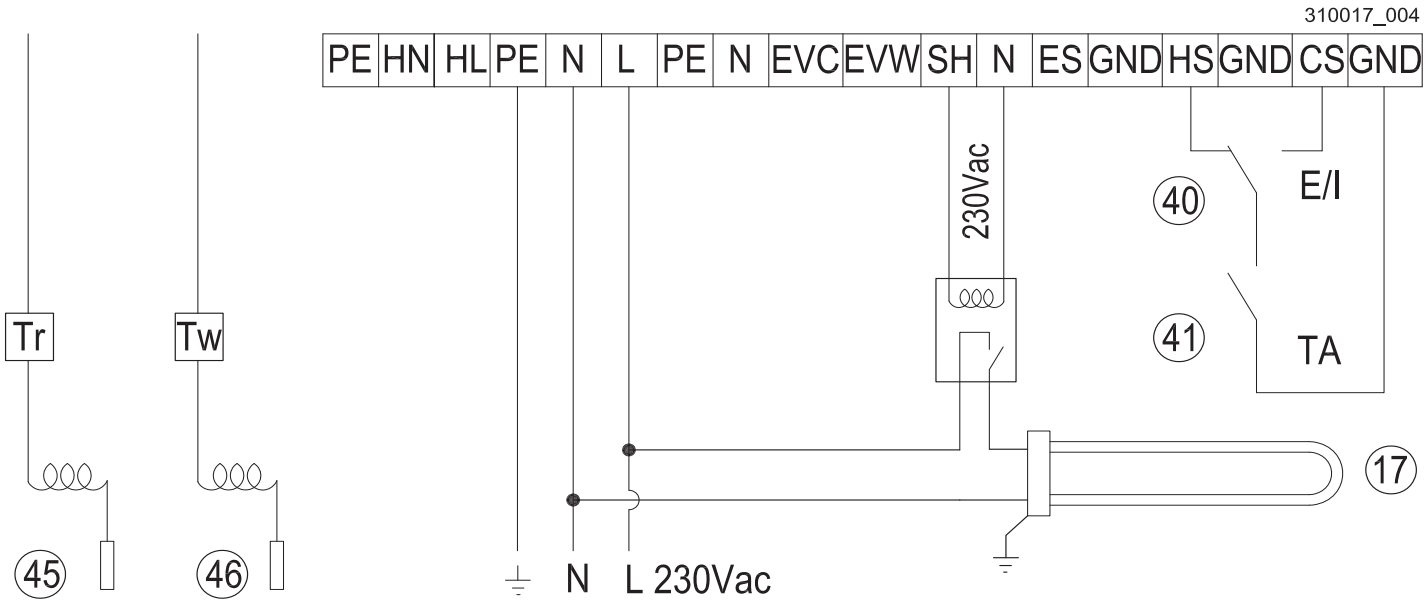
LEGEND of Figure 4-4:

1 - Heat pump
2 - Filter
3 - Pressure safety valve
4 - Pressure meter gauge
6 - Puffer tank (Minimum size 10 liters for each kilowatt of Pdc power)
10 - System filling water inlet
11 - Non-return valve
12 - Heating / cooling supply manifold
13 - Heating / cooling return manifold
17 - Integrative electrical resistance (optional)
18 - Expansion tank
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
42 - By-pass differential valve

☞ No settings need to be changed for operation with this diagram. Connect any additional Integrative electrical resistance (17) with the interposition of a relay suitable for the electrical absorption of the installed resistance (see section 5.7.3). The resistance must be connected to the “SH” and “N” terminals (Figure 5-9). The maximum applicable current is 2A.

☞ Items “2” to “18” must be field supplied.

Figure 4-4 - Hydraulic diagram with puffer tank in series

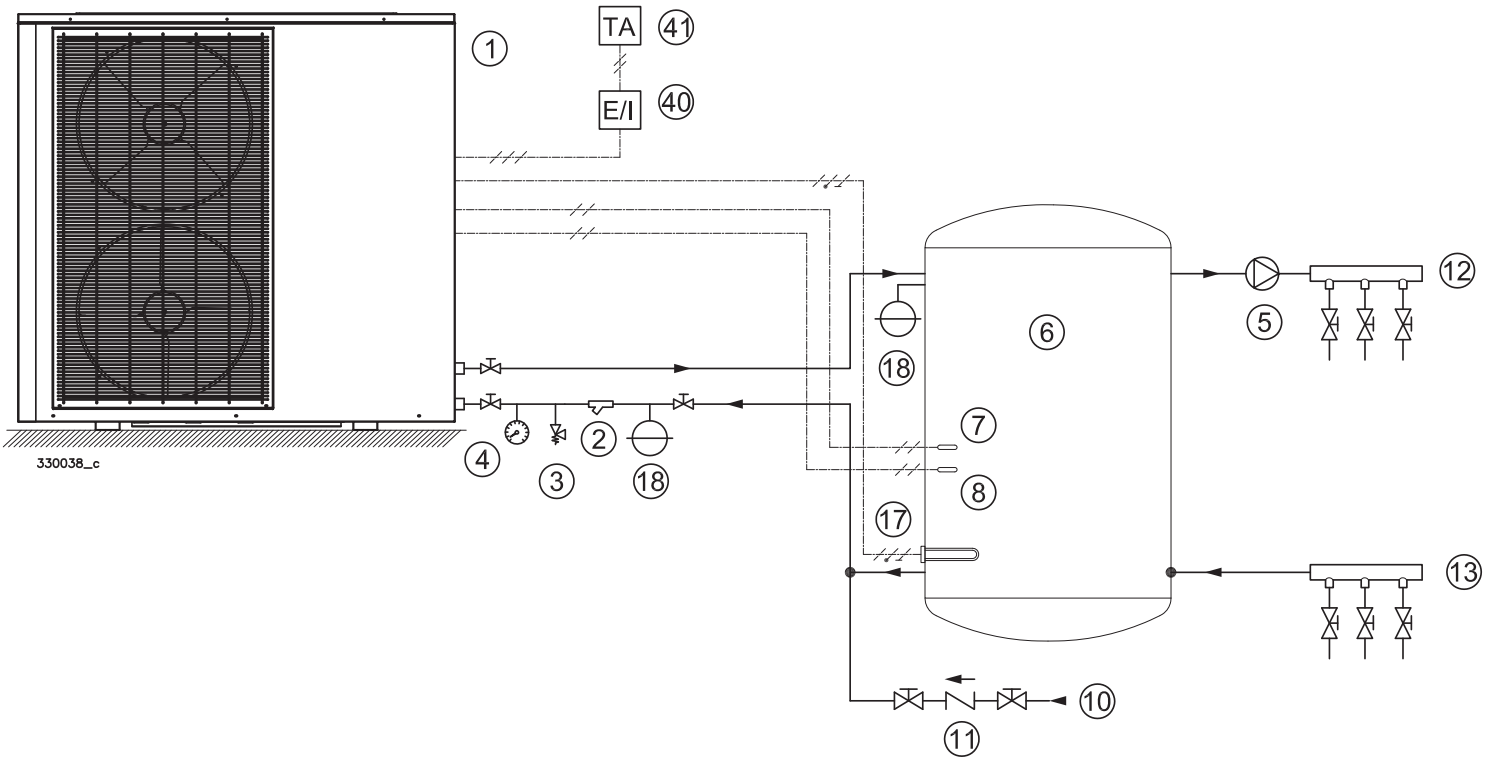


LEGEND of Figure 4-5:

17 - Integrative electrical resistance (optional)
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
45 - “Tr” temperature sensor (leave inside the electrical box)
46 - “Tw” temperature sensor (leave inside the electrical box)

Figura 4-5 - Electrical diagram with puffer tank in series

4.2.3 - Connection with puffer tank in parallel



LEGEND of Figure 4-6:
1 - Heat pump
2 - Filter
3 - Pressure safety valve
4 - Pressure meter gauge
5 - Pump
6 - Puffer tank (Minimum size 10 liters for each kilowatt of Pdc power)
7 - “Tc” sensor
8 - “Th” sensor
10 - System filling water inlet
11 - Non-return valve
12 - Heating / cooling supply manifold
13 - Heating / cooling return manifold
17 - Integrative electrical resistance (optional)
18 - Expansion tank
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature

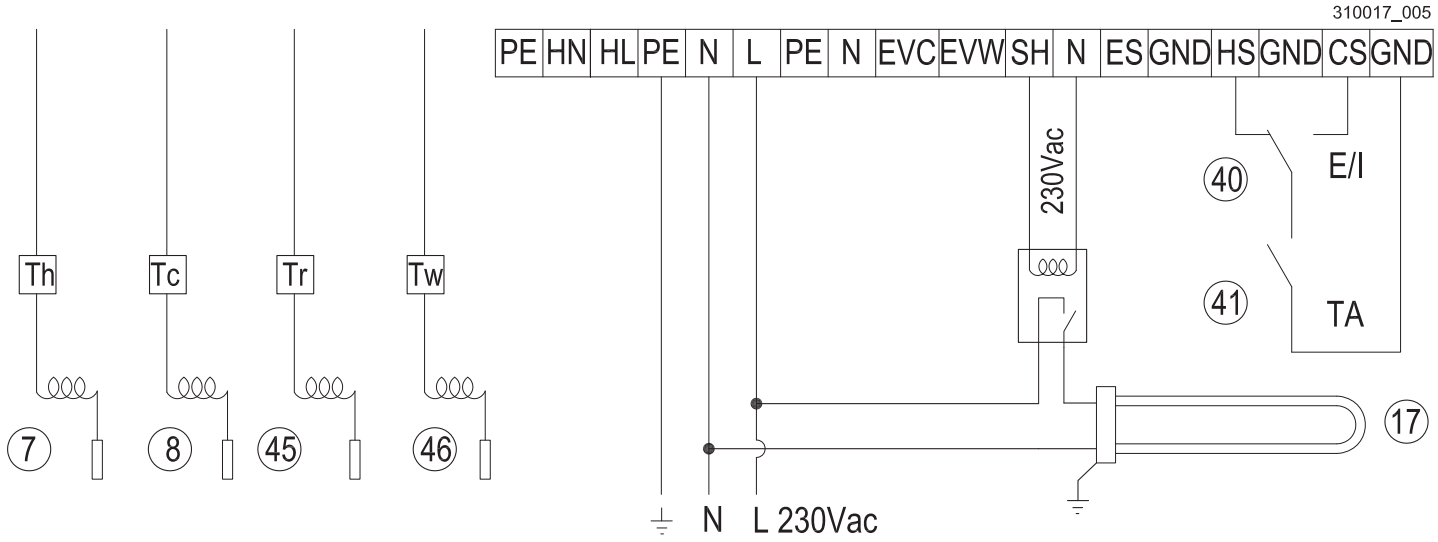
☞ Items “2” to “18” must be field supplied.

☞ The “Tc” (7) and “Th” (8) sensors are fixed inside the appliance on the supply tube. To place them on the tank, remove the cover and the frontal cover of the appliance, remove the two sensors and place them on the tank using the extension cables supplied in the accessories bag (section 5.7.4).

☞ Connect any integrative electrical resistance (17) with the interposition of a relay suitable for the electrical absorption of the installed resistance (section 5.7.3).

☞ Modify the operation of the internal pump, in this way the circulator will switch off 60 seconds after the compressor is switched off: set Parameter “A1” to 0. (section 7.5).

Figure 4-6 - Hydraulic diagram with puffer tank in parallel

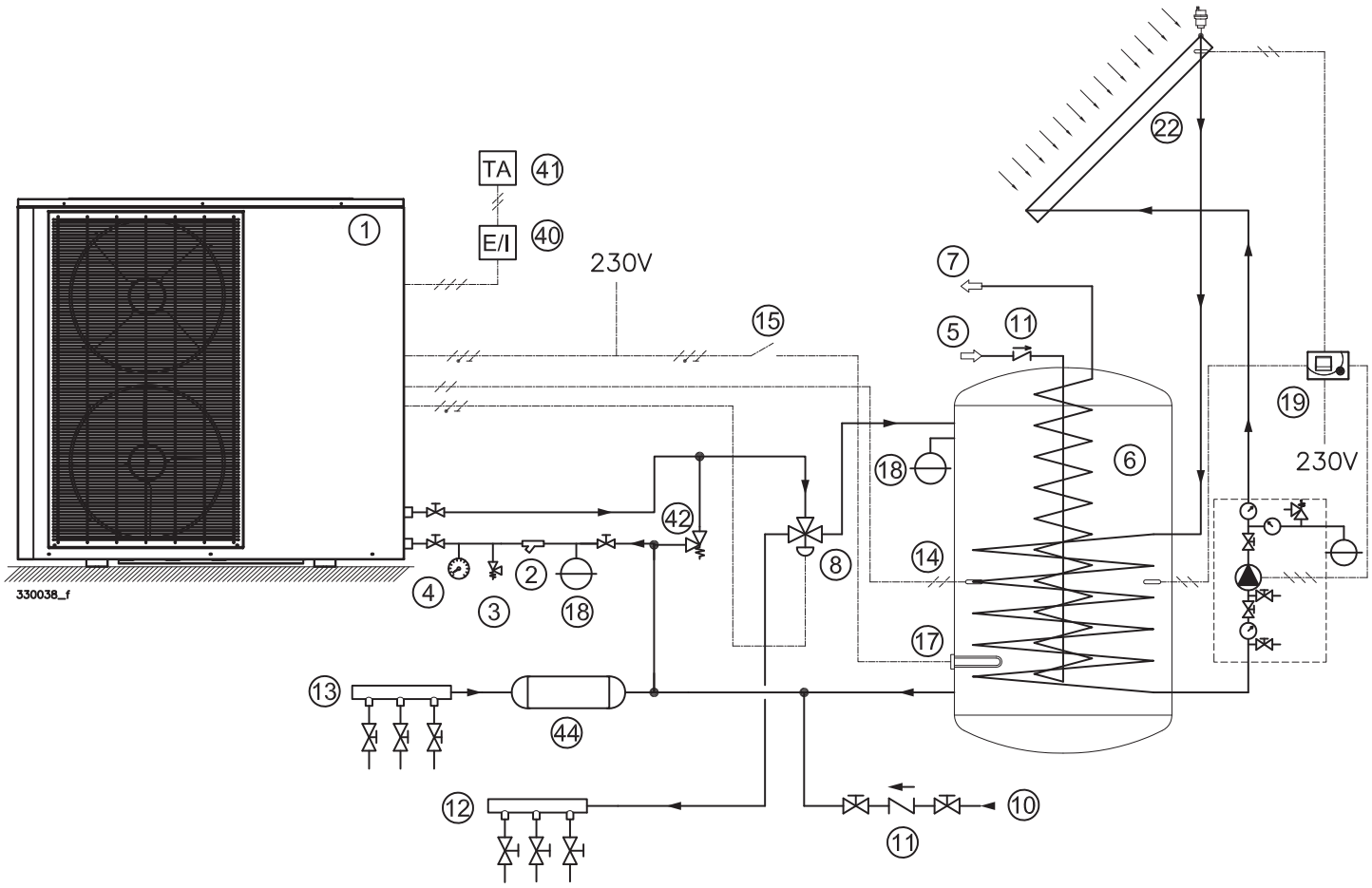


LEGEND of Figure 4-7:

7 - “Tc” sensor (insert in the middle position of tank)
8 - “Th” sensor (insert in the middle position of tank)
17 - Integrative electrical resistance (optional)
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
45 - “Tr” temperature sensor (leave inside the electrical box)
46 - “Tw” temperature sensor (leave inside the electrical box)

Figure 4-7 - Electrical diagram with puffer tank in parallel

4.2.4 - Connection with DHW production plus semi-rapid tank plus solar (optional)



LEGEND of Figure 4-8:

1 - Heat pump
2 - Filter
3 - Pressure safety valve
4 - Pressure meter gauge
5 - Water inlet
6 - Semi-rapid tank
7 - Domestic hot water outlet
8 - Diverter valve
10 - System filling water inlet
11 - Non-return valve
12 - Heating / cooling supply manifold
13 - Heating / cooling return manifold
14 - “Tw” DHW temperature sensor
15 - Integrative electric resistance thermostat
17 - Integrative electrical resistance (optional)
18 - Expansion tank
19 - Solar control board
22 - Solar panel
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
42 - By-pass differential valve
44 - Inertial tank (to be provided in the event that the volume of water of the heating / cooling system is less than 10l/kW).

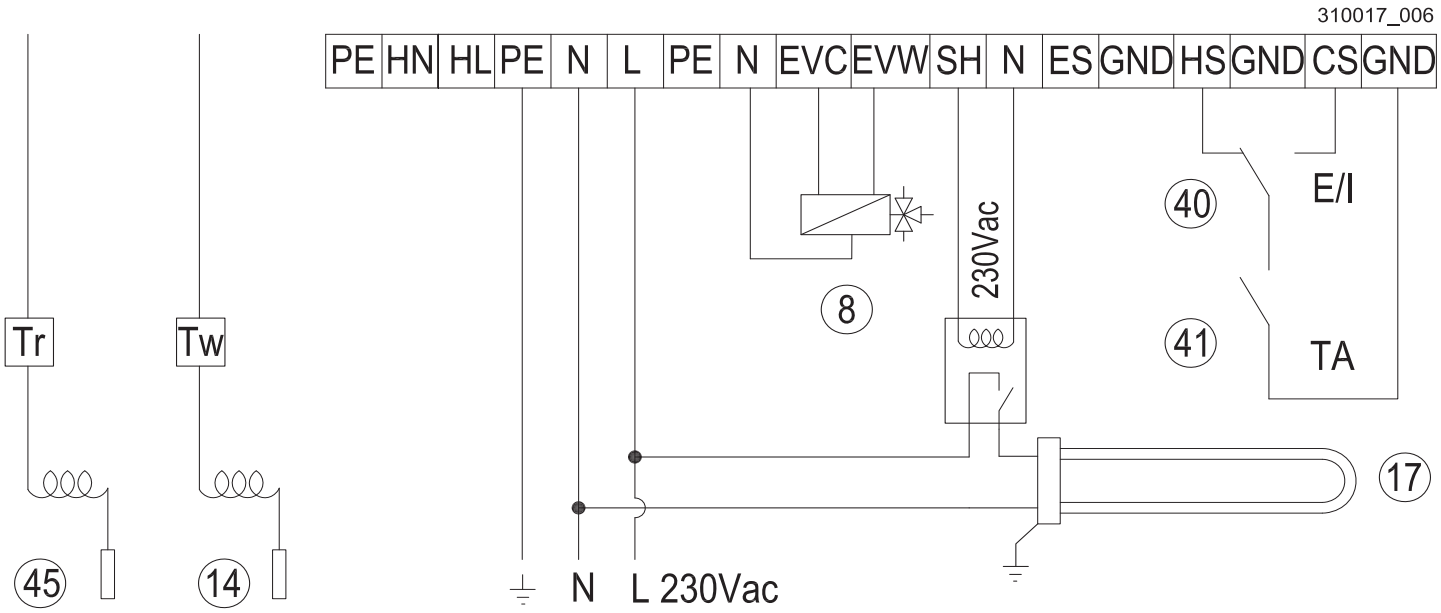
☞ Except for items "1" and "14", all items must be field supplied.

☞ The “Tw” sensor (14), supplied with the appliance, must be positioned on the tank using the extension cable connected to the “Tw” terminal (Figure 5-9), present in the electrical connection compartment (Figure 3-1). Enable DHW operation via the system settings: Parameter “08” = 2. (section 7.5).

☞ Connect any integrative electrical resistance (17) to a thermostat (15).

☞ Set the integrative electrical resistance point (17), using the Integrative electric resistance thermostat (15), at 5 ° C lower than the domestic hot water set point.

Figure 4-8 - Hydraulic diagram with DHW production plus semi-rapid puffer tank plus solar (optional)



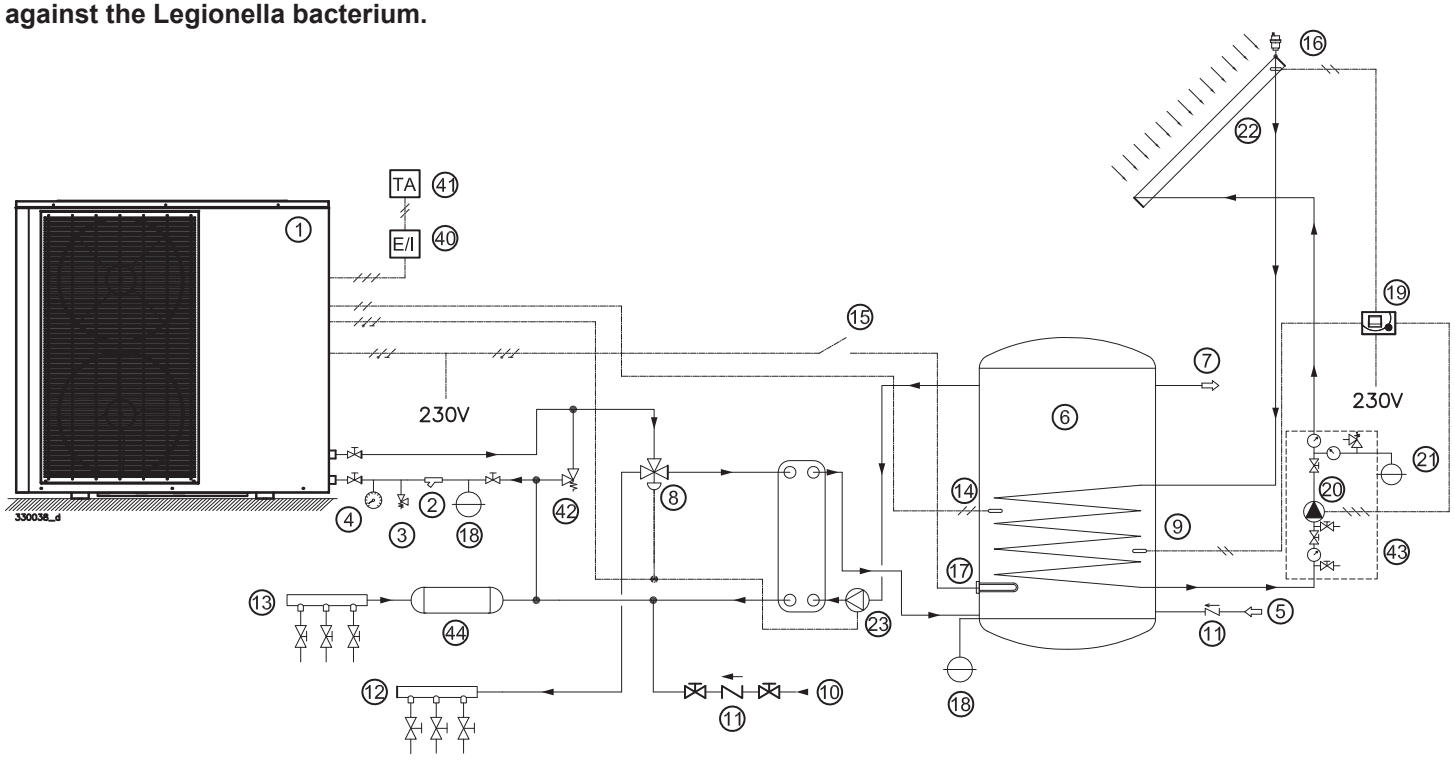
LEGEND of Figure 4-9:

8 - Diverter valve
14 - “Tw” DHW temperature sensor (take it to the tank)
15 - Integrative electric resistance thermostat
17 - Integrative electrical resistance (optional)
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
45 - “Tr” temperature sensor (leave inside the electrical box

Figure 4-9 - Electrical diagram with DHW production plus semi-rapid puffer tank plus solar (optional)

4.2.5 - Connection with DHW production (single coil tank loaded by plate heat exchanger) plus solar (optional) plus direct connection to the system

WARNING !!! If you use this scheme, you must to provide a sanitization system against the Legionella bacterium.



LEGEND of Figure 4-10:
1 - Heat pump
2 - Filter
3 - Pressure safety valve
4 - Pressure meter gauge
5 - Water inlet
6 - Coil tank
7 - Domestic hot water outlet
8 - Diverter valve
9 - Solar tank sensor
10 - System filling water inlet
11 - Non-return valve
12 - Heating / cooling supply manifold
13 - Heating / cooling return manifold
14 - “Tw” DHW temperature sensor
15 - Electric resistance power supply
16 - Solar panel sensor
17 - Integrative electrical resistance (optional)
18 - Expansion tank
19 - Solar control board
20 - Solar pump
21 - Solar expansion tank
22 - Solar panel
23 - Pump
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
42 - By-pass differential valve
43 - Fill and safety solar group
44 - Inertial tank (to be provided in the event that the volume of water of the heating / cooling system is less than 10l/kW).

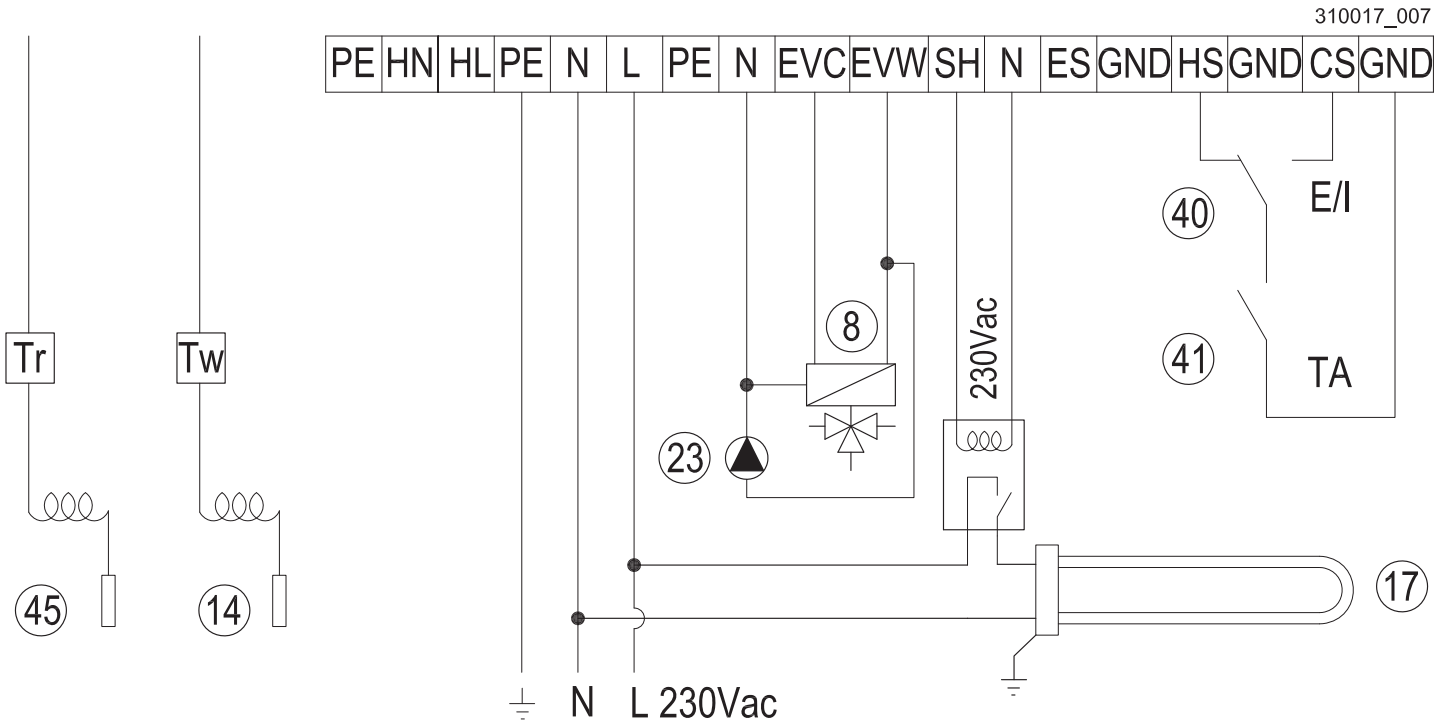
☞ Except for items “1” and “14”, all items must be field supplied.

☞ The “Tw” sensor (14), supplied with the appliance, must be positioned on the tank using the extension cable connected to the “Tw” terminal (Figure 5-9), present in the electrical connection compartment (Figure 3-1). Enable DHW operation via the system settings: Parameter “08” = 2. (section 7.5).

☞ Connect any integrative electrical resistance (17) to a thermostat (15).

☞ Set the integrative electrical resistance point (17), using the integrative electric resistance thermostat (15), at 5 ° C lower than the domestic hot water set point.

Figure 4-10 - Hydraulic diagram with DHW production (single coil tank loaded by plate heat exchanger) plus solar (optional) plus direct connection to the system

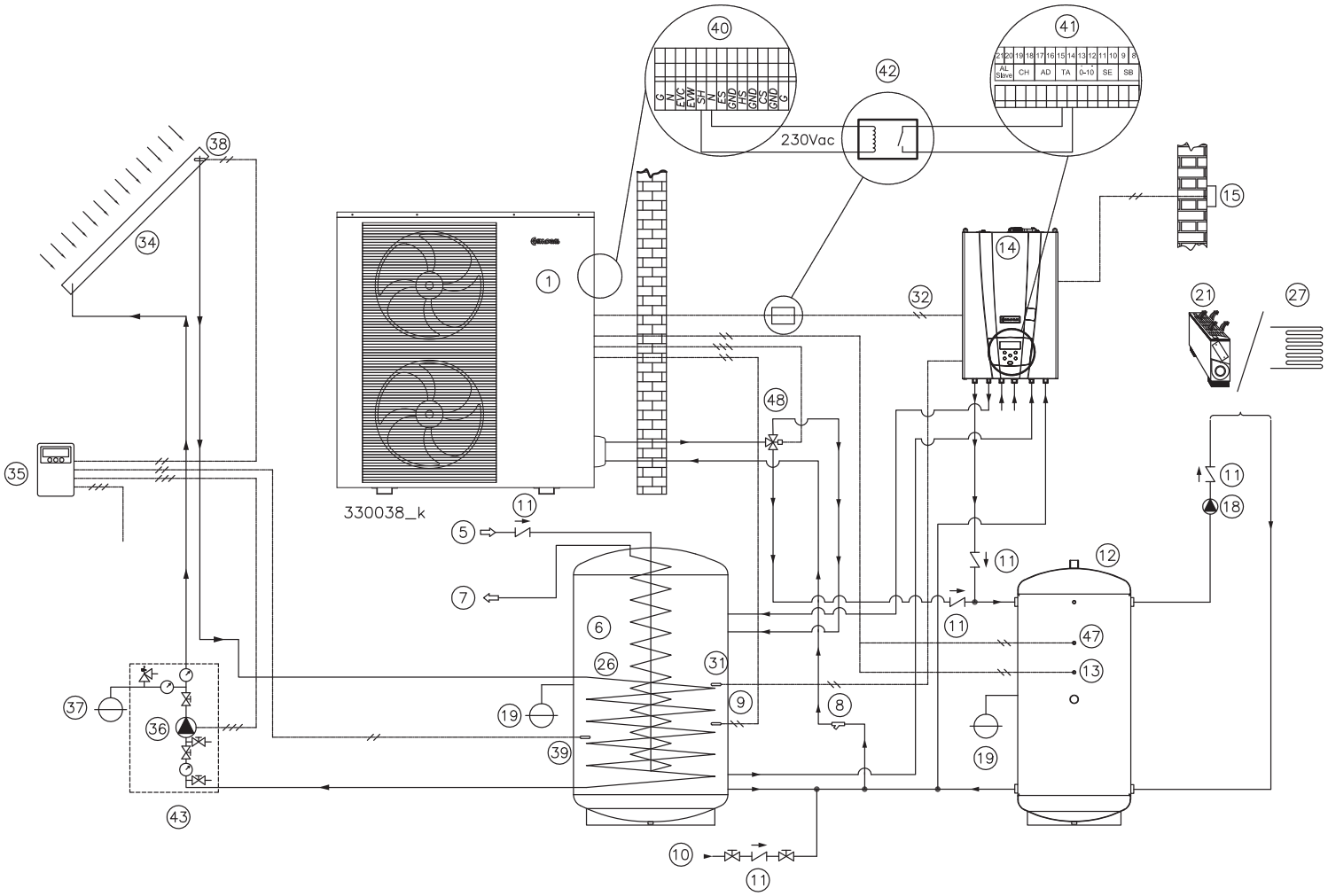


LEGEND of Figure 4-11:

8 - Diverter valve
14 - “Tw” DHW temperature sensor (take it to the tank)
15 - Integrative electric resistance thermostat
17 - Integrative electrical resistance (optional)
23 - Pump
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
45 - “Tr” temperature sensor (leave inside the electrical box)

Figure 4-11 - Electrical diagram with DHW production (single coil tank loaded by plate heat exchanger) plus solar (optional) plus direct connection to the system

4.2.6 - Connection with DHW production (semi-rapid tank) plus buffer tank plus 1 circuit heating/cooling plus boiler (optional) plus solar



LEGEND of Figure 4-12:
1 - Heat pump
5 - Water inlet
6 - Semi-rapid tank
7 - Domestic hot water outlet
8 - Water filter
9 - “Tw” DHW temperature sensor
10 - System filling water inlet
11 - Non-return valve
12 - Heating/cooling puffer
13 - “Tc” sensor
14 - Boiler (Mydens B or Novadens B model) (optional)
15 - Outdoor sensor (optional)
18 - Pump
19 - Expansion tank
21 - Heating/cooling system circuit 1
26 - Auxiliary heat exchanger for solar
27 - Radiant panel system
31 - DHW sensor boiler
32 - Boiler integration demand cable
34 - Solar panel
35 - Solar control board
36 - Solar pump
37 - Solar expansion tank
38 - Solar panel sensor
39 - Solar tank sensor
40 - Pdc terminals
41 - Boiler terminals
42 - Relay
43 - Fill and safety solar group
47 - “Th” sensor
48 - Diverter valve

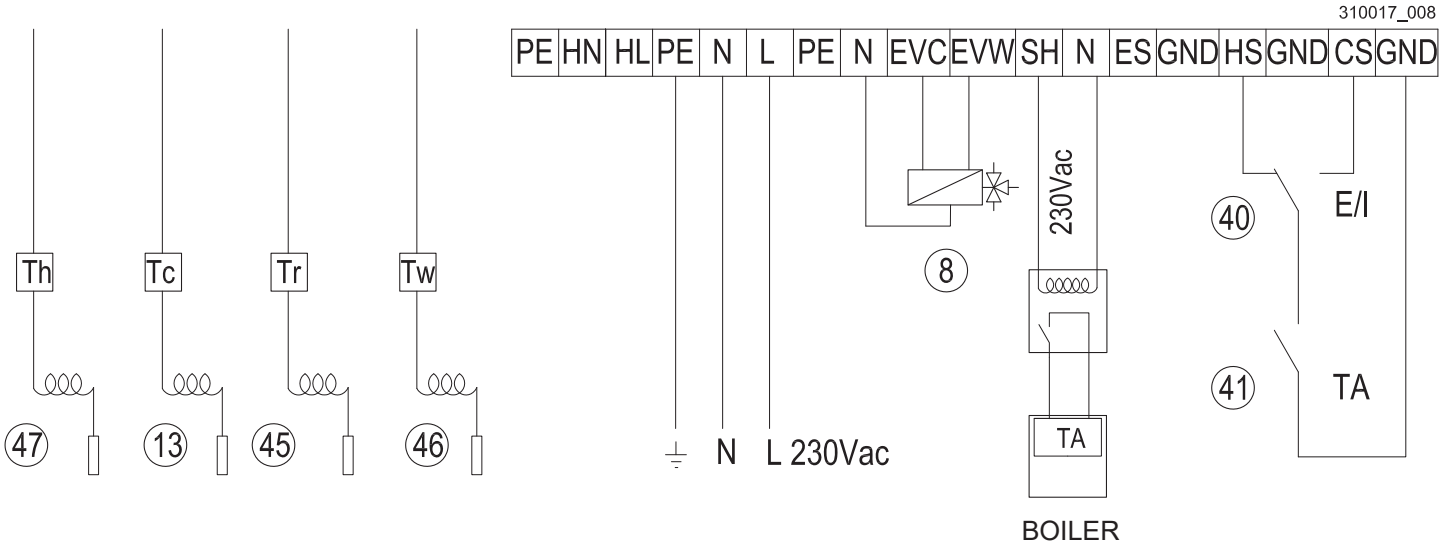
☞ Except for items “1”, “9” and “13”, all items must be field supplied.

☞ The “Tw” sensor (14), supplied with the appliance, must be positioned on the tank using the extension cable connected to the “Tw” terminal (Figure 5-9), present in the electrical connection compartment (Figure 3-1). Enable DHW operation via the system settings: Parameter “08” = 2. (section 7.5).

☞ Connect the demand from the Pdc to the boiler through the interposition of a relay (42).

☞ Set the DHW setpoint of the boiler (15) at 5 ° C lower than the DHW setpoint of heat pump.

Figure 4-12 - Hydraulic diagram with DHW production (semi-rapid tank) plus puffer plus 1 circuit heating/cooling plus boiler (optional) plus solar



LEGEND of Figure 4-13:

13 - “Tc” sensor (take it into puffer)
40 - E/I = Summer / winter diverter (to be provided if the machine is both heating and cooling).
41 - TA = RT Room Temperature
45 - “Tr” temperature sensor (leave inside the electrical box)
46 - “Tw” temperature sensor (leave inside the electrical box)
47 - “Th” sensor (take it into puffer)
48 - Diverter valve

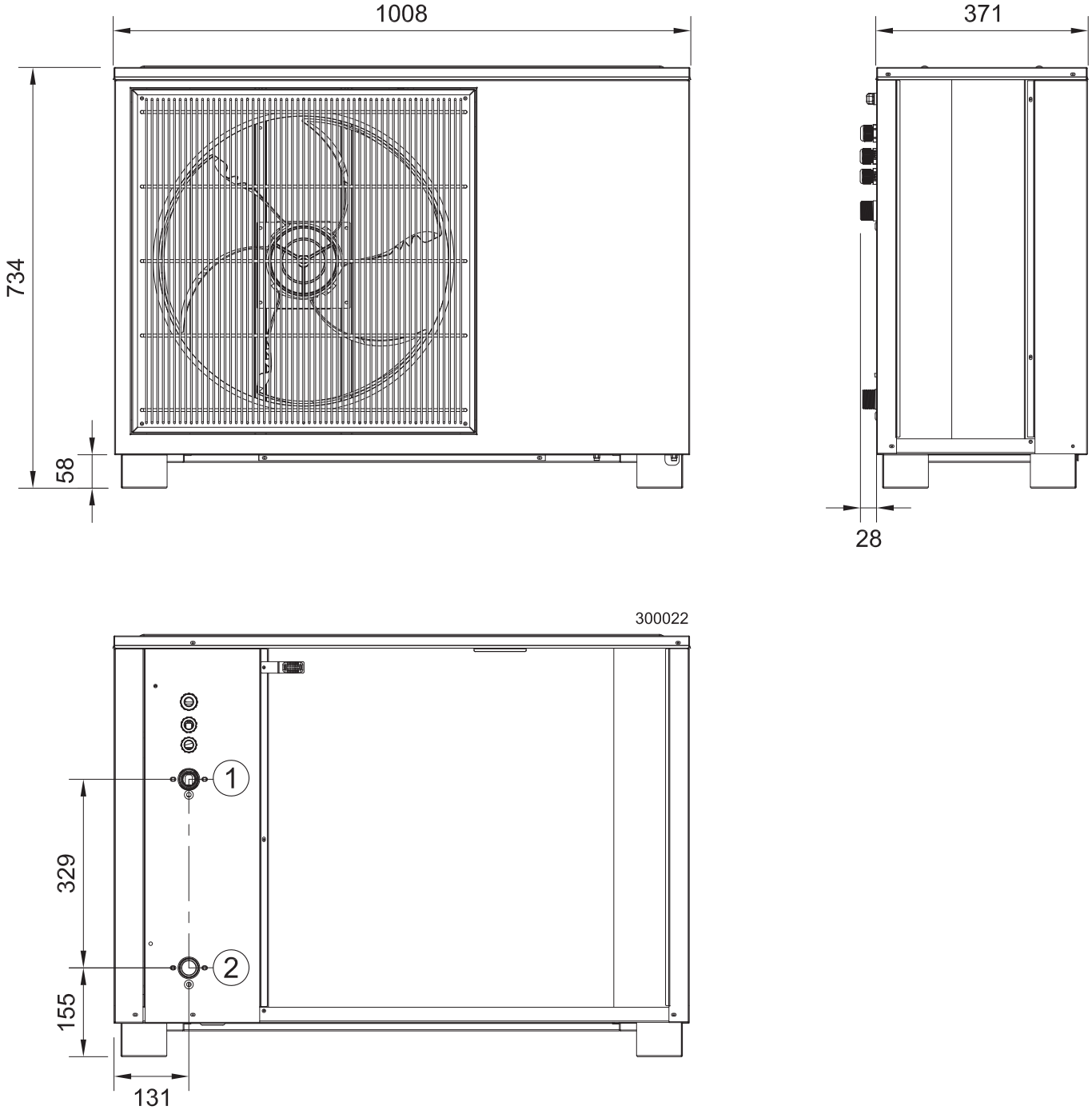
Figure 4-13 - Electrical diagram with DHW production (semi-rapid tank) plus puffer plus 1 circuit heating/cooling plus boiler (optional) plus solar

5 - INSTALLATION

5.1 - Opening the package

The appliance is supplied in cardboard packaging. To open it, follow the instructions on the closing flaps of the packaging itself.

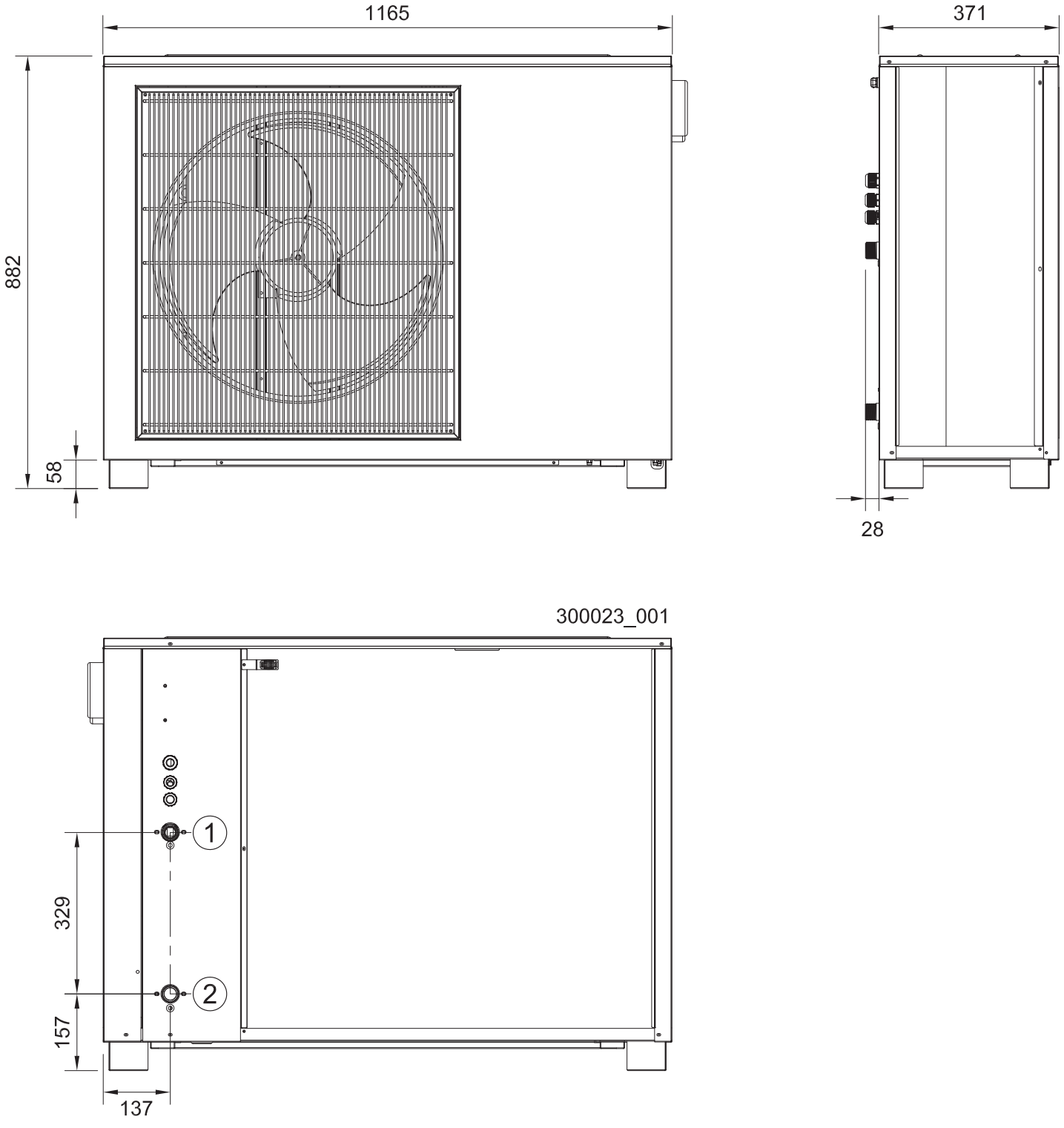
5.2 - Dimensions



MODEL	1	2
	WATER OUTLET	WATER INLET
6 kW	1”	1”

☞ All dimensions are in millimeters.

Figure 5-1 - Dimensions of model 6 kW



MODEL	1	2
	WATER OUTLET	WATER INLET
9-12 kW	1”	1”

☞ All dimensions are in millimeters.

Figure 5-2 - Dimensions of model 9 and 12 kW

5.3 - Minimum clearance distances

WARNING !!! The appliance must only be installed outside of the buildings in a well-ventilated place.

WARNING !!! It is forbidden to install the units one above the other (Figure 5-3), to prevent the condensation produced by the one positioned above from falling onto the one below.

For installation and maintenance, it is necessary to leave free spaces around the appliance as shown in the Figure 5-4.

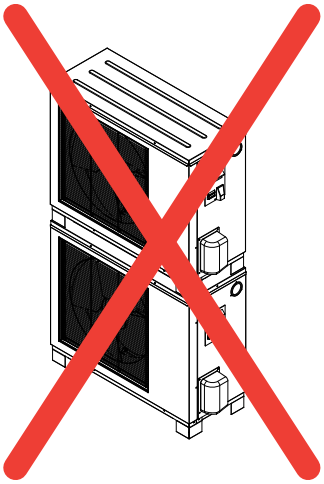
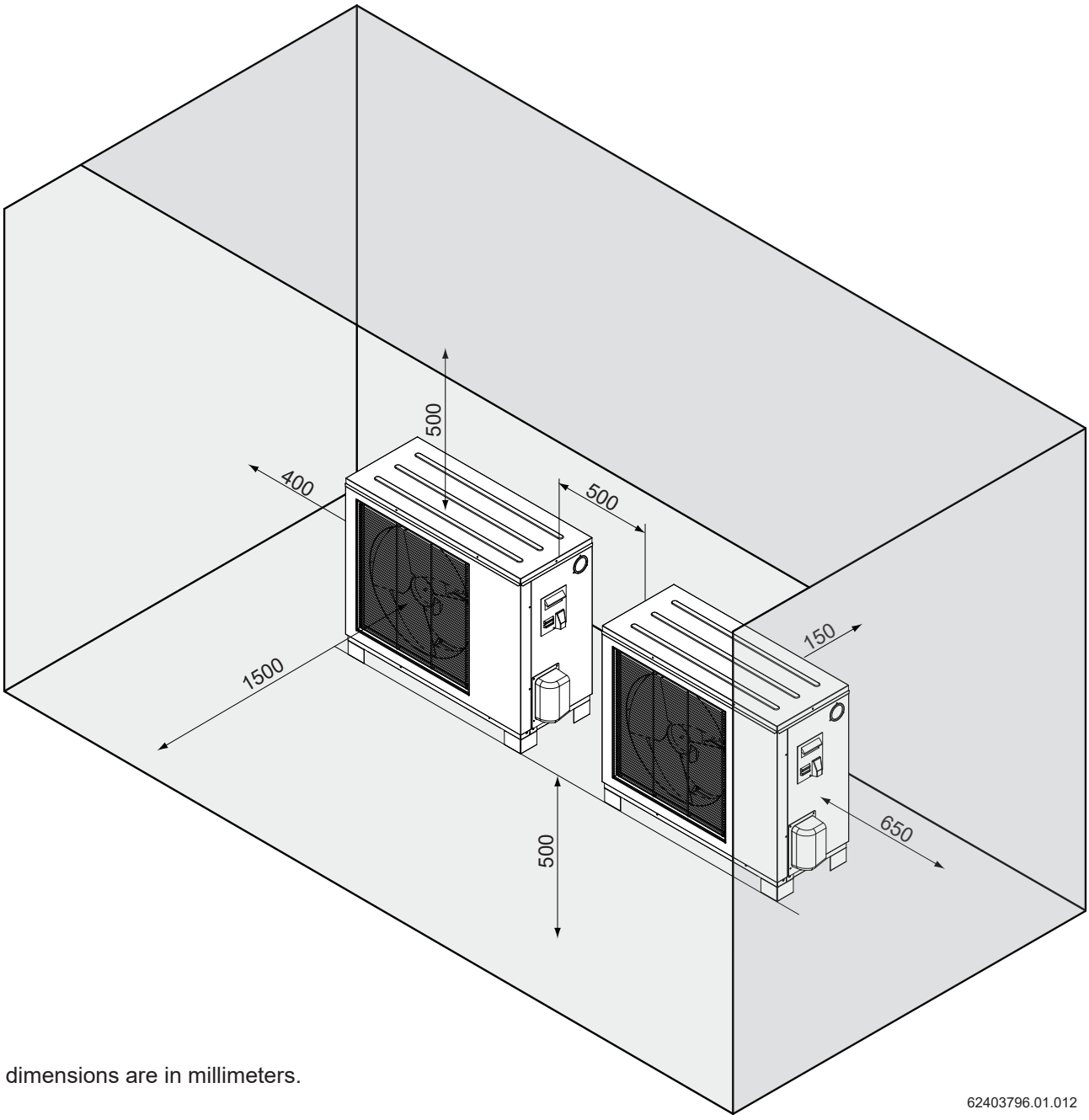


Figure 5-3 - Appliances uncorrect position



☞ All dimensions are in millimeters.

62403796.01.012

Figure 5-4 - Minimum clearance distances for installation and future maintenance

5.4 - Choosing the installation location

☞ The appliance must be installed in open spaces, corridors, balconies, roofs or vertical walls.

☞ The appliance must be installed in a ventilated and weather-protected location. If installed in a humid place, the electronic components could deteriorate and short circuits could occur.

☞ The appliance must not be installed in a place with the presence of corrosive or flammable gases.

☞ In order to avoid acoustic discomfort, it is preferable to not install the device near bedrooms or living rooms.

☞ Install the appliance at least 50 cm from the ground in case the climatic conditions are severe: temperatures below zero and high humidity.

☞ Install the device at a minimum of 50 cm higher than the typical snow level.

☞ Install a cover on the appliance to prevent snow from occluding the air intake and air outlet.

☞ Make sure that there is the possibility of drainage around the appliance to evacuate condensation during the defrosting process.

☞ Install the appliance away from the kitchen air outlet. The oily fumes could enter the appliance and adhere to the evapo-condensing battery.

☞ Install the appliance in a place not humid and not corrosive, in order to not shorten its operating life.

☞ Drill holes for connecting the slightly inclined pipes (> 8 °) to prevent rainwater from entering.

5.5 - Mounting the appliance

Observe the following instructions during installation (Figure 5-5):

- Install the appliance on a concrete floor or masonry blocks or a metal bracket;
- If use a metal bracket, it must ensure a support weight of at least 5 times that of the appliance;
- The bracket can be made of galvanized steel, aluminum or other materials that do not degrade over time;
- In the case of wall mounting, choose a support suitable for the weight of the appliance;

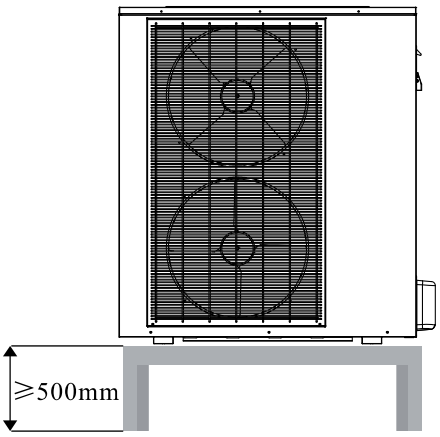


Figure 5-5 - Installation on a raised floor

5.6 - Condensate drain assembly

The appliance is designed for conveying and draining the condensate that forms on the battery. To do this, insert the condensate drain fitting in the desired hole.

☞ Mount the drainage fitting in position “A” and seal it with silicone, as shown in the Figure 5-6.

☞ Tilt the appliance by 1 cm / m in the direction of the drainage fitting to facilitate the evacuation of the collected water.

☞ During installation, tilt the condensate collection pipe by 1 cm / m to facilitate the drainage of rainwater.

☞ Convey the condensate drain connection to a suitable drain with siphon (see Figure 5-7).

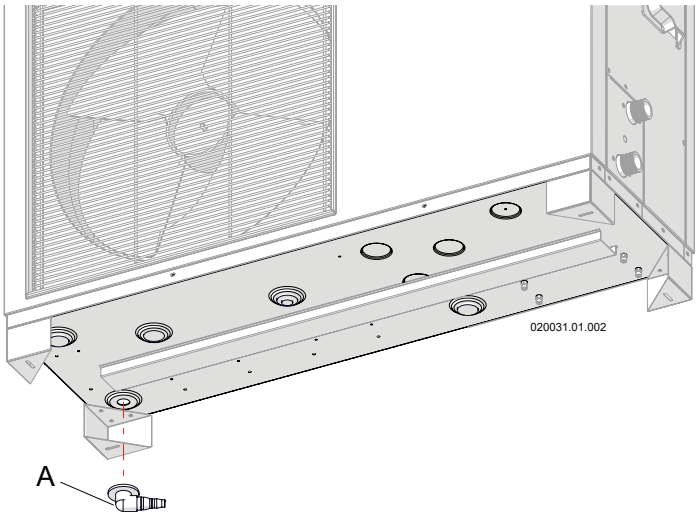
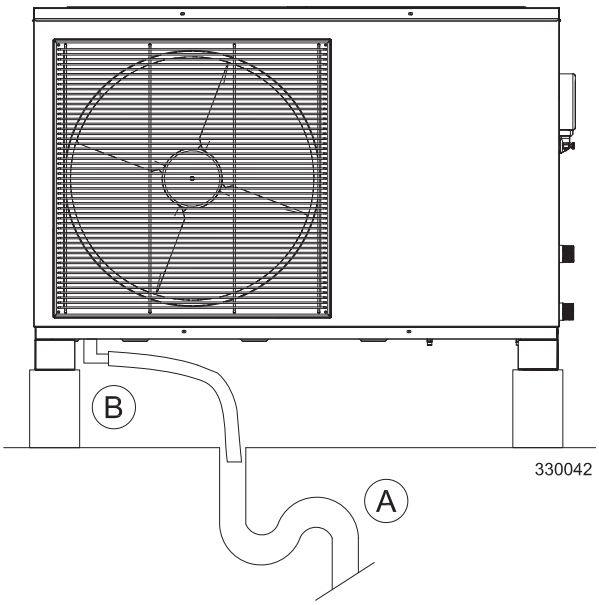


Figure 5-6 - Mounting the drainage fitting (A)



A - Drain with siphon
B - Condensate drain connection

Figure 5-7 - Condensate drain connection

5.7 - Electrical connections

- ☞ Use a properly sized main electrical switch.
- ☞ The power supply for the heat pump must be grounded.
- ☞ Electrical wiring must be done by a qualified technician.
- ☞ The electrical wiring must be carried out in compliance with local regulations.
- ☞ The electrical wiring must be done with the unit disconnected.
- ☞ Wiring must be securely fastened.
- ☞ Do not let the wiring touch together.
- ☞ Make sure that the main power supply complies with the data plate.
- ☞ Make sure that the power, wiring and power socket comply with the power of the appliance.

To connect the appliance to the power supply, proceed as follows (Figure 5-9):
1.- Access to the electrical connection as per section 9.6;
2.- Secure the end of the power cable in the cable clamp;
3.- Connect the terminals of the power cable to the terminals in the positions PE (Ground), N (Neutral) and L (Line).

WARNING !!! Dimension the section of the power supply cable according to the maximum absorbed current (see section 10) and its length.

If you want to control the appliance from an external signal, connect the pair of cables between HS and GND for the heating demand and CS and GND for the cooling demand (Figure 5-9).

☞ By the factory, the remote ON-OFF input is disabled. If you want to enable it, you need to act on Parameter 01 (section 7.5). This input has priority over the heating, cooling and sanitary demands.

WARNING !!! The external signal for the heating and cooling demand only works if both the icon representing the heating function (☀) and the cooling function (❄) are displayed on the display. To enable the two functions, refer to section 7.2.3.

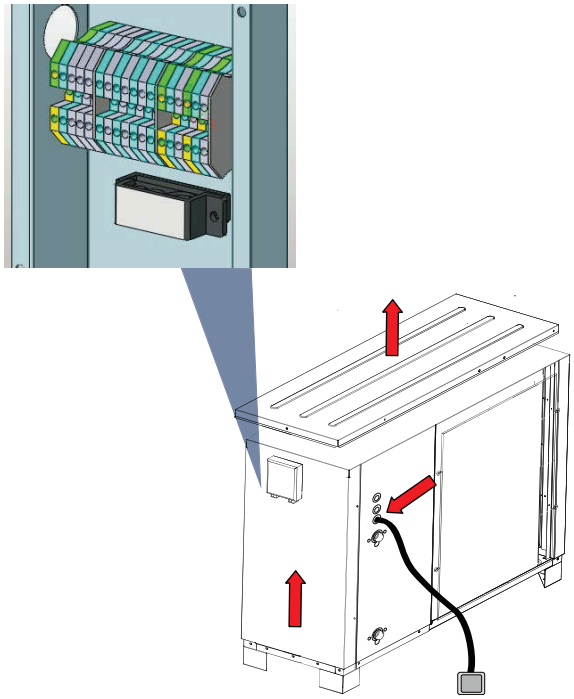


Figure 5-8 - Electrical terminals position

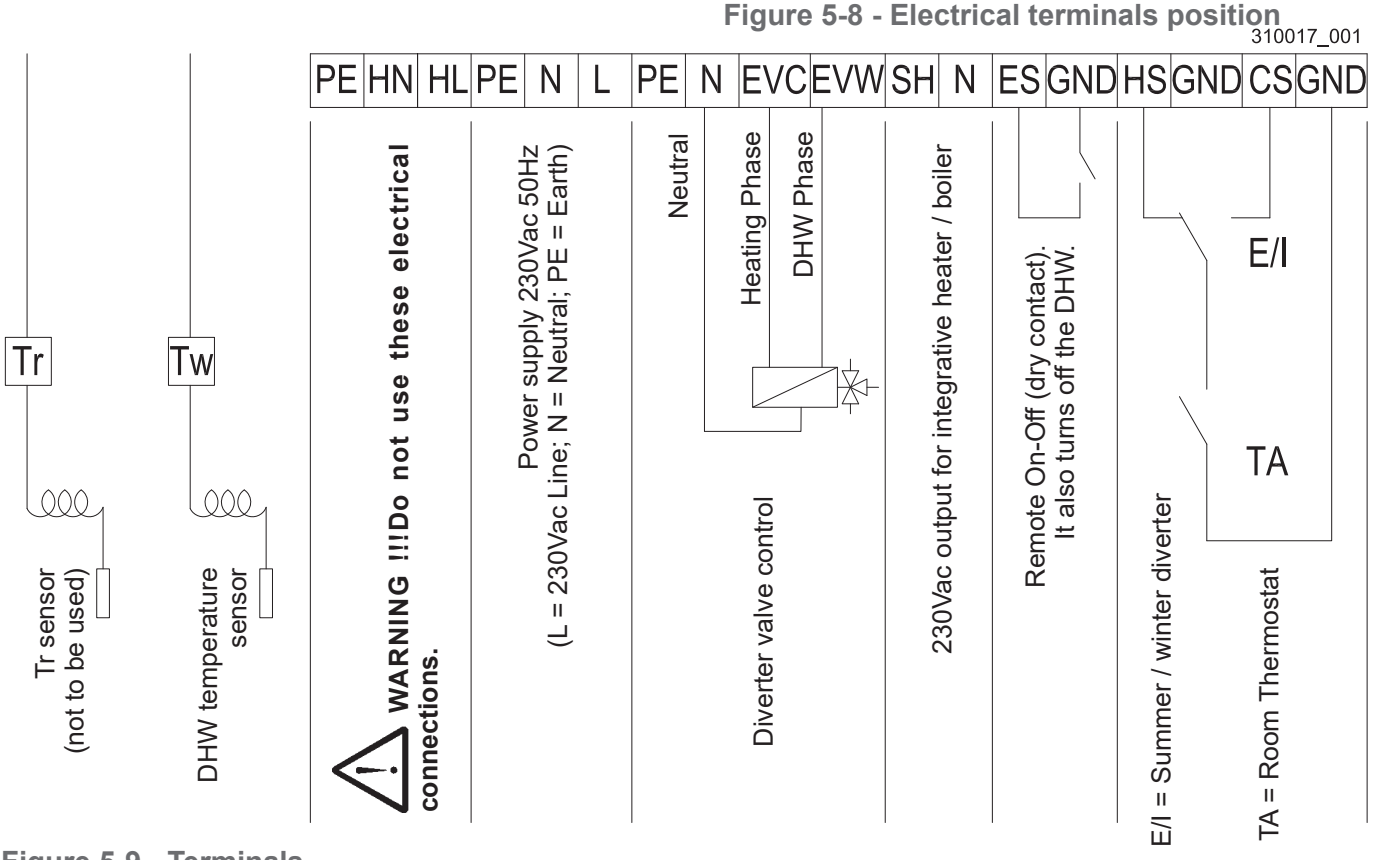


Figure 5-9 - Terminals

5.7.1.- Display installation in a remote position

To install the display in a remote you need to:

1.- Open the display protection flap (detail “3” Figure 3-1);

2.- Disassemble the front part of the display by levering with a cutter in the four corners, as in the Figure 5-10;

Figure 5-10 - Removal the front of the display

3.- Disconnect the cable from the display and remove the rear part by unscrewing the two screws (Figure 5-11);

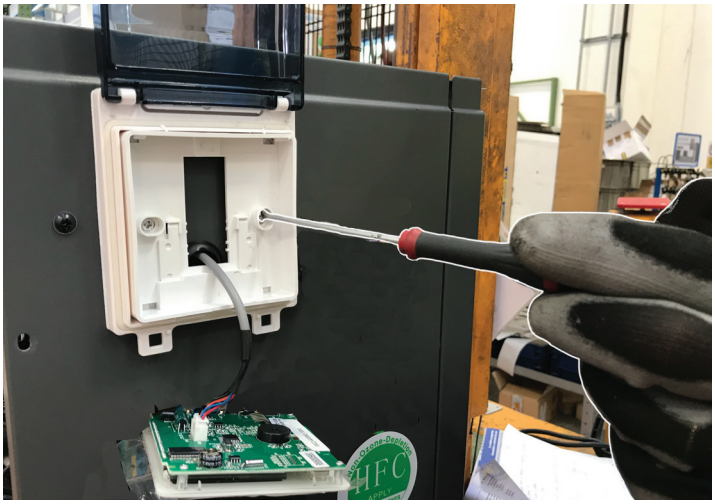


Figura 5-11 - Removal the rear part

4.- Mount the rear part to the display and the screws to the casing of the appliance, in the same position, to fix the structure of the display protection flap;

5.- Remove the upper and lateral cover of the appliance to access the internal components, as per section 9.6;

6.- From the inside of the appliance, remove the cable that was connected to the display and bring it inwards (Figure 5-12);

Figure 5-12 - Remove, from the inside appliance, the display cable

7.- Pass the cable through the grommet and take it towards the outside of the appliance;

8.- Connect the 10 m extension cable, located inside the accessories bag, to the terminal of the cable and connect it to the display;

9.- Now it is possible to mount the display on the wall and away from the appliance.

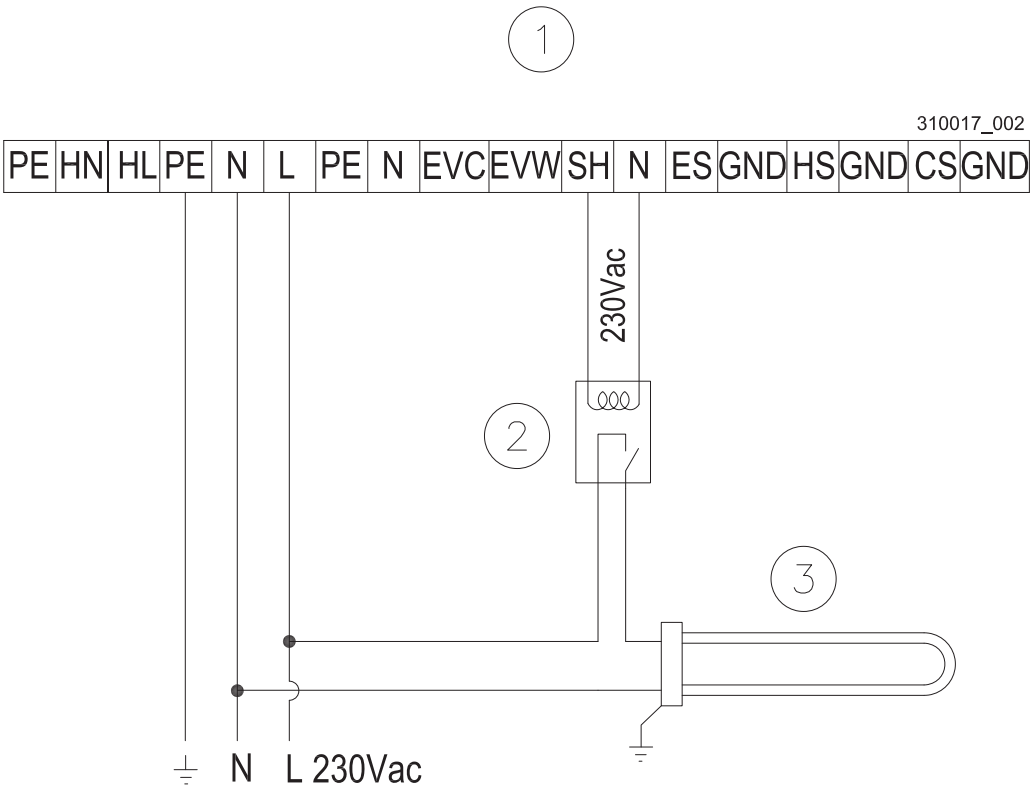
☞ Install the display in a dry place inside a room.

5.7.2.- Installation of the DHW sensor (Tw) on the storage tank

The DHW sensor is already connected to the terminal board (Figure 5-9), it is sufficient to take it from the terminal board compartment to the tank. Activate the DHW function following section 7.5, Parameter “08”.

5.7.3.- Integrative electrical resistance connection

For the integrative electrical resistance (detail “17” of Figures from 4-4 to 4-10) it is necessary to introduce a support relay at the output SH and N (Figure 5-13). This relay must have a 230V coil and at least 16A contacts.



1 = Unit electrical terminals
2 = Relay with 230Vac coil and at least 16A contact (Field provided)
3 = Integrative electrical resistance (Field provided)

Figure 5-13 - Integrative electrical resistance connection

5.7.4.- Connection of “Tc” and “Th” sensor to a puffer

The “Tc” and “Th” sensors are used as a reference for the setpoint temperature, respectively in cooling and heating. If use a puffer (as in the diagram in Figure 4-6) these sensors must be removed from inside the appliance and taken to the puffer. To do this, proceed as follow:

1.- Disconnect the appliance from the main electrical supply;
2.- Access to the internal components as per section 9.6;
3.- Remove the cable ties from the supply pipe (Figure 5-14) ;

Figure 5-14 - Supply pipe

4.- Remove the thermal insulation from supply pipe (Figure 5-15) to access the sensors;

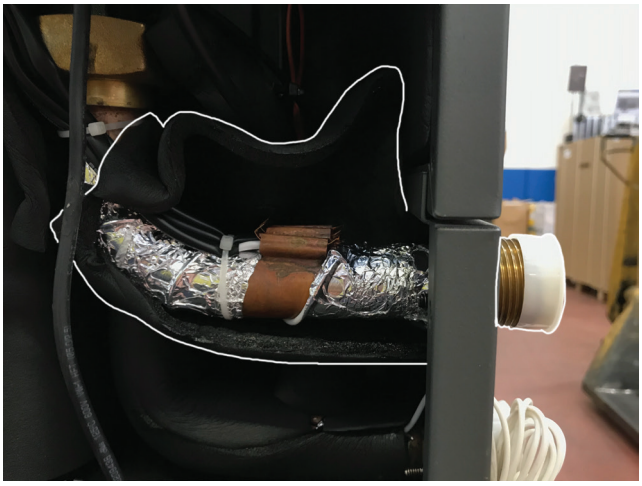


Figure 5-15 - Thermal insulation removal and access the sensors

5.- Remove “Th” and “Tc” sensors (identified by a label on the probes) from their position (Figure 5-16);
6.- Pass the sensors through the grommets (Figure 3-1), so as to take them out of the appliance and place them in their positions on the puffer.

Figure 5-16 - “Tc” and “Th” sensors

5.8 - Hydraulic connections

This appliance is designed to operate with a difference temperature of 5°C between the supply and return. This is achieved by circulating in the system a water flow equal to the value given in the Figure 5-17. The designer must evaluate all the pressure drops of the system (consider in addition the pressure drops of the linear pipe, also those of the various accessories such as taps, check valves, 90 ° elbows, 45 ° elbows, lockshields, 3-way valves, etc.), which, for this flow rate, are lower than the available head (see Figure 5-17).
An incorrect sizing of the system causes a low water flow or frost risk alarm to the plate heat exchanger (section 8).

WARNING !!! Make sure that the available head is sufficient to reach the desired flow rate. If the water flow is not enough, add a pump.

WARNING !!! In the case of use of zone valves that can reduce the water flow to regulate the temperature of the rooms, it is necessary to separate the water flow of the system from that of the machine (Figure 4-6).

WARNING !!! All the supply and return pipes must be insulated to prevent the condensate produced during the cooling phase, from falling on sensitive areas.

- ☞ After the electrical installation, connect the water inlet and outlet pipes in accordance with local regulations in force.
- ☞ For the diameters of the water inlet and outlet pipes refer to the Figure 3-1.
- ☞ Before use, clean the hydraulic circuit.
- ☞ After installation, test the tightness of the hydraulic circuit under pressure.

5.8.1 - Filter

- ☞ Place a mesh filter on the return connection to keep the water clean and collect impurities (Figures from 4-2 to 4-10, detail “2”).
- ☞ Be sure to keep the mesh filter pointing downwards.
- ☞ It is recommended to mount ball valves before and after the filter to allow for easy cleaning or replacement.

5.8.2 - Connect the water system filling

For the water system filling, it is necessary to connect the water net system to the hydronic circuit, as shown in Figures 4-4 to 4-13. In the branch to the net water system, a pressure reducer, a check valve, an interception valve and a pressure gauge must be provided.

WARNING !!! Find out about any local regulations, because they may include devices other than those mentioned above regarding the connection of closed and potentially polluted circuits to net water system.

- ☞ The chloride contained in the water must be below 300 ppm at a temperature below 60 ° C.
- ☞ The pH value of the water must be between 6 and 8.
- ☞ Do not use water with ammonia.
- ☞ Install a metal mesh filter on the return (Figure from 4-4 to 4-10).
- ☞ Be sure to use clean water to ensure that the appliance works in high efficiency for a long time.

Model	Minimum water flow	Available head
	l/h	kPa
6PI32	1280	75
9PI32	1584	73
12PI32	2005	60

Figure 5-17 - Water flow rate and available head

6.1 - Before starting

WARNING !!! After complete the installation, fill the system and purge the air with automatic air vent ("7" Figure 3-1) before proceeding with start-up.

Before starting, a series of checks must be carried out to ensure that the appliance can work in the best possible way:

1.- Make sure the fans rotate free;
2.- Verify that a metal mesh filter is installed on the return (detail "2" of Figures from 4-2 to 4-10);
3.- Check that the power supply voltage is within the allowed parameters with appliance "OFF" and at full output;
4.- Make sure the appliance's grounding is valid;
5.- Check the presence of switches and electrical safety devices;
6.- Check that all electrical connections are tight;
7.- Check that there are no leaks and ventilation is guaranteed (as per Figure 5-4);
8.- Check that the condensation, produced by the appliance, drains correctly;
9.- Check that the machine is installed more than 50 cm from the ground or from the typical snow level;

WARNING !!! If all the controls are positive, you can proceed with the first start-up, otherwise proceed with the elimination of the anomaly.

10.- Check that the heating and cooling demand inputs (Figure 5-9) are closed. If these inputs are open it is possible to force ignition by setting Parameter "08" (section 7.5) to 1,2,3 or 4, depending on the desired mode. Then, using the "M" button, select the mode to be started, as described in section 7.2.3;

WARNING !!! In this mode the appliance works continuously at the temperature set as per section 7.2.4.

11.- If the appliance must also work in DHW, it is necessary to check that the direction of the diverter valve (detail "8" of Figures 4-8 and 4-10) is consistent with the heating and DHW function. Otherwise it is necessary to operate on Parameter "A9" (section 7.5), inverting the switching direction. Set Parameter "A8" (section 7.5) to a value equal to or slightly higher than the switching time of the diverter valve (detail "8" in Figures 4-8 and 4-10).

6.2 - Start-up

1.- Start the unit by pressing the button ⏻ on the display;
2.- After the appliance has worked properly for 10 minutes without problems, the start-up is completed. In case of errors or problems refer to section 8.

WARNING !!! Do not work the appliance in heating or DHW mode if the outdoor temperature is higher than 43 ° C, in this case the unit goes into self-protection and stops.

7 - USE

7.1 - Introduction to the display

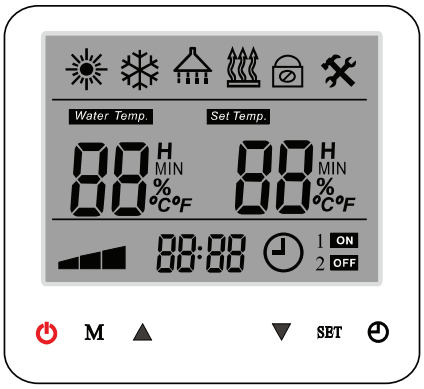


Figure 7-1 - Display

Symbol	Function	Description
	Heating	Heating symbol: appears when heating is on (Section 7.5, Parameter “08” = 1 o 2) and flashes when it is in operation (HS-GND input closed, see section 5.7).
	Cooling	Cooling symbol: appears when cooling is on (Section 7.5, Parameter “08”= 1 or 2) and flashes when it is in operation (CS-GND input closed, see section 5.7).
	Domestic hot water	Domestic hot water symbol (DHW): appears when DHW is on (section 7.5, Parameter “08”= 0, 2 or 4) and flashes when it is in operation.
	Auxiliary heater	The symbol appears on the display when the integrative electrical resistance is called.
	Antifreeze function	Protection function to avoid freezing: the icon is on during protection.
Water Temp.	Supply temperature	⚠ **WARNING !!! This indicator must always be active. If it is not active, press and hold the “M” button until “Water Temp.” appears.**
Set Temp.	Supply setpoint temperature	Shows the temperature set for the supply water in heating or cooling.
MIN	Silent mode	Reduces the compressor and fan speed in the set period. The symbol appears when this mode is set as active.
%	Defrost	Icon appears when the defrost function is on.
°C°F	Temperature unit of measure	This icon shows if the temperature is in °C or °F.
	Compressor indicator	Show the actual speed of compressor: the symbol appears when it is in operation.
88:88	Time or parameters	The icon represents the time, when you are in main screen, and parameters, when you enter in one of available menù (Figure 7-10).
	Timer (N/A)	⚠ **WARNING !!! If this icon is present, follow section 7.2.5 to turn it off.**
	ON/OFF button	This button turns the appliance on or off.
M	Operation mode button	The button switches between the various operating modes: heating / cooling, DHW or combinations. ⚠ **WARNING !!! For automatic operation (control via external inputs in Figure 5-9) always leave the and icons and displayed at the same time (section 7.2.3).**
▲	Up button	Increase the value of the selected parameter. Scroll through the parameters and change their value during settings.
▼	Down button	Decrease the value of the selected parameter. Scroll through the parameters and change their value during settings.
SET	Set button	Multifunction button: functions are described from time to time in the various sections.
	Clock button	Multifunction button: functions are described from time to time in the various sections.

7.2 - Basic operation

7.2.1 - Switch on and off the appliance

When the appliance is off, press ⏻ button to switch it on.
The unit will operate with the same settings as the last time.

Press ⏻ button again to switch off the appliance.

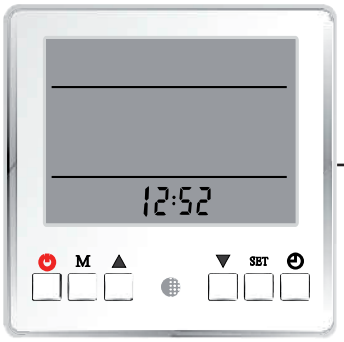


Figure 7-2 - Appliance OFF

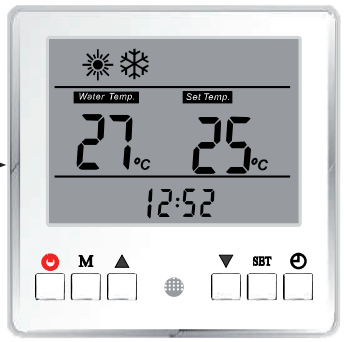


Figure 7-3 - Appliance ON (Home page)

7.2.2 - Time setting

1.- When the appliance is off press the “SET” button for 5 seconds, the current time will start flashing (Figure 7-4);
2.- Press ▲ to change the hours and press ▼ to change the minutes;
3.- Press “SET” to confirm the changes carried out.

Figure 7-4 - During the time setting, the hours and minutes flashes

7.2.3 - Heating / cooling / DHW operation mode

With the appliance on, press the “M” button.
Each time “M” is pressed, a different operating mode can be selected, identified by a characteristic icon, which appears on the display (Figure 7-1, the first 3 symbols of the table).

WARNING !!! To control the appliance automatically, through the HS-GND and CS-GND terminals in Figure 5-9, parameter “08” (section 7.5) must be set to “1” or “2” and enabled both functions, via the “M” key. If both the heating and cooling function symbols (and) are not present on the display, it means that Parameter “08” (section 7.5) is set to 0, so modify it to the desired value.

WARNING !!! If only the or icon appears on the display, the related function works continuously without being controlled by any room thermostat.

WARNING !!! If the symbol “Water Temp.” does not appear on the display (section 7.1), press and hold the M button until it appears (Figure 7-5).

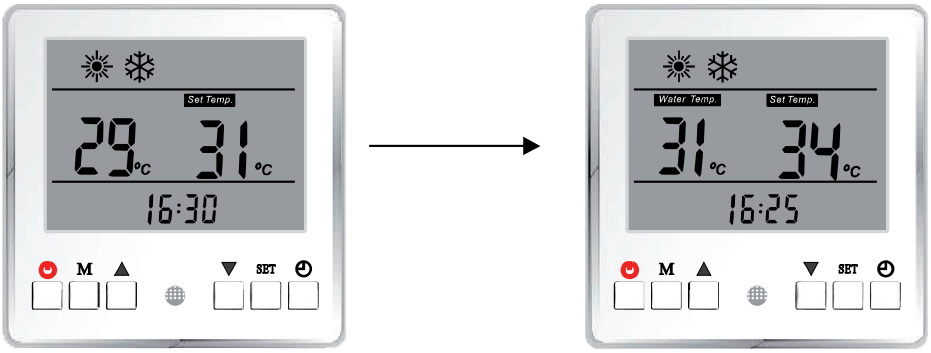


Figure 7-5 - Showing “Water Temp.”

☞ If the appliance works only for the production of DHW (section 7.5, Parameter “08” = 0) the symbol is present. In this mode the symbol Water Temp. never appears.

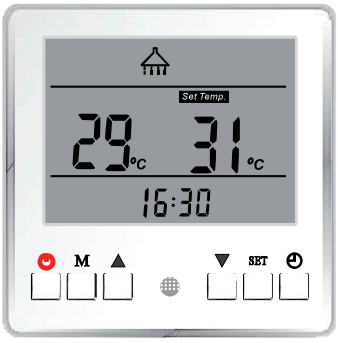


Figure 7-6 - Display shows DHW mode

7.2.4 - Setting the setpoint temperature in heating / cooling / DHW

You can adjust the domestic hot water temperature between 20 ° C and 75 ° C, but a temperature above 55 ° C can cause malfunctions.

The maximum temperature that can be set in heating is 42 ° C. It is possible to increase this temperature up to 55 ° C by modifying the “C5” parameter (section 7.5).

WARNING !!! If the outdoor reset is activated (section 7.4, Parameter “d1” = 1) it will not be possible to modify the setpoint heating temperature, because it will be calculated according to what is set in the parameters between “d1” and “dC” (section 7.4).

The minimum temperature that can be set in cooling is 7 ° C.

When an operating mode is selected (section 7.2.3), the relative setpoint temperature must be set, proceed as follows:

1.- Press the “SET” button to activate the temperature settings, the symbol relating to the operating mode and the temperature to be set will start flashing;
2.- Press ▲ and ▼ buttons to increase or decrease the setpoint temperature;
3.- Confirm by pressing “SET”, the symbol of the next operating mode will flash, then proceed as in the previous points.

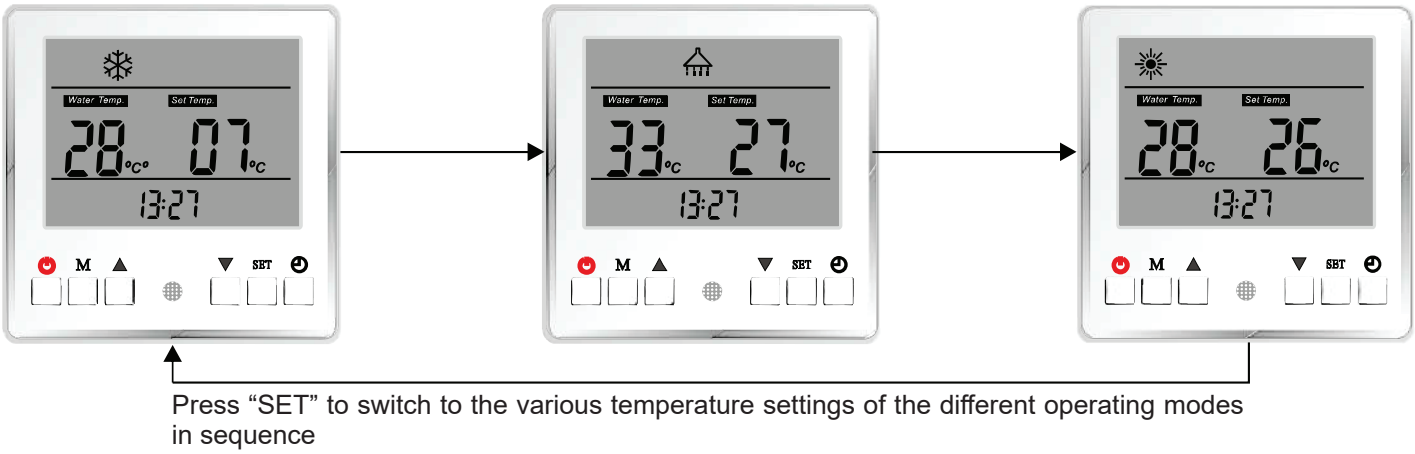


Figure 7-7 - Setting the setpoint temperature

7.2.5 - Timer

The timer functions are not active in this type of appliance. If the timer function is activated inadvertently, the symbol appears on the display (section 7.1). To remove this feature, proceed as follows:

1.- Press button (it doesn't matter if the machine is on or off). The display will appear as in Figure 7-8.
2.- Press "SET" button and the display will start flashing;

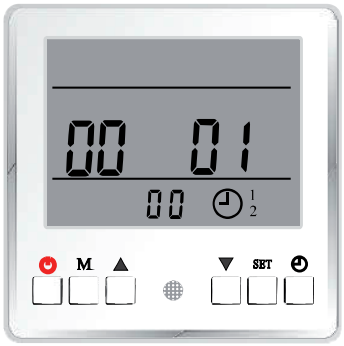


Figure 7-8 - Timer function

4.- Press the button to change the value from "00 01" to "00 00";
5.- Press "SET" button to confirm the change;
6.- Press the button to exit the menù;
7.- Now the icon must not be longer present in the display.

7.2.6.- Restore the parameters to the factory values

WARNING !!! Once the factory values have been restored, these values must be reviewed by recorrecting them as indicated in the "Factory value" column in section 7.4 and 7.5.

With the appliance it is possible to reset all the parameters to the factory values by pressing the "M" and buttons together for more than 5 seconds, until you hear an audible "beep".
Then review all the parameters of sections 7.4 and 7.5, aligning their values with what is reported in the "Factory value" column.

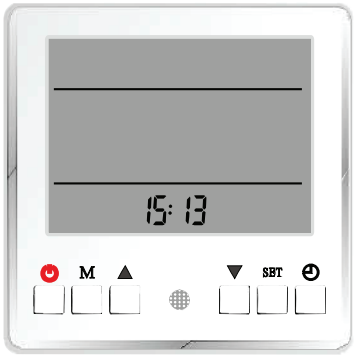


Figure 7-9 - Display when the appliance is OFF

7.3 - Sensors and system informations

All the temperatures detected by the sensors and the various system information can be viewed on the display. To access the parameters, proceed as follows:

1.- With the appliance on, press the ▲ and ▼ buttons simultaneously for 5 seconds. The display will switch as in Figure 7-10;

2.- Press the ▲ and ▼ button to view the various information in accordance with the table below.

3.- Press the ⏻ button to exit the menù.

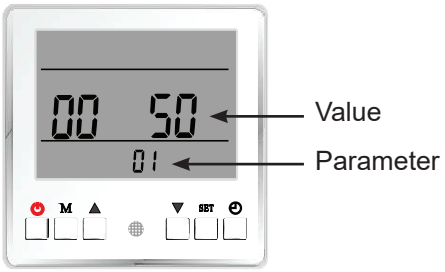


Figure 7-10 - Sensor and system informations menù

Parameter	Description	Unit of measure
01	DHW setpoint	°C
02	Heating supply temperature setpoint	°C
03	Cooling supply temperature setpoint	°C
04	Room temperature (N/A)	/
05	Outdoor temperature	°C
06	DHW temperature measured (Tw) (“26” of Figure 4-1)	°C
07	Heating supply temperature measured (Th) (“23” of Figure 4-1)	°C
08	Cooling supply temperature measured (Tc) (“22” of Figure 4-1)	°C
09	Room temperature (N/A)	/
10	Water supply temperature (“10” of Figure 4-1)	°C
11	Water return temperature (“13” of Figure 4-1)	°C
12	Refrigerant temperature (“14” of Figure 4-1)	°C
13	Supply voltage	V
14	Current consumption	A x 10
15	Compressor speed	Hz
16	Evapo-condensing battery temperature (“25” of Figure 4-1)	°C
17	Compressor discharge temperature (“6” of Figure 4-1)	°C
18	Compressor suction temperature (“7” of Figure 4-1)	°C
19	Evaporation pressure (low) (“20” of Figure 4-1)	bar x 10
20	Condensation pressure (high) (“19” of Figure 4-1)	bar x 10
21	Expansion valve position	0 = completely open, 500 = completely close
22	Internal heat exchanger temperature system 1 (N/A)	/
23	Voltage (V) system 1 (N/A)	/
24	Current (A) system 1 (N/A)	/
25	Compressor speed (Hz) system 1 (N/A)	/
26	External heat exchanger temperature system 1 (N/A)	/
27	Exhaust temperature system 1 (N/A)	/
28	Suction temperature system 1 (N/A)	/
29	Evaporation pressure system 1 (N/A)	/
30	Condensation pressure system 1 (N/A)	/
31	EEV position system 1 (N/A)	/
32	Maximum safety supply temperature (N/A)	/
33	Minimum safety supply temperature (N/A)	/
34	Software version indoor unit (N/A)	/
35	Software version outdoor unit 2 (N/A)	/
36	Software version outdoor unit 1 (N/A)	/

7.4 - User parameter

It is possible to access the “User” parameters in consultation or modification. To access the consultation mode, access the menu when the unit is in operation. To access the parameters in “modification” mode, the appliance must first be turned off by pressing the key ⏻. Once you have chosen whether to enter into modification or consultation only, operate as follows:

1.- Press the “SET” and “M” buttons for 5 seconds. The display will switch as in Figure 7-11;
2.- Push the ▲ and ▼ buttons to scroll the parameter of the table below;
3.- Press “SET” to enable the modification of a parameter;
4.- Press the ▲ and ▼ buttom to modify the value;
5.- Press “SET” to confirm the change;
6.- To exit the menu and return to the home page, press the key ⏻.

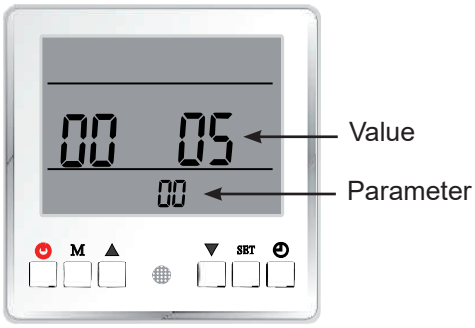
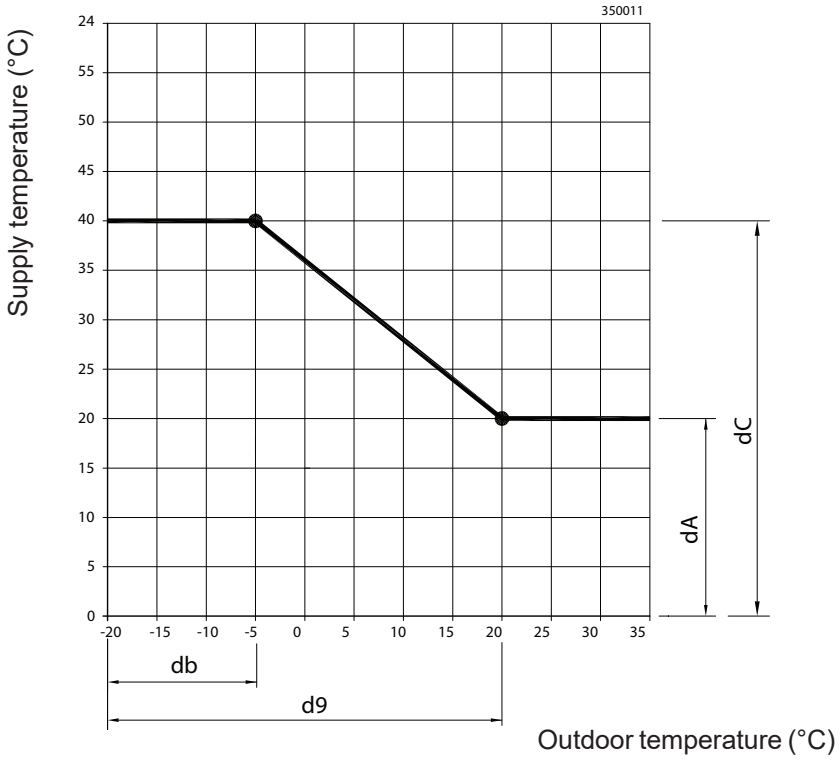


Figure 7-11 - User menù

Parameter	Description	Unit of measure	Range	Factory value
00	Negative DHW restart hysteresis	°C	0...10	5
01	Negative heating restart hysteresis	°C	0...10	2
02	Positive cooling restart hysteresis	°C	0...10	2
03	Cooling and heating based on outdoor temperature or demand with dry contact on electrical terminals (see Figure 5-9). - If set to “0” the appliance will switch between heating and cooling automatically based on the outdoor temperature (according to what is set in Parameter “05” of this menu). ⚠ **WARNING!!! If the system is connected to a very large tank, pay attention to the setting of Parameters “05” and “04”, because in mid-seasons a lot of energy could be wasted in the transition between heating and cooling.** - If set to “1” the appliance will switch between heating and cooling according to the demand of the Heating or Cooling contacts in section 5.7. In any case, the outdoor temperature, as set in Parameters “04” and “05”, will have priority over the remote digital signal.	/	0...1	1
04	Outdoor temperature for heating start.	°C	-10...43	43
05	Outdoor temperature for cooling start.	°C	5...35	5
06	Heating priority (N/A) (Do not change)	/	/	100
07	Room temperature setting (N/A) (Do not change)	/	/	20
d1	Outdoor reset function (only for heating)	/	0 (disab.),1 (enab.)	0
d2	Effect of room temperature on the heating outdoor reset (N/A) (Do not change)	/	/	0
d3	(Do not change)	°C	-20...65	45
d4	(Do not change)	°C	-20...65	20
d5	(Do not change)	°C	-20...65	44
d6	(Do not change)	°C	-20...65	21
d7	(Do not change)	°C	-20...45	21
d8	(Do not change)	°C	-20...65	22
d9	Spring outdoor temperature (*)	°C	-20...45	20
dA	Supply spring temperature (*)	°C	-20...65	20
db	Winter outdoor temperature (*)	°C	-20...45	-5
dC	Supply winter temperature (*)	°C	-20...65	40

(*) For the integration of these parameters, refer to Figure 7-12.

7.4.1 - Outdoor reset



☞ In this example graph you can see how the Parameters “dA”, “db”, “dC” and “d9” (section 7.4) act on the outdoor reset and how a supply temperature is calculated as a function of the outdoor temperature.

Figure 7-12- Outdoor reset graph

7.5 - Advanced Mode parameters

WARNING !!! Only a qualified technician, who knows this menu in depth, is authorized to modify it.

To access the “Advanced Mode” parameters, proceed as follows:

1.- Switch off the appliance by pressing ⏻ button;
2.- Press ▼ for 5 seconds until this symbol “----” appears (Figure 7-13);
4.- Set the password “2234” to access the menu in this way:
   a.- Press ▲ to switch between the 4 settable values;
   b.- Press ▼ to modify the flashing value;
   c.- Once the password values have been entered, press “SET”, the display will appear as in Figure 7-14;
5.- Press the ▲ and ▼ buttons to scroll through the parameters within each group;
6.- Press “SET” button to select the parameter. Now the parameter will start flashing;
7.- To modify the parameter press ▲ and ▼ buttons. To confirm the chage press the SET” button;
8.- To scroll through the various groups of parameters, press the button ◴ ;
9.- To exit this menu, press the button ⏻.

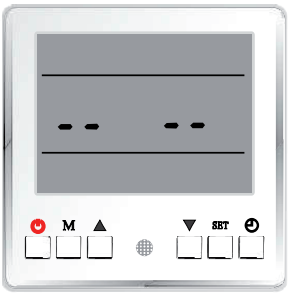


Figure 7-13

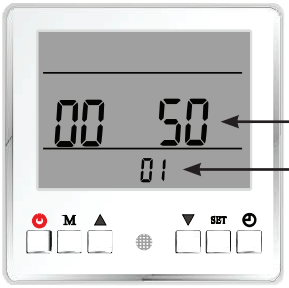


Figure 7-14 Advanced Mode Menù

The “Advanced Mode” parameters are listed in the following tables:

Parameter	Description	Unit of measure	Range	Factory value
00	System control mode (N/A)	/	Leave at 0	0
01	External ON / OFF switch: must be connected between ES and GND terminals (Figure 5-9). This switch also turns off the DHW.	/	00 (input disabled), 01(input enabled)	0
02	Water flow switch activation delay after switching on the pump	sec	0 (water flow switch control is disabled), 1 ... 60 (flow switch activation delay)	60
03	Heating storage (do not change) (N/A)	/	0 (no), 1(yes)	0
04	Cooling storage (do not change) (N/A)	/	0 (no), 1(yes)	0
05	DHW or heating priority switch (do not change) (N/A)	/	0 (DHW), 1 (heating)	0
06	Refrigerant collection (do not change) (N/A)	/	0 (off), 1 (compressor system 2 ON), 2 (compressor system 1 or single ON)	0
07	Block function (do not change) (N/A)	week	00...99	00
08	Operating mode	/	0 - Only DHW (to control the ON/OFF switch of the DHW function, use the ES and GND contact in Figure 5-9); 1 - Cooling and Heating (to control the ON/OFF switch of this two functions, use the relative contact CS-GND and HS-GND of Figure 5-9); 2 - All function are active. The “Tw” sensor must be connected (to control the ON/OFF switch of this functions, use the relative contact of Figure 5-9); 3 - Only heating (Caution!!! In this mode the contact HS-GND of Figure 5-9 is disabled, so the function is continuously active); 4 - Heating and DHW. The “Tw” sensor must be connected (Caution!!! In this mode the contacts HS-GND and ES-GND of Figure 5-9 are disabled, so the functions are continuously active);	1
09	Compressor modulation band with respect to the setpoint temperature. The band is positive in heating and negative in cooling.	°C	2...10	2
0A	Maximum duration for minimum compressor speed. When the supply is higher than the setpoint value, the compressor speed will be reduced. The compressor will be switched off after having worked continuously at the minimum value for the time set in this parameter. After the set time has elapsed, the compressor restarts after 3 minutes.	Min	10...60	30

☞ Press the key ◴ to access the following parameters:

Parameter	Description	Unit of measure	Range	Factory value
A1	Type of pump control	/	0 (pump works when the compressor works), 1-15 (Minimum running time of the pump in correspondence with the compressor), 16 (Pump always on even if there is no request from the external control contacts)	8

Parameter	Description	Unit of measure	Range	Factory value
A2	Type of heating unit pump control (N/A) (Do not change)	/	0 (control by the unit), 1-15 (ignition time in minutes), 16 (always on)	0
A3	Type of cooling unit pump control (N/A) (Do not change)	/	0 (control by the unit), 1-15 (ignition time in minutes), 16 (always on)	0
A4	Heating pump start temperature (N/A) (Do not change)	°C	20...50	20
A5	Heating pump stop temperature (N/A) (Do not change)	°C	18...50	18
A6	Cooling pump start temperature (N/A) (Do not change)	°C	5...20	18
A7	Cooling pump stop temperature (N/A) (Do not change)	°C	5...20	20
A8	3-way valve diverter time. This parameter is used to set the operation of the 3-way valve used to regulate the water flow between the various working modes.	/	0 (the voltage is continuously present on the switching side of the diverter valve), 1 ... 600 (duration in seconds it takes the valve to completely diverter the position)	120
A9	3-way valve direction	/	0 (like in DHW), 1 (like in heating mode)	1

☞ Press the key ◴ to access the following parameters:

b1	Anti-legionella temperature setting (N/A) (Do not change)	°C	60...75	60
b2	Anti-legionella duration (N/A) (Do not change)	min	10...60	30
b3	Anti-legionella maximum duration (N/A) (Do not change)	min	10...240	120
b4	Antifreeze function	/	0 (disabled), 1 (enabled)	1
b5	Outdoor display temperature (antifreeze icon on the display)	°C	5...10	5
b6	Antifreeze start outdoor temperature - compressor	°C	0...4	2
b7	Antifreeze start supply temperature by the pump with cycle 1 min ON, 8 min OFF	°C	0...10	5
b8	Antifreeze start supply temperature - compressor	°C	0...10	2
b9	Antifreeze stop spply temperature - compressor	°C	5...20	15

☞ Press the key ◴ to access the following parameters:

C1	Manual heater ON/OFF in DHW mode (N/A) (Do not change)	/	0 (invalid), 1 (valid)	0
C2	Auxiliary source for DHW (N/A) (Do not change)	/	0 (no), 1 (yes)	0
C3	Auxiliary source priority for DHW (N/A) (Do not change)	/	0 (low), 1 (high)	0
C4	Checking the duration of the DHW temperature increase (N/A) (Do not change)	min	1...20	40
C5	Maximum temperature that can be set in heating mode. **⚠ WARNING!!! The maximum heating temperature is 55 ° C, do not set this parameter to a higher value.** **⚠ WARNING!!! Consider whether the system downstream of the appliance can be damaged by a temperature higher than 42 ° C (floor systems).**	/	40...65	42
C6	Forcing of integrative electrical resistance (section 5.7.3)	/	0 (disabled), 1 (enabled)	0
C7	Auxiliary source for heating mode (Do not change)	/	0 (disabled), 1 (enabled)	1

Parameter	Description	Unit of measure	Range	Factory value
C8	Auxiliary source priority for heating mode (Do not change)	/	0 (low), 1 (high)	1
C9	Demand algorithm of the integrative resistance to the heating. The higher the value, the more late the resistance starts.	/	0...600	200
☞ Press the key ◴ to access the following parameters:				
d1	For the “d” parameters refer to section 7.4 from “d1” to “dC”.			
☞ Press the key ◴ to access the following parameters:				
E1	Heat recovery function (N/A) (Do not change)	/	0 (invalid), 1 (valid)	0
E2	DHW restart based on ΔT during heat recovery function (N / A) (Do not change)	°C	5...10	5
E3	DHW stop based on ΔT during heat recovery function (N / A) (Do not change)	°C	1...10	5
E4	Heating offset temperature during heating priority operation (N/A) (Do not change)	°C	3...20	5
E5	Maximum number of minutes of heating operation during heating priority operation (N/A) (Do not change)	min	20...180	30
E6	Minimum number of minutes of DHW operation during heating priority operation (N/A) (Do not change)	min	20...180	50
E7	Intervention request of auxiliary heating source in DHW during operation with heating priority (N/A) (Do not change)	/	0 (no), 1 (yes)	0

8 - DIAGNOSTIC

If there is an error it will be shown on the display as in Figure 8-1:

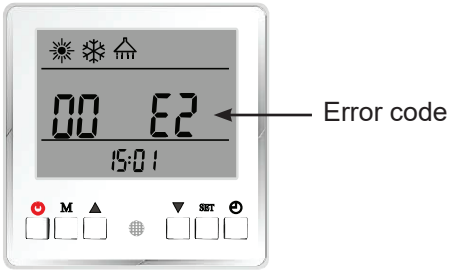


Figure 8-1- Display show an error

Some errors can be temporary or permanent. If it's permanent, to try to restore operation, the appliance must be turned off for at least 30 seconds and turned on again.

Code	Description	Operation status	Possible causes and solutions
00 E1	Outdoor temperature sensor fault	1. Reduced compressor speed; 2. Switch between cooling and heating not working; 3. The appliance will use the compressor discharge temperature as a reference for the antifreeze function; 4. No longer calls the auxiliary heater.	Check that the outdoor temperature sensor is not broken, short-circuited or with a value out of range. Replace it if necessary.
00 E2	DHW temperature sensor fault (Tw)	DHW mode not available	Check that the DHW temperature sensor (Tw) is not open, short-circuited or with too high drifts. Replace it if necessary.
00 E3	Heating temperature sensor fault (Th)	Heating mode not available	Check that the heating temperature sensor (Th) is not open, short-circuited or with too high drifts. Replace it if necessary.
00 E4	Cooling temperature sensor fault (Tc)	Cooling mode not available	Check that the cooling temperature sensor (Tc) is not open, short-circuited or with too high drifts. Replace it if necessary.
00 E5	Supply temperature sensor fault	Appliance stopped	Check that the supply temperature sensor is not open, short-circuited or with too high drifts. Replace it if necessary.
00 E6	Return temperature sensor fault	Appliance stopped	Check that the return temperature sensor is not open, short-circuited or with too high drifts. Replace it if necessary.
00 E7	Evapo-condensing temperature sensor fault	Compressor stopped	Check that the temperature sensor is not open, short-circuited or with too high drifts. Replace it if necessary.
00 E8	Internal battery 1 temperature sensor fault (N/A)	System 1 stopped	(N/A)
00 E9	Room temperature sensor fault (Tr)	1. Operation with non-selectable room temperature control. 2. Non-selectable room temperature compensation function.	The room sensor (Tr) is inside the electrical connection box (Figure 5-9).Check that the room temperature sensor (Tr) is not open, short-circuited or with too high drifts. Replace it if necessary.
00 Ea	Internal Eeprom fault	The appliance works	Replace the water side control board.

Code	Description	Operation status	Possible causes and solutions
00 Eb	Water flow switch fault	Compressor stopped	If the water flow switch is “closed” with no flow, this message will appear. We may be in the presence of an external pump that is running when the internal pump is off. Check that the water flow switch does not get stuck in the “closed” state.
00 EC	Water flow too low	Compressor stopped	The too low flow rate message appears if protection “00 P7” trips 3 times in a given time. To reset it, remove the voltage for 30 seconds and restore the power supply. Check the hydraulic system, especially the filters. Check the operating status of the pump.
00 P1	System 1 communication fault	System 1 stopped	Too much communication data lost. Check that the connection wiring is intact and well connected. The cable must be a maximum of 30 meters long. Check that there are no disturbances in the vicinity of the unit. The unit resets as soon as the problem disappears. Check that the switches n ° 1, 2 and 8 on the gas side control board are set to “OFF”.
00 P2	Communication failure between display and gas side control board	System stopped	Too much communication data lost. Check that the connection wiring is intact and well connected. Verify that the display is not installed very far away or in a high voltage conduit. The unit resets as soon as the problem disappears. Check that the switches n ° 1, 2 and 8 on the gas side control board are set to “OFF”.
00 P3	Communication failure with display	The appliance will stop	Too much communication data lost. Check that the connection wiring is intact and well connected. The cable must be a maximum of 30 meters long. Check that there are no disturbances in the vicinity of the unit. The unit resets as soon as the problem disappears.
00 P4	Communication failure with Master appliance	The appliance stops only when the external Master is connected and activated, otherwise the unit continues to work with the current settings.	This fault appears only if there is an external Master unit connected to the appliance that controls it via Modbus. Too much data lost. Check that the connection wiring is intact and well connected. The cable must be maximum 30 meters long. Check that there are no disturbances in the vicinity of the unit. The appliance resets as soon as the problem disappears.
00 P5	Antifreeze function in cooling	Compressor stopped. If the message does not disappear within 3 minutes, it means that it occurred 3 times within a certain time. In this case, disconnect the power for 30 seconds and restore the power supply to restore the system.	Check that the cooling temperature is not too low (section 7.2.4). Check that the water flow rate is not too low. Check the status of the filters. Check that the refrigerant is sufficient through the pressure on the evaporator (section 7.3, Parameter “19”). Check that the room temperature is not below 15 ° C.
00 P6	Antifreeze function in cooling system 1	Compressor 1 speed reduced to 0. If the message does not disappear within 3 minutes, it means that it occurred 3 times within a certain time. In this case, disconnect the power and restore it to restore the system.	Check that the cooling temperature is not too low. Check that the water flow rate is not too low. Check the status of the filters. Check that the refrigerant is sufficient through the pressure on the evaporator. Check that the ambient temperature is not below 15 ° C.

Code	Description	Operation status	Possible causes and solutions
00 P7	Low water flow protection	The unit restarts after 3 minutes	The water flow rate is less than the minimum allowed. If the problem occurs 3 times in a given time the system will not reboot, then power off for 30 seconds and then power on again to restart. Check the hydraulic circuit, paying particular attention to the filters. Check the operation of the pump. Check the operation of the water flow switch.
00 P8	Flow water temperature too low in cooling	Compressor stopped	The compressor stops if the water outlet temperature is below 5 ° C in cooling. Check that the temperature sensor is well connected and working. Check that the supply temperature setpoint is not too low (section 7.2.4). Check that the water flow rate is not too low.
00 P9	Water supply temperature too high in cooling or DHW	Compressor stopped	The compressor stops if the water supply temperature is higher than 57 ° C in heating or DHW. Check that the heating or DHW flow temperature sensor is well connected and functioning. Check that the supply temperature setpoint is not too high (section 7.2.4). Check that the water flow rate is not too low.
00 Pa	Water supply temperature too in defrost	The compressor stops defrosting and goes back to heating or DHW production	When the appliance works in defrosting, if the supply water temperature is too low it could freeze in the plate heat exchanger, damaging it. When this happens the appliance stops defrosting and returns to produce hot water for heating or DHW. The evaporator may freeze. Increase the required heating or DHW temperature (chapter 7.2.4). If the system water volume is too low, the temperature will drops too low during defrosting, it is necessary to add a tank to increase the capacity of the circuit. Check that the supply water temperature sensor and the cooling temperature sensor are not reversed.
00 Pb	Supply water temperature too low in unit 1 during defrost	System 1 compressor stops defrosting and switches back to heating or DHW production	When the appliance works in defrosting, if the supply water temperature is too low it could freeze in the plate heat exchanger, damaging it. When this happens the appliance stops defrosting and returns to produce hot water for heating or DHW. The evaporator may freeze. Increase the required heating or DHW temperature, or start the back-up heating system. If the water volume of the system is too low, the temperature will drop too much during defrosting, it is necessary to add a tank to increase the capacity of the circuit. Check that the water supply and internal coil temperature sensors are not reversed.
00 Pc	Level 1 antifreeze water protection	The pump runs for one minute every 6 minutes	When the appliance is OFF, if the outdoor temperature and the water temperature are too low, the water could freeze. Then it becomes necessary to start the pump.
00 Pd	Level 2 antifreeze water protection	The compressor starts automatically	When the appliance is OFF, if the outdoor temperature and the water temperature are too low, the compressor starts automatically to heat the water beyond a certain value. In accordance with current regulations, antifreeze could be added to the system water.

Code	Description	Operation status	Possible causes and solutions
02 E1	Communication between water and gas side control boards failed	Compressor stopped	Failed communication between display and gas side control board. Check the wiring and that switches 1,2 and 8 on the gas side control board are ON, while all the switches on the water side control board must all be OFF. Verify that the previously mentioned control boards are working.
02 E2	Communication between gas side control board and compressor inverter board failed	Compressor stopped	Check the wiring between the gas side control board and the compressor inverter. Check that they are not broken, if so, replace them.
02 E3	Fault in a compressor supply phase (open or short-circuited)	Compressor stopped	Check that the compressor power supply wiring is not broken or short-circuited. Check the impedance between the compressor phases.
02 E4	Overcurrent at a compressor supply phase	Compressor stopped	Check that the inverter is not broken, replace it if necessary. Check that the compressor is not broken, replace it if necessary. Check that the wiring to the compressor is intact.
02 E5	Compressor inverter board fault	Compressor stopped	Check that the compressor inverter board is not broken, replace it if necessary. Check that the wiring to the compressor is intact.
02 E6	High or low voltage inverter board fault	Compressor stopped	Check that the inverter board is not broken, if necessary replace it.
02 E7	Gas side control board current error	Compressor stopped	Replace the gas side control board.
02 E8	Eeprom fault	Compressor stopped	Replace the gas side control board.
02 F1	Outdoor temperature sensor error	Compressor stopped	Check that the outdoor temperature sensor is not short-circuited, open or that it does not rise too much. Replace it if necessary. If this error appears only when the compressor is running, check that the outdoor temperature sensor and the battery sensor are not inverted.
02 F2	Error in the evapo-condensing battery temperature sensor	Compressor stopped	Check that the evapo-condensing battery temperature sensor is not short-circuited, open or that it does not rise too much. Replace it if necessary.
02 F3	Compressor discharge temperature sensor error	Compressor stopped	Check that the compressor discharge temperature sensor is not short-circuited, open or that it does not rise too much. Replace it if necessary.
02 F4	Error on the suction temperature sensor	Compressor stopped	Check that the suction temperature sensor is not short-circuited, open or that it does not rise too much. Replace it if necessary.
02 F5	Low water pressure sensor error	Compressor stopped	Check that the low water pressure sensor is not short-circuited, open or that it does not rise too much. Replace it if necessary.
02 F6	High water pressure sensor error	Compressor stopped	Check that the high water pressure sensor is not short-circuited, open or that it does not rise too much. Replace it if necessary.
02 F7	High pressure switch high	Compressor stopped	This error appears if the pressure switch is open when the unit is in stand-by or after 2 minutes that the compressor has stopped. Check that the high pressure switch is not broken or badly connected. Check that the fan and pump are working properly. Check that the evapocondensing battery is not obstructed, that the water temperature is not too high and that there is less than 8 ° C difference between supply and return.
02 F8	Water flow switch error	Compressor stopped	Check the operation of the water flow switch.

Code	Description	Operation status	Possible causes and solutions
02 F9	Fan rotation speed error (6 kW and 9 kW model)	Compressor stopped	There is no feedback from the fan or the fan does not reach the desired speed. Check that the fan or the gas side control board are working. Verify that the fan is connected to the correct port on the board.
02 Fa	Fan rotation speed error (13 kW model)	Reduced compressor speed. If both fans are in error, the compressor stops.	There is no feedback from fan # 1 or the fan does not reach the desired speed. Check that the fan or the electronic board are working. Verify that the fan is connected to the correct port on the control board.
02 Fb	The low pressure sensor indicates too low a value	Compressor stopped	This protection works when the low pressure sensor detects a too low value. If, after reducing the compressor speed, the pressure remains too low, the compressor will be stopped. Check that the value set for the supply water is not too high. Check that the water flow rate is sufficient. Check that the electronic expansion valve works properly. Check that the air turns regularly in cooling or that it is not too hot in heating. If necessary, top up the refrigerant quantity.
02 Fc	Compressor speed reduced due to too high pressure detected by the high pressure sensor	Compressor stopped	This protection appears when the pressure is higher than the pressure set for a certain speed. If the compressor reduces the speed, but the pressure remains higher than expected, the compressor stops. Check that the supply temperature is not too high, that the water flow rate is not too low, that the electronic expansion valve works regularly, that the air turns regularly in the unit and that the temperature difference between supply and return does not exceed 8 ° C.
02 PI	Incorrect power supply voltage	Compressor stopped	The power supply voltage is too high, too low or the system works in overload. The appliance resets itself after 5 minutes. If the protection trips 3 times in a certain time, the block becomes permanent.
02 P2	Compressor phase current protection	Compressor stopped	The supply current is too high or low, or the system is overloaded. Check the power supply. Check the correct operation of the fan and the pump, if the external battery is dirty, if the supply temperature is too high and if the difference between the supply and return temperature is not higher than 8 ° C.
02 P3	IPM module protection	Compressor stopped	Compressor driver fault. Check that the cable is intact and not damaged. Check that the compressor inverter board or the compressor are not broken.
02 P4	Compressor oil return protection	Accelerated compressor	If the compressor has always worked at minimum speed for a certain period of time, the unit starts this protection to suck oil into the compressor. This is a normal security activity, no activity should be done.

Code	Description	Operation status	Possible causes and solutions
02 P5	Compressor off due to the intervention of the high pressure switch	Compressor stopped	If the pressure is too high, the pressure switch switches off the compressor. After 5 minutes the system resets itself automatically. Check that the fan and pump are running smoothly and that the external battery is not blocked by dirt. Also check that the supply temperature is not too high or that there is no more than 8 ° C difference between supply and return.
02 P6	Compressor speed reduced due to too high pressure detected by the high pressure sensor	Compressor stopped	This protection appears when the pressure is higher than the pressure set for a certain speed. If the compressor reduces the speed, but the pressure remains higher than expected, the compressor stops. Check that the supply temperature is not too high, that the water flow rate is not too low, that the electronic expansion valve works regularly, that the air turns regularly in the unit and that the temperature difference between supply and return does not exceed 8 ° C.
02 P7	Compressor preheating	Expected function, nothing needs to be done.	This is a normal security function. If the compressor has not worked for a long time and the outdoor temperature is below -5 ° C, the electrical resistance placed on the compressor base is activated for 30 minutes.
02 P8	Excessive compressor discharge temperature	Compressor stopped	Check that the value set for the supply water is not too high, especially when the outdoor temperature is very low. Check that the water flow rate is sufficient. Check that the refrigerant circuit has no leaks and that there is sufficient coolant.
02 P9	Evapo-condensing battery temperature too high	Compressor stopped	The temperature of the evapo-condensing battery is too high. Check if the air circulates freely in the battery.
02 Pa	Supply voltage too high or low	Compressor stopped	The power supply voltage is incorrect. Verify that it is between 180 and 264 V.
02 Pb	Compressor off due to too high or too low outdoor temperature	Compressor stopped	The outdoor temperature is too low or too high to work.
02 Pc	Compressor speed power supply intervention due to an outdoor temperature that is too high or too low	Limited compressor speed	The outdoor temperature is too high or too low to work at full load. This protection serves to ensure correct operation.
02 Pd	N/A	N/A	N/A
02 PE	The low pressure sensor indicates a value too low	Compressor stopped	This protection intervenes when the low pressure sensor detects a too low value. If, after reducing the compressor speed, the pressure remains too low, the compressor will be stopped. Check that the value set for the supply water is not too high. Check that the water flow rate is sufficient. Check that the electronic expansion valve works properly. Check that the air turns regularly in cooling or that it is not too hot in heating. If necessary, top up the refrigerant quantity.
03 P3	Wired communication fault	If an external controller is present and has communication, the unit continues to work. If there is no remote control, the unit stops.	Too much communication data lost. Check that the connection wiring is intact and well connected. The maximum cable must be 30 meters long. Check that there are no disturbances in the vicinity of the unit.

9.1 - General recommendations

WARNING !!! The user cannot change the internal wiring of the unit.

WARNING !!! Service and maintenance must be performed by qualified technician. If the appliance does not work, immediately disconnect the power supply.

WARNING !!! The control system is able to automatically analyze the various protection problems during daily use, and show the error code on the display. The appliance can reset itself. During normal operation, the pipes inside the appliance do not need any maintenance.

WARNING !!! Under normal environmental working conditions, the user only has to worry about cleaning the surface of the external evapo-condensing battery. Operation to be performed every 4-6 months.

WARNING !!! If the work environment is particularly dirty or oily, the external part of the evapo-condensing battery must be cleaned with specific professional detergents to ensure optimal performance and efficiency.

WARNING !!! Please pay attention to the surrounding environment to ensure that the unit is installed safely and that the air intake and exhaust are not obstructed.

WARNING !!! In the event that the appliance is not used for a long time in winter, it is recommended to drain the system to avoid damage due to freezing.

9.2 - Cleaning the water filter

The water filter must be cleaned in accordance with its relevant manual to ensure the correct flow rate of the system. It is recommended to clean it after the first month and every 6 months thereafter.

9.3 - Cleaning the plate heat exchanger

Thanks to the great turbulence inside the heat exchanger we have a self-cleaning effect. However, in certain cases the tendency to get dirty is very high. For example if you use very hard water at high temperatures. In these cases it is possible to clean the heat exchanger by circulating cleaning liquids. Use a tank with weak acid such as 5% phosphoric acid (if cleaning is done frequently use oxalic acid). Pump the liquid through the heat exchanger. This operation must be carried out by qualified technician, contact the assistance center.

9.4 - Cleaning the evapo-condensing battery

The external battery does not require any special maintenance, except when it is blocked by dirt or other foreign objects. Clean with detergent and low pressure water, rinse with clean water.

- ☞ Before cleaning make sure the appliance is turned off.
- ☞ The evapo-condensing battery must be cleaned by qualified installer.
- ☞ Do not use gasoline, benzene or other similar products to clean the appliance. Do not spray insecticides, otherwise the unit may be damaged. It is recommended to use specific products.
- ☞ Spray the specific product on the battery and let it “rest” for 5-11 minutes.
- ☞ Rinse with clean water.
- ☞ To clean from surface dirt or fluff use a brush, use it in the direction of the foils.
- ☞ Use a dry and soft cloth to clean the appliance cover.

Figure 9-1 Cleaning the evapo-condensing battery

9.5 - Replacement of the circulation pump

1.- Disconnect the power supply and access to the control boards as per section 9.6;
2.- Close the water supply to the system and drain the circuit;
3.- Disconnect the electrial connections of the pump;
4.- Using the special wrench, remove the pump;
5.- Connect the new pump and reconnect the electrical connections.

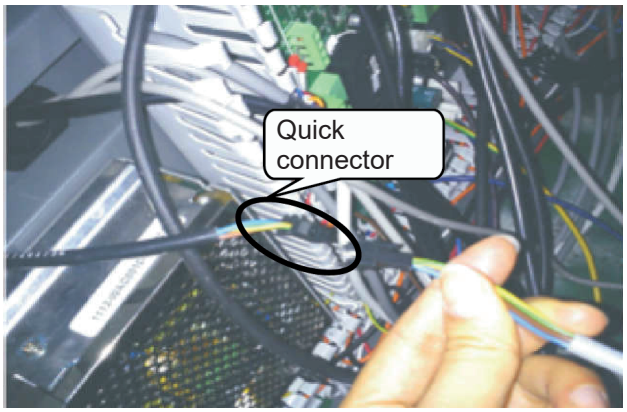


Figure 9-2 Quick connector

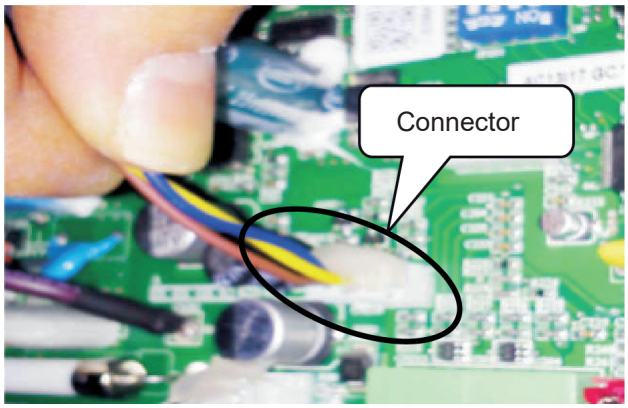


Figure 9-3 Connector

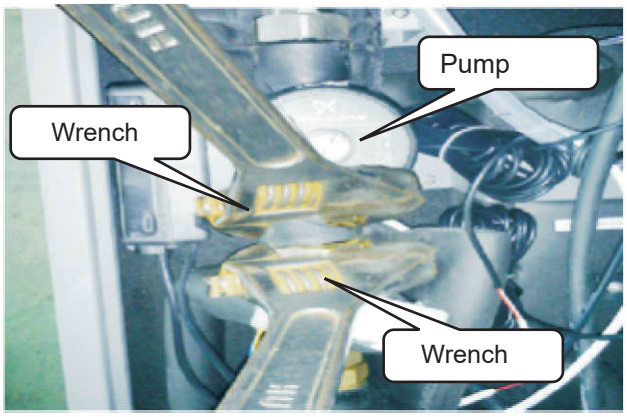


Figure 9-4 Pump disassembly

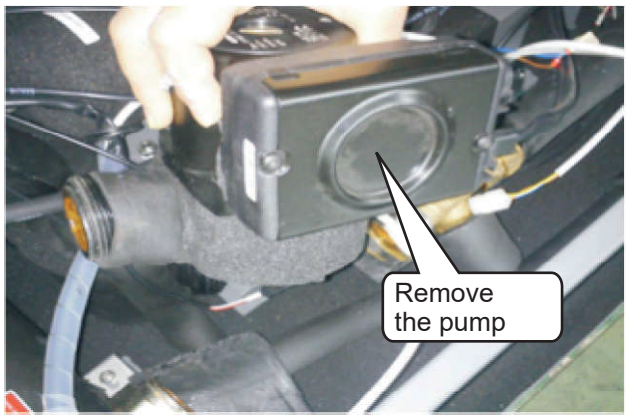


Figure 9-5 Pump removal

9.6 - Access to control boards

1.- Disconnect the power supply;
2.- Unscrewing the appropriate screws, first remove the top "A" and than lateral "B" cover of the appliance (Figure 9-6);
2.- Remove electrical box covers "C" and "D" (Figure 9-7);
3.- Carry out the necessary maintenance activities.

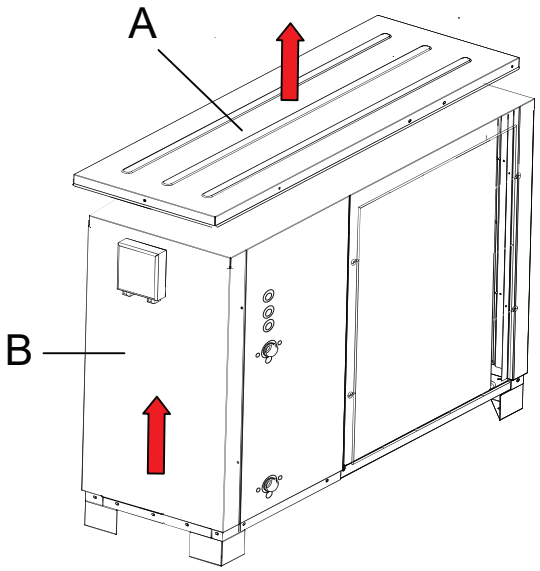


Figure 9-6 Remove the top cover

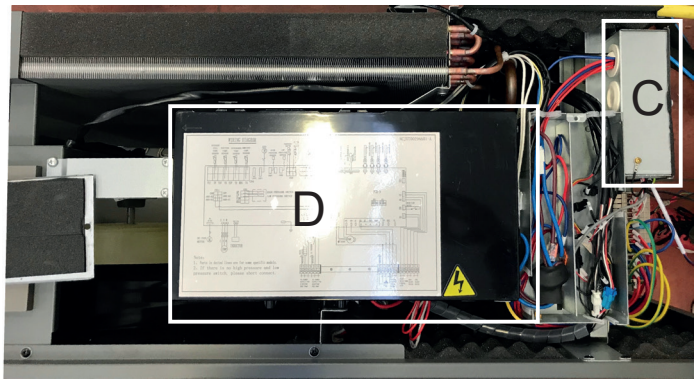


Figure 9-7 Remove the electrical box cover

9.7 - Replacing the fan motor

1.- Disconnect the power supply and remove the fan protection grid;
2.- With a wrench loose the central nut that fixes the fan and remove it;
3.- Remove the screws that fix the motor;
4.- Disconnect the connection cable to the electronic board;
5.- Replace the fan and reverse the previous steps.

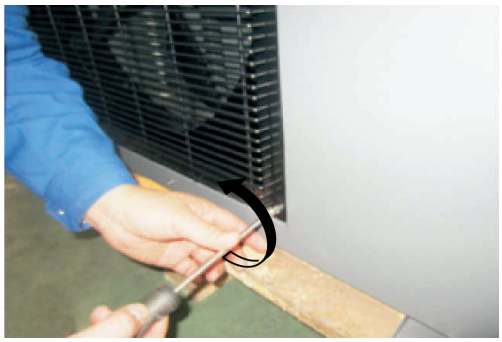


Figure 9-8 Screw of fan protection grid

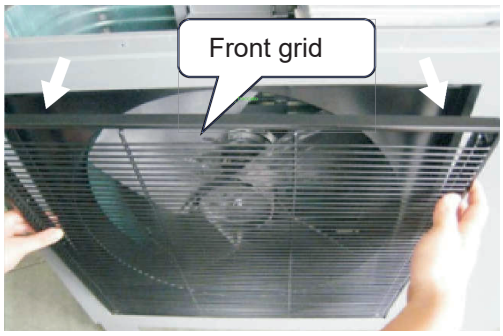


Figure 9-9 Remove the fan protection grid

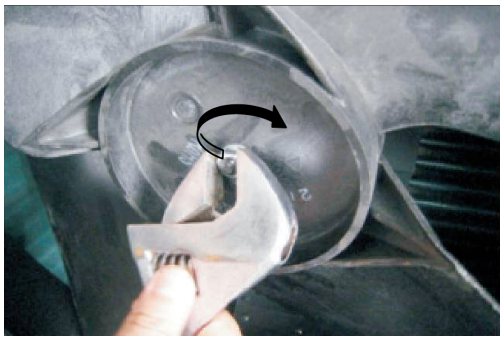


Figure 9-10 Remove the screw of fan

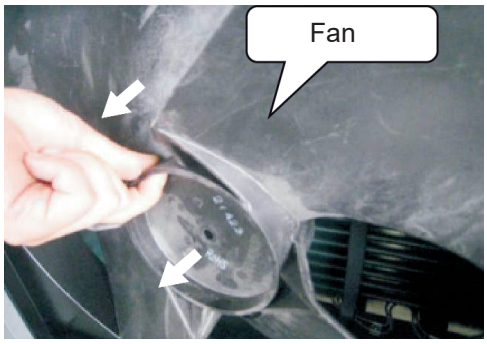


Figure 9-11 Remove the fan

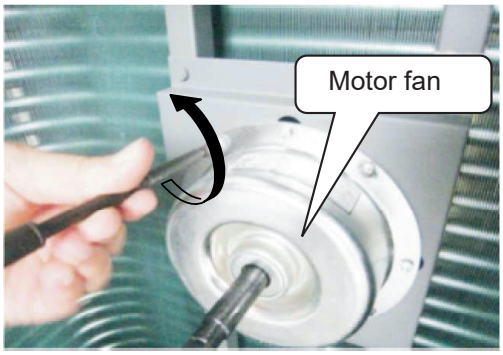


Figura 9-12 Remove the screws of the motor

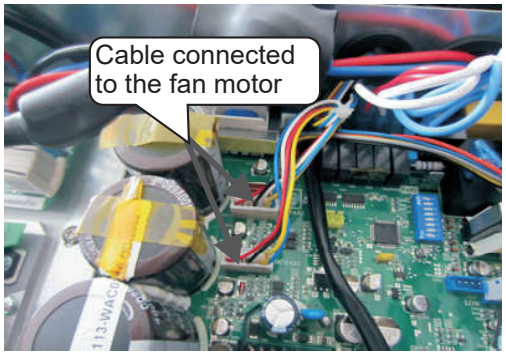


Figure 9-13 Disconnect the cable to the fan motor

Figure 9-14 Replacing the fan motor

9.8 - Replace the machine floor heater wire

1.- Disconnect the upper power supply and remove the fan as per section 9.7;
2.- Remove the heater wire retaining bracket;
3.- Disconnect the power quick connector and remove the wire;
4.- Connect the new wire and repeat the previous steps in reverse.

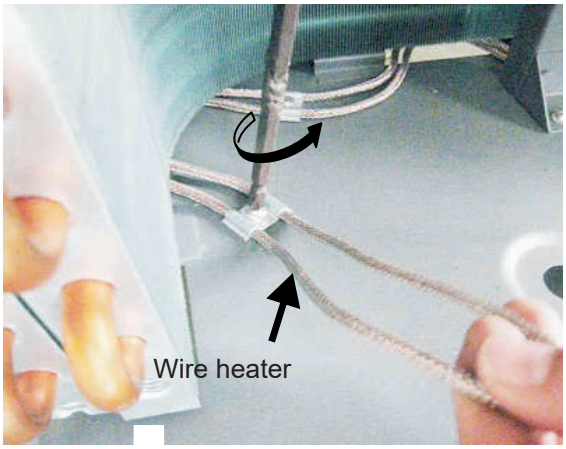


Figure 9-15 Bottom wire heater

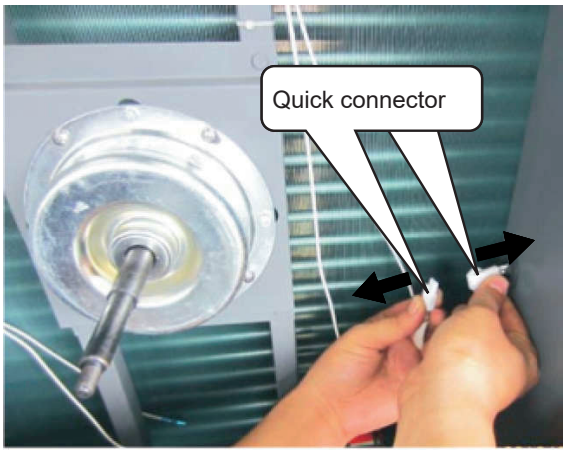


Figure 9-16 Disconnect the quick connector

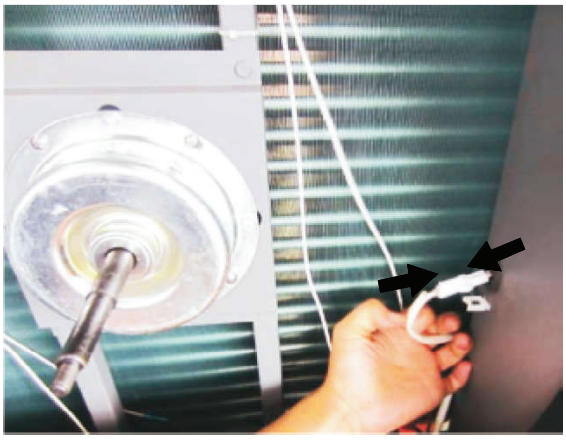
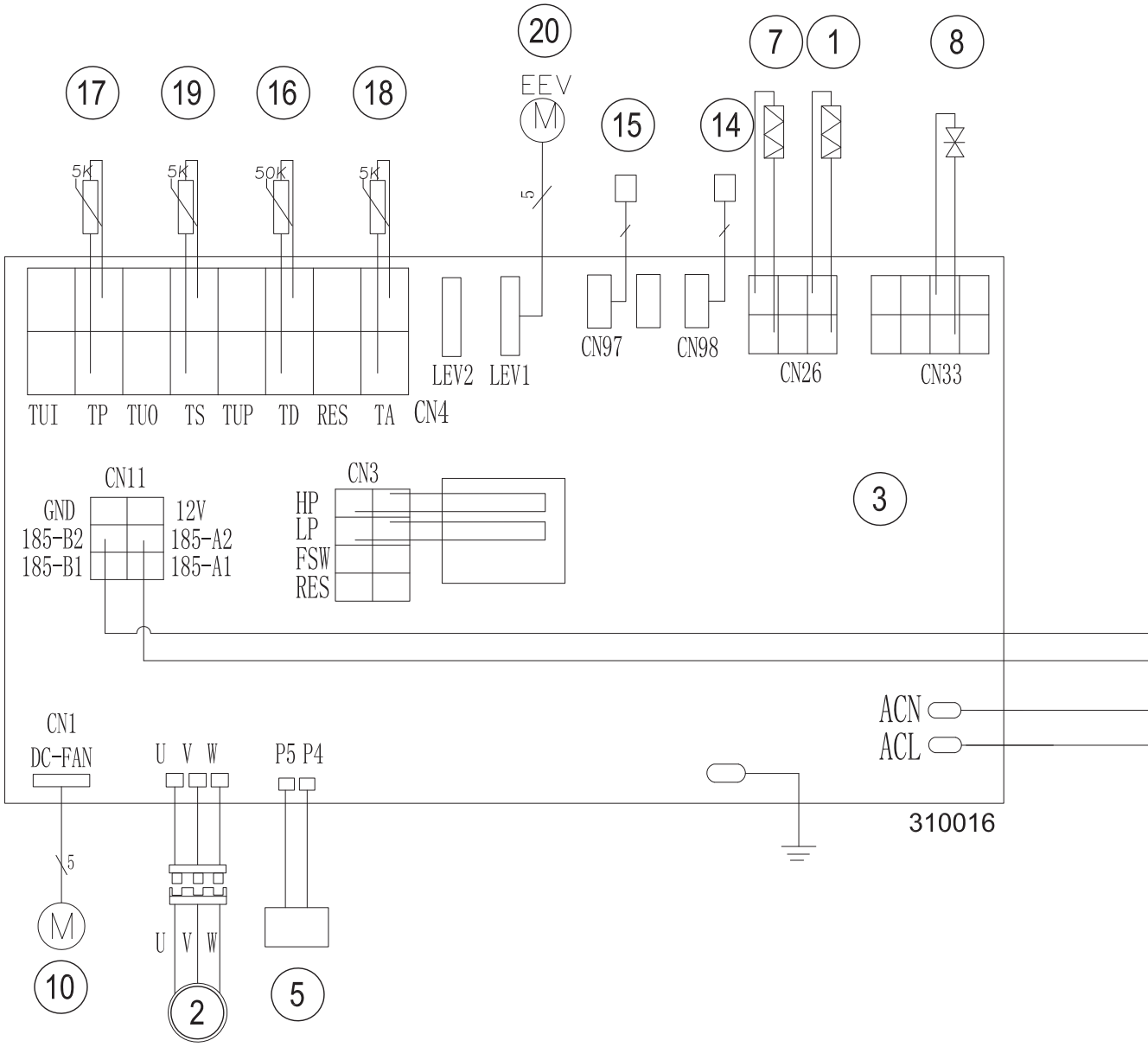


Figure 9-17 Connect the new wire heater

9.9 - Troubleshooting

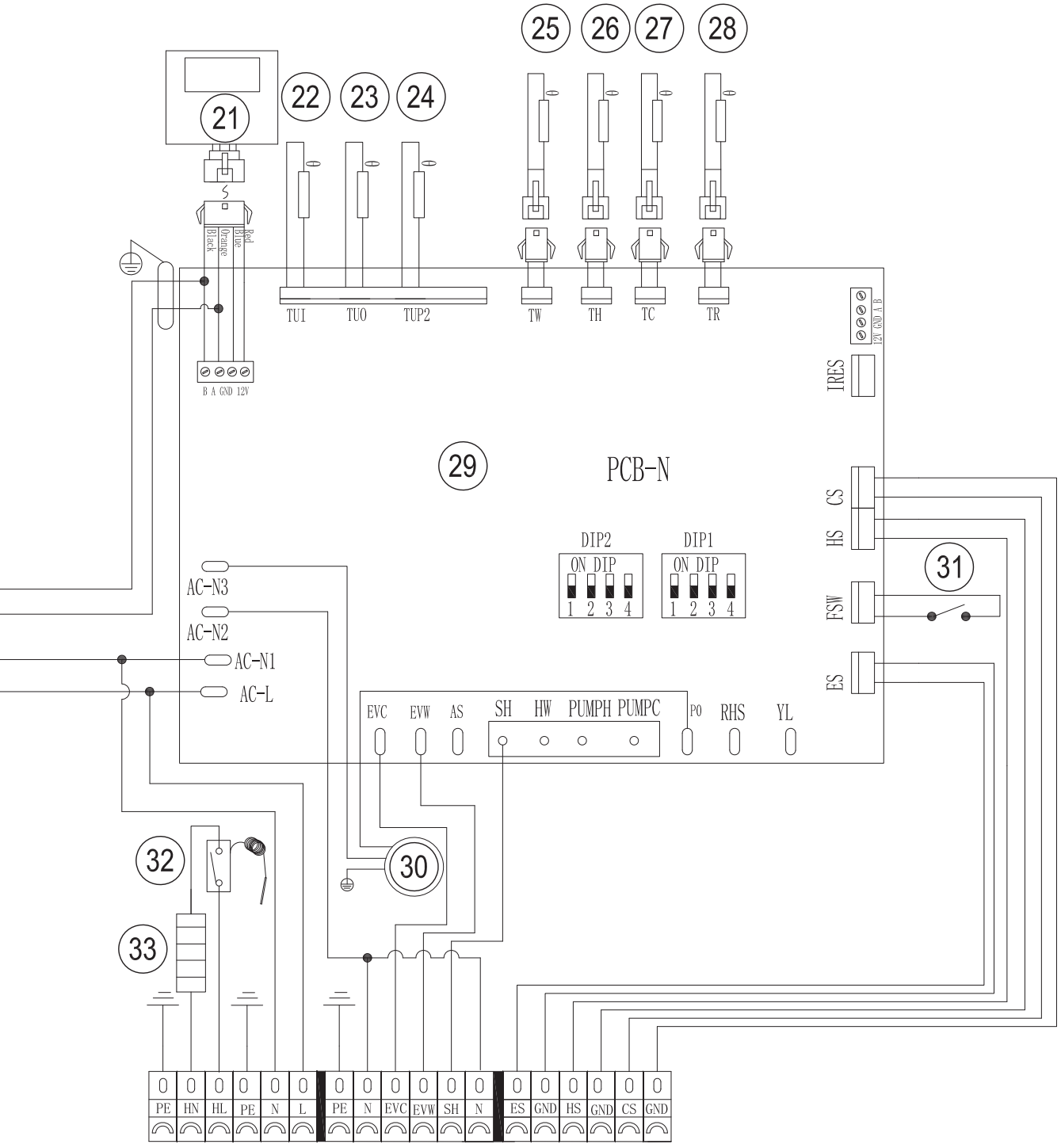
Fault	Cause	Solution
The appliance don't start	1. No power supply.	Check the power supply.
	2. The fuse on the gas side control board has tripped or the switch is open.	Verify that the circuit is not open and that it is properly grounded. Replace the fuse and reset the switch. Check that the circuit is stable and that the connections are well done.
	3. Some protection has intervened.	Identify the protection intervened, restore it and restart the appliance.
	4. Slow wiring.	Check the electrical wiring and tighten the connections.
	5. Compressor broken.	Replace the compressor.
The fan don't work	1. Wiring motor not connected.	Check the wiring motor.
	2. Fan motor fault.	Replace the fan motor.
Low heating performance	1. The plate heat exhanger is dirty.	Clean the plate heat exchanger.
	2. Ventilation is insufficient.	Remove the objects that prevent air circulation.
	3. Insufficient refrigerant.	Check that there are no leaks in the appliance and system, if necessary repair them. Replace the refrigerant with new product and correct quantity.
	4. Temperature out of range	Check that the setpoint temperature is not too high in heating or too low in cooling.
Abnormal noise from the pump or no water circulation while the pump is running	1. Water loss in the circuit.	Check the filling tap, fill the circuit with the right amount of water.
	2. Air in the hydraulic circuit.	Remove air from the circuit.
	3. The valves in the hydraulic circuit are not fully open.	Verify that all valves are fully open.
	4. The water filter is dirty or clogged.	Clean the filter or replace it.
Compressor discharge pressure too high	1. Too much refrigerant.	Replace the refrigerant with new product and correct quantity.
	2. Air in the refrigerant circuit.	Replace the refrigerant with new product and correct quantity.
	3. Inadequate water flow.	Check the water flow in the circuit, if necessary use a more performing pump.
	4. Too high temperature.	Make sure that the water supply temperature sensor works properly.
Suction pressure too low	1. Dirty filter drier.	Replace the filter drier.
	2. Electronic expansion valve blocked.	Repair or replace it.
	3. Loss of refrigerant.	Check that there are no leaks in the appliance and in the system, if necessary repair them. Replace the refrigerant with new product and in the correct quantity.
The appliance does not complete the defrost cycle	1. Expansion battery sensor fault.	Check the position and value of the temperature sensor, if necessary replace it.
	2. Ventilation is insufficient.	Eliminate objects that prevent air circulation. If necessary, clean the evaporation battery.

9.10 - Wiring diagram



1 - Floor wire heater
2 - Compressor
3 - Gas side control board + compressor inverter board
5 - Reactance
7 - Compressor heater
8 - 4-way valve
10 - Fan
14 - Low pressure sensor
15 - High pressure sensor
16 - Compressor discharge temperature sensor
17 - Evapo-condensing battery temperature sensore
18 - Outdoor temperature sensor
19 - Sunction temperature sensor
20 - Electronic expansion valve
21 - Display
22 - Return temperature sensor
23 - Supply temperature sensor
24 - Refrigerant temperature sensor
25 - Domestic hot water sensor (TW)
26 - Heating temperature sensor (Th)

Figure 9-18 Wiring diagram



27 - Cooling temperature sensor (Tc)
28 - Room temperature sensor (N/A)
29 - Water side control board
30 - Pump
31 - Water flow switch
32 - Antifreeze thermostat set at 7 ° C(N/A)
33 - Heater wire (N/A)

10 - TECHNICAL DATA

FPI32		UM	Inverter air to water heat pump		
Model			6	9	12
Power supply		V/Hz/Ph	220-240 / 50 / 1	220-240 / 50 / 1	220-240 / 50 / 1
Refrigerant		kg	R32 / 0,9	R32 / 1,4	R32 / 1,8
Heat output Min / Max (1)		kW	3,50 / 7,45	4,30 / 9,21	5,50 / 11,67
Electric absorption Min / Max (1)		W	758 / 1410	927 / 2097	1107 / 2683
C.O.P 100% capacity ratio / Max (1)			4,51 / 4,75	4,48 / 4,88	4,35 / 4,94
Heat output Min / Max (2)		kW	3,15 / 6,80	3,90 / 8,68	4,90 / 11,25
Heating electric absorption Min / Max (2)		W	943 / 1732	1162 / 2550	1401 / 3263
C.O.P 100% capacity ratio / Max (2)			3,44 / 3,56	3,46 / 3,66	3,45 / 3,63
Cool output Min / Max (3)		kW	6,22 / 7,41	6,70 / 9,48	7,20 / 9,84
Cooling electric absorption Min / Max (3)		W	1400 / 1863	1679 / 2242	1791 / 2510
E.E.R 100% capacity ratio / Max (3)			4,10 / 4,53	4,31 / 4,56	3,92 / 4,51
Cool output Min / Max (4)		kW	3,50 / 4,25	4,90 / 6,95	4,90 / 6,56
Cooling electric absorption Min / Max (4)		W	1330 / 1680	1451 / 2366	1358 / 2444
E.E.R 100% capacity ratio / Max (4)			2,52 / 3,56	2,99 / 3,75	2,68 / 3,67
Maximum pressure of the circuit		bar	42	42	42
Pump nominal output		W	87	87	87
Compressor	Type		Twin Rotary	Twin Rotary	Twin Rotary
	Quantity		1	1	1
	Oil		FV68S	FV68S	FV68S
	V.max Heating	Hz	90	90	90
	V.max Cooling	Hz	74	80	74
Fan	Quantity		1	1	1
Sound power		dB (A)	52	53	52
Water side heat exchanger	Type		Plate heat exchanger		
	Material		Steel - Inox		
Hydraulic connections diameter		inches	1	1	1
Net size (WxDxH)		mm	1008x371x734	1165x371x882	1165x371x882
Packaging dimensions (WxDxH)		mm	1050x470x900	1220x470x1060	1220x470x1060
Net weight		Kg	65	78	85
Weight with packaging		Kg	75	78	105
Outdoor operating temperature	Heating	°C	-25~43	-25~43	-25~43
	Cooling	°C	20~55	20~55	20~55
Water volume		Kg	3	3,5	4
Pressione massima acqua riscaldamento		MPa	0,3	0,3	0,3
Efficienza energetica stagionale riscaldamento d'ambiente (ηs)		%	186	186	185

(1) Heating condition: Water temperature return/supply: 30/35°C, Outdoor temperature: DB/WB 7/6°C
(2) Heating condition: Water temperature return/supply: 40/45°C, Outdoor temperature: DB/WB 7/6°C
(3) Cooling condition: Water temperature return/supply: 23/18°C, Outdoor temperature: 35°C
(4) Cooling condition: Water temperature return/supply: 12/7°C, Outdoor temperature: 35°C

FPI32 - Heating efficiency						
Water inlet/outlet 30/35°C						
	6		9		12	
Te	Heating heat output	COP	Heating heat output	COP	Heating heat output	COP
-7	4,74	3,04	5,71	2,97	7,64	3,10
2	6,13	3,80	7,87	3,87	10,17	3,89
7	7,45	4,51	9,21	4,48	11,67	4,35
12	7,27	5,23	8,85	5,16	11,09	4,94
Water inlet/outlet 40/45°C						
	6		9		12	
Te	Heating heat output	COP	Heating heat output	COP	Heating heat output	COP
-7	4,44	2,38	5,29	2,28	7,12	2,39
2	5,87	3,07	7,40	2,98	9,80	3,07
7	6,80	3,44	8,68	3,46	11,25	3,45
12	6,76	3,91	8,63	4,00	10,69	3,82
Water inlet/outlet 50/55°C						
	6		9		12	
Te	Heating heat output	COP	Heating heat output	COP	Heating heat output	COP
-7	3,69	1,77	4,88	1,73	6,51	1,74
2	4,72	2,22	6,85	2,28	8,62	2,28
7	5,69	2,60	7,91	2,56	9,86	2,63
12	6,32	2,98	7,96	3,03	9,67	2,80

FPI32 - Cooling efficiency						
Water inlet/outlet 18/23°C						
	6		9		12	
Te	Cooling heat output	EER	Cooling heat output	EER	Cooling heat output	EER
35	7,41	4,10	9,48	4,31	9,84	3,92
30	8,50	5,50	10,80	5,70	11,00	5,00
25	9,40	6,70	11,90	6,60	12,10	5,80
20	10,10	7,80	13,10	7,70	13,20	6,90
Water inlet/outlet 7/12°C						
	6		9		12	
Te	Cooling heat output	EER	Cooling heat output	EER	Cooling heat output	EER
35	4,25	2,52	6,95	2,99	6,56	2,68
30	5,40	3,30	7,10	3,30	7,30	3,20
25	6,20	4,30	8,00	4,20	8,20	3,90
20	7,10	5,10	9,20	5,10	9,40	5,20

EU DECLARATION OF CONFORMITY

The undersigned CEO of the company COSMOGAS S.r.l., with registered office in Via L. Da Vinci no. 16 - 47014 Meldola (FC) Italy,

DECLARES

under its own responsibility that the appliance:

SERIAL N° _____

MODEL _____

PRODUCTION DATA _____

subject of this declaration is in compliance with: Directive of machinery, (**2006/42/CE**), Low voltage directive (**2014/35/UE**), EMC Directive (**2014/30/UE**), Pressure directive **(2014/68/UE)** class I.

This declaration is issued as stipulated by the aforementioned directives.

Meldola (FC) ITALY, (Production data).

Alessandrini Arturo
Sole Director

12 - PRODUCT FICHE

Low temperature table (30/35) medium zones								
Name or brand of the supplier			ADVECO Ltd					
Model			FRPI32 - 6					
Air/Water heat pump			YES					
Water/Water heat pump			NO					
Brine/Water heat pump			NO					
Low temperature heat pump			YES					
With additional heater			NO					
Combined heating appliance with heat pump			NO					
The parameters are declared for medium temperature application, except for low temperature heat pumps. For low temperature heat pumps, the parameters are declared for low temperature application.								
The parameters are suitable for medium climatic applications								
Element	Symbol	Value	Unit		Element	Symbol	Value	Unit
Nominal heat output	Pnominal	4,193	kW		Seasonal space heating energy efficiency	ηs	186,7	%
Heating capacity at partial load, with room temperature equal to 20 ° C and outdoor temperature Tj					Declared coefficient of performance, with room temperature equal to 20 ° C and outdoor temperature Tj			
Tj = -7°C	Pdh	3,709	kW		Tj = -7°C	COPd	3,12	--
Tj = +2°C	Pdh	2,258	kW		Tj = +2°C	COPd	4,48	--
Tj = +7°C	Pdh	1,451	kW		Tj = +7°C	COPd	6,18	--
Tj = +12°C	Pdh	0,645	kW		Tj = +12°C	COPd	8,49	--
Tj = bivalent temperature	Pdh	3,709	kW		Tj = bivalent temperature	COPd	3,12	--
Tj = operating limit temperature	Pdh	4,314	kW		Tj = operating limit temperature	COPd	2,84	--
for air/water heat pump: Tj = -15 °C (se TOL < -20 °C)	Pdh		kW		for air/water heat pump: Tj = -15 °C(se TOL < -20 °C)	COPd		--
Bivalent temperature	Tbiv	-7	°C		for air/water heat pump: operating limit temperature	TOL	-10	°C
Cyclicality of capacity intervals for heating	Pcych		kW					
Degradation coefficient	Cdh	0,9	--		Cyclicality of the intervals efficiency	COPcyc or PERcyc		--
Energy consumption in ways other than the active way								
Off mode	Poff	0,013	kW		Operating limit temperature for water heating	WTOL	60	°C
Thermostat off mode	Pto	0,013	kW		Additional heater			
Stand-by mode	Psb	0,013	kW		Nominal heat output	Psup		kW
Crankcase heating mode	Pck	0,044	kW		Type of energy supply	Electric		
Other elements								
Capacity control	Variable				For air / water heat pumps: nominal air flow, outside	--	3000	m3/h
Sound power level, inside / outside	Lwa	52	dB		For water / water and brine / water heat pumps: brine or nominal water flow, external heat exchanger	--		m3/h
Annual energy consumption	Qhe	1827	kWh or GJ					
For mixed heat pump heaters:								
Load profile declared					Energy efficiency of water heating	ηwh		%
Daily consumption of electricity	Qelec		kWh		Daily fuel consumption	Qfuel		kWh
Annual energy consumption	AEC		kWh		Annual fuel consumption	AFC		GJ
Contact details	Adveco Ltd , Units 7 & 8, Armstrong Mall, Southwood Business Park, Farnborough, GU140NR							

12 - PRODUCT FICHE

Low temperature table (30/35) medium zones								
Name or brand of the supplier			ADVECO Ltd					
Model			FPI32 -9					
Air/Water heat pump			YES					
Water/Water heat pump			NO					
Brine/Water heat pump			NO					
Low temperature heat pump			YES					
With additional heater			NO					
Combined heating appliance with heat pump			NO					
The parameters are declared for medium temperature application, except for low temperature heat pumps. For low temperature heat pumps, the parameters are declared for low temperature application.								
The parameters are suitable for medium climatic applications								
Element	Symbol	Value	Unit		Element	Symbol	Value	Unit
Nominal heat output	Pnominal	6,464	kW		Seasonal space heating energy efficiency	ηs	186	%
Heating capacity at partial load, with room temperature equal to 20 ° C and outdoor temperature Tj					Declared coefficient of performance, with room temperature equal to 20 ° C and outdoor temperature Tj			
Tj = -7°C	Pdh	5,718	kW		Tj = -7°C	COPd	3,16	--
Tj = +2°C	Pdh	3,481	kW		Tj = +2°C	COPd	4,44	--
Tj = +7°C	Pdh	2,238	kW		Tj = +7°C	COPd	6,19	--
Tj = +12°C	Pdh	0,994	kW		Tj = +12°C	COPd	8,62	--
Tj = bivalent temperature	Pdh	5,718	kW		Tj = bivalent temperature	COPd	3,16	--
Tj = operating limit temperature	Pdh	5,391	kW		Tj = operating limit temperature	COPd	2,80	--
for air/water heat pump: Tj = -15 °C (se TOL < -20 °C)	Pdh		kW		for air/water heat pump: Tj = -15 °C(se TOL < -20 °C)	COPd		--
Bivalent temperature	Tbiv	-7	°C		for air/water heat pump: operating limit temperature	TOL	-10	°C
Cyclicality of capacity intervals for heating	Pcych		kW					
Degradation coefficient	Cdh	0,9	--		Cyclicality of the intervals efficiency	COPcyc or PERcyc		--
Energy consumption in ways other than the active way								
Off mode	Poff	0,01	kW		Operating limit temperature for water heating	WTOL	60	°C
Thermostat off mode	Pto	0,01	kW		Additional heater			
Stand-by mode	Psb	0,01	kW		Nominal heat output	Psup		kW
Crankcase heating mode	Pck	0,027	kW		Type of energy supply	Electric		
Other elements								
Capacity control	Variable				For air / water heat pumps: nominal air flow, outside	--	3500	m3/h
Sound power level, inside / outside	Lwa	53	dB		For water / water and brine / water heat pumps: brine or nominal water flow, external heat exchanger	--		m3/h
Annual energy consumption	Qhe	2826	kWh or GJ					
For mixed heat pump heaters:								
Load profile declared					Energy efficiency of water heating	ηwh		%
Daily consumption of electricity	Qelec		kWh		Daily fuel consumption	Qfuel		kWh
Annual energy consumption	AEC		kWh		Annual fuel consumption	AFC		GJ
Contact details	Adveco Ltd , Units 7 & 8, Armstrong Mall, Southwood Business Park, Farnborough, GU140NR							

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Low temperature table (30/35) medium zones								
Name or brand of the supplier			ADVECO LTD					
Model			FPI32-12					
Air/Water heat pump			SI					
Water/Water heat pump			NO					
Brine/Water heat pump			NO					
Low temperature heat pump			SI					
With additional heater			NO					
Combined heating appliance with heat pump			NO					
The parameters are declared for medium temperature application, except for low temperature heat pumps. For low temperature heat pumps, the parameters are declared for low temperature application.								
The parameters are suitable for medium climatic applications								
Element	Symbol	Value	Unit		Element	Symbol	Value	Unit
Nominal heat output	Pnominal	8,849	kW		Seasonal space heating energy efficiency	ηs	185,5	%
Heating capacity at partial load, with room temperature equal to 20 ° C and outdoor temperature Tj					Declared coefficient of performance, with room temperature equal to 20 ° C and outdoor temperature Tj			
Tj = -7°C	Pdh	7,828	kW		Tj = -7°C	COPd	3,25	--
Tj = +2°C	Pdh	4,765	kW		Tj = +2°C	COPd	4,51	--
Tj = +7°C	Pdh	3,063	kW		Tj = +7°C	COPd	5,79	--
Tj = +12°C	Pdh	1,361	kW		Tj = +12°C	COPd	9,26	--
Tj = bivalent temperature	Pdh	7,828	kW		Tj = bivalent temperature	COPd	3,25	--
Tj = operating limit temperature	Pdh	6,380	kW		Tj = operating limit temperature	COPd	2,78	--
for air/water heat pump: Tj = -15 °C (se TOL < -20 °C)	Pdh		kW		for air/water heat pump: Tj = -15 °C(se TOL < -20 °C)	COPd		--
Bivalent temperature	Tbiv	-7	°C		for air/water heat pump: operating limit temperature	TOL	-10	°C
Cyclicality of capacity intervals for heating	Pcych		kW					
Degradation coefficient	Cdh	0,9	--		Cyclicality of the intervals efficiency	COPcyc or PERcyc		--
Energy consumption in ways other than the active way								
Off mode	Poff	0,017	kW		Operating limit temperature for water heating	WTOL	60	°C
Thermostat off mode	Pto	0,017	kW		Additional heater			
Stand-by mode	Psb	0,017	kW		Nominal heat output	Psup		kW
Crankcase heating mode	Pck	0,033	kW		Type of energy supply	Electric		
Other elements								
Capacity control	Variable				For air / water heat pumps: nominal air flow, outside	--	3500	m3/h
Sound power level, inside / outside	Lwa	52	dB		For water / water and brine / water heat pumps: brine or nominal water flow, external heat exchanger	--		m3/h
Annual energy consumption	Qhe	3879	kWh or GJ					
For mixed heat pump heaters:								
Load profile declared					Energy efficiency of water heating	ηwh		%
Daily consumption of electricity	Qelec		kWh		Daily fuel consumption	Qfuel		kWh
Annual energy consumption	AEC		kWh		Annual fuel consumption	AFC		GJ
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