HRC70

High temperature Heat Pump and HRC70 Pilot

Energy efficient

Installation and operating instructions

HRC70 Pilot

HRC70
high temperature
Heat Pump

HRC70 7 single phase - XS
Ref.151691

HRC70 11 single phase - XS
Ref.151631

HRC70 11 three phase - XS
Ref.151641

HRC70 7 single phase - 50
Ref.1516912

HRC70 11 single phase - 50
Ref.151632

HRC70 11 three phase - 50
Ref.151642

Made in France

CE

Manual ref: 1895522
Edition n°: 16.151

CONTENTS

1 - PLEASE READ IMMEDIATELY

1.1 - Important information

These installation and operating instructions form part of the appliances which they refer to. **In order for the warranty to be valid, they must be read before using the appliance.**
This manual must be kept and passed on to successive users for future reference. It will be considered as evidence in case of litigation.

ELECTRICAL INSTALLATION RECOMMENDATIONS

- It is the responsibility of the installer and the client to contact the electricity provider and ensure that the appliance is compatible with the power grid before connecting the HRC^{70} Heat Pump (see the information form which is an appendix to this document).

- The power grid impedance value must be less than the Heat Pump impedance Z_{max} (see § "Connecting the HRC^{70} Heat Pump to the power supply").

- If electrical installation standards are not respected, irreversible damage could be sustained to the HRC^{70} Heat Pump, which will not be covered by the manufacturer's warranty.

HYDRAULIC INSTALLATION RECOMMENDATIONS

- Rinse and clean the hydraulic heating circuit before connecting the Heat Pump and Pilot.

- The appliance only works when filled with water. Never switch the appliance on if it has not been properly purged and filled with water.

- The filter valve protects the Heat Pump; an annual check on the condition of the filter must be carried out.

- We recommend that you check for sludge and limescale from time to time and clean if necessary. The appliance must be switched off before any cleaning is undertaken.

- Always switch the appliance off before working on any electrical parts.
Caution: the fan may still continue to run through inertia even when the appliance has been switched off.

- Never put water on the control components or any electrical parts. Switch off the appliance before cleaning.

The high temperature Heat Pump absorbs the calories contained in outdoor air, transforms them into useful energy and transfers them to the heating water for your home. AUER cannot be held responsible for any other usage of the appliance.

The safety advice and instructions which are given here must be strictly respected.

Before making any connections, make sure that the appliances are compatible with the installation.

Before switching the system on, make sure that the network voltage to be applied to the appliances is the same as the voltage indicated on their rating plates.

Before undertaking any maintenance or handling or in case of the appliances functioning incorrectly or not at all, always disconnect from the mains power supply and seek advice from a specialist.

AUER declines any responsibility for damage caused by these instructions not being followed and any errors due to improper handling, installation or usage.

These installation and operating instructions are subject to change without prior notice.

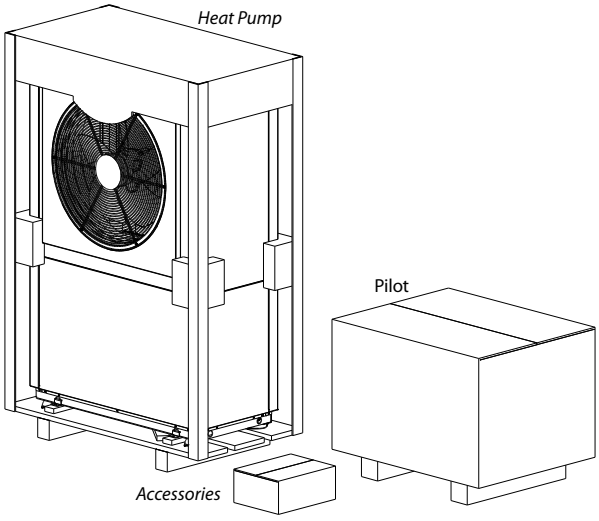
1.2 - Safety instructions and advice

- The Heat Pump must only be installed outdoors.
- This appliance is not intended for use by people (including children) who have reduced physical, sensory or mental capacities, or by people who have insufficient experience or knowledge of the product, unless they are being supervised by someone who is responsible for their safety and in possession of the instructions on how the appliance should be used.
- Installing the Heat Pump indoors is **strictly forbidden**.
- The Heat Pump has an operating range of -20°C to 40°C. When the temperature falls below -20°C, the installation is no longer heated by the Heat Pump, but by the back-up.
- It is FORBIDDEN :
  - to let the Heat Pump run using air intake which contains solvents or explosive matter
  - to use air intake which contains grease, dust or aerosol particles
  - to connect vented exhaust hoods
- It is **FORBIDDEN** to use the appliances if the installation is not filled with water
- All work undertaken on the installation must be carried out by a qualified professional with the appliances disconnected from the mains power supply.
- This appliance must be installed in accordance with national electrical installation regulations.
- Check that the installation is equipped with a properly sized and connected ground cable.
  This CE-approved unit is in compliance with the essential requirements of the following directives:
  - low voltage 2006/95/CEE (standard EN 60.335.1)
  - electromagnetic compatability 2004/108/CEE (standard EN 55014.1 / EN 55014.2).
- Any work undertaken on the refrigerant circuit must be carried out by a qualified professional with a category 1 certificate of aptitude. It is prohibited to release refrigerant into the atmosphere: it is mandatory to recover the refrigerant before beginning any work on the circuit.

The Heat Pump uses type R290 refrigerant. Given the flammable nature of this fluid, any work done on the refrigerant circuit must be carried out using the correct equipment and in compliance with all current regulations. In case of handling the fluid (recovery, evacuation or refilling), the machine must be switched off. Do not smoke or light any flame (e.g. lighter, blowtorch) when handling the fluid. If any work needs to be undertaken on the refrigerant circuit using a flame (e.g. a blowtorch) the refrigerant must be evacuated first and replaced with nitrogen.

1.3 - Delivery terms and conditions

In general, the material is transported at the recipient's own risk. It is essential to check that all the elements have been received and that no damage has been sustained during transport upon receipt of the appliance and before beginning the installation procedure.



1.4 - Storage and transport

Acceptable transport temperatures range from -20°C to +60°C.

1.4.1 - General information

The appliances must be stored and transported in their packaging on a wooden pallet and completely empty of water.

1.4.2 - Transporting with a forklift truck

When being transported by a forklift truck, the Heat Pump must remain upright on a wooden pallet.

When moving the Heat Pump do not lift or lower the unit suddenly as it can easily lose its balance. It should also be suitably secured to prevent it from tipping over.

1.4.3 - Transporting manually

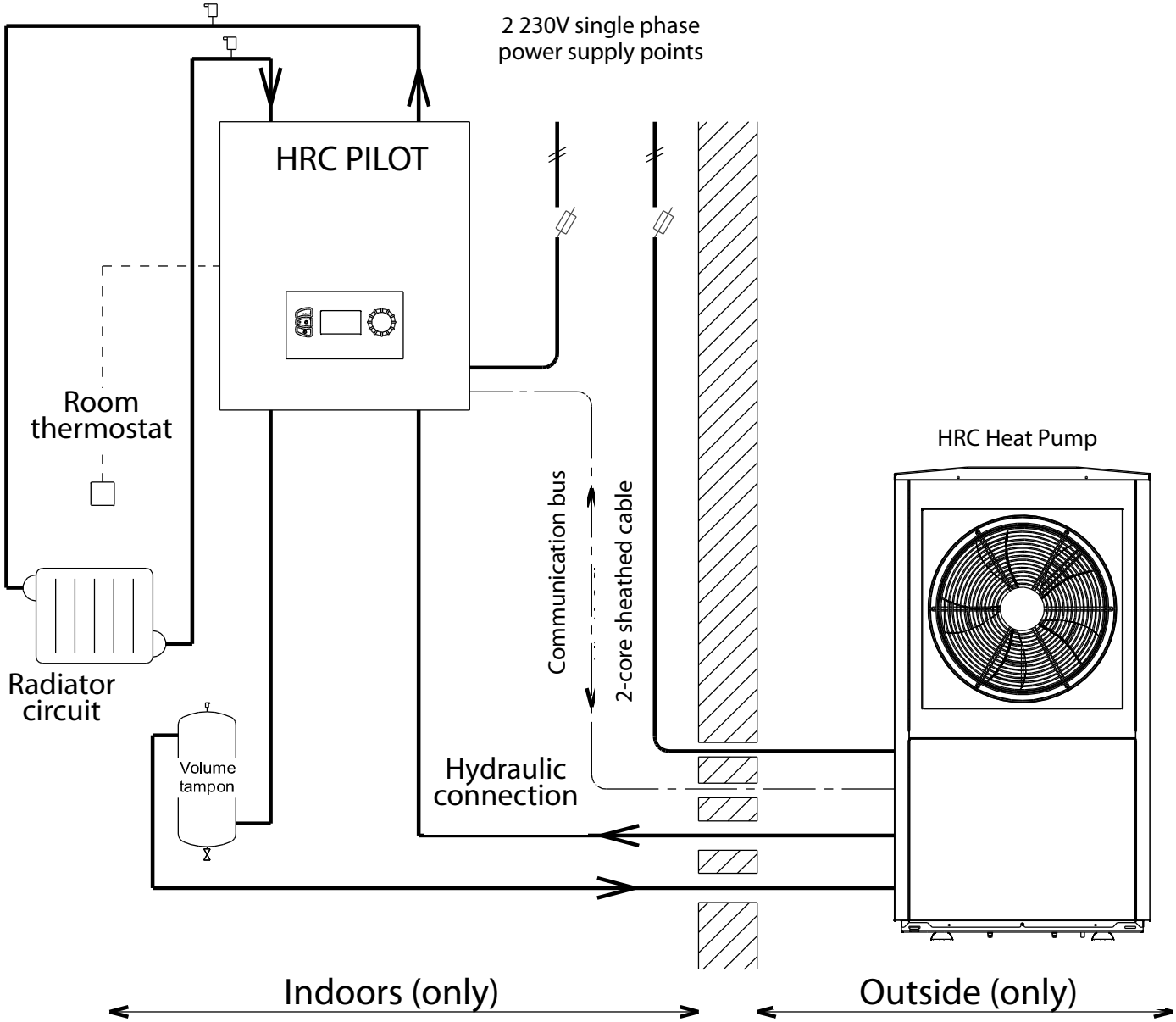
The Heat Pump can be transported manually.

Do not damage the heat exchanger fins during handling or transport.

Heat Pumps should never be laid on their sides. Do not tilt the appliance more than 30°.

2 - PRESENTATION

2.1 - Standard configuration



Indoor installation only

Outdoor installation only

The group is composed of an exterior unit (monobloc high temperature Heat Pump, to be installed outdoors only) and an interior unit (Pilot, to be installed indoors only) . These units are linked together by a hydraulic connection and a communication bus.

The air to water Heat Pump collects the calories from outdoor air and transfers them to the heating water circuit with high energy efficiency.

The Pilot maintains the regulation and hydraulic distribution of the installation.

The Pilot is pre-equipped and designed for heating installations in domestic or tertiary premises.

The Pilot is pre-configured for heating a radiator circuit which is controlled from a room thermostat from the Heat Pump only.

You will need to configure the Pilot accordingly if you wish to connect it to an existing boiler (or if using electrical back-up from 0 to 6kW) or when connecting it to an underfloor heating circuit, a secondary heating circuit, a domestic hot water system or a swimming pool circuit.

N.B: The Heat Pump is designed solely for heating purposes. It cannot be used for cooling.

If the required heating capacity is higher than the capacity delivered by the Heat Pump, the Pilot can provide an extra power boost, either through the boiler or its electrical back-up (0-2-4- or 6kW, depending on how much is required).

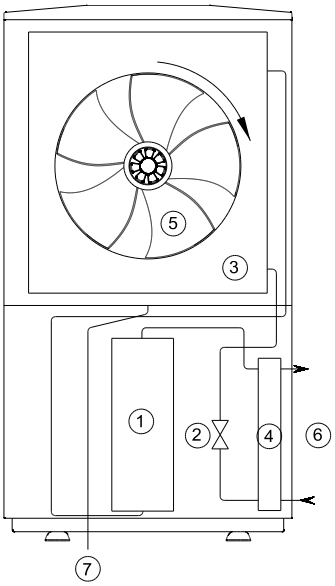
2.2 - Operating

2.2.1 - Heat pump operation

This is a closed pressurised system in which the refrigerant serves as a medium for transferring energy.

The evaporator (**3**) is a refrigerating exchanger which extracts calories from the air. The humidity in the air condenses on contact with the cold surface, condenses and forms water (evacuation in (**7**)).

The capacitor (**4**), a plated heat exchanger which is hydraulically linked to the heating installation (**6**) via the Pilot, enables the water in the circuit and in turn the building, to be heated.



1 : Compressor

2 : Expansion valve

3 : Evaporator

4 : Capacitor

5 : Fan

6 : Leaving / return point for heating installation

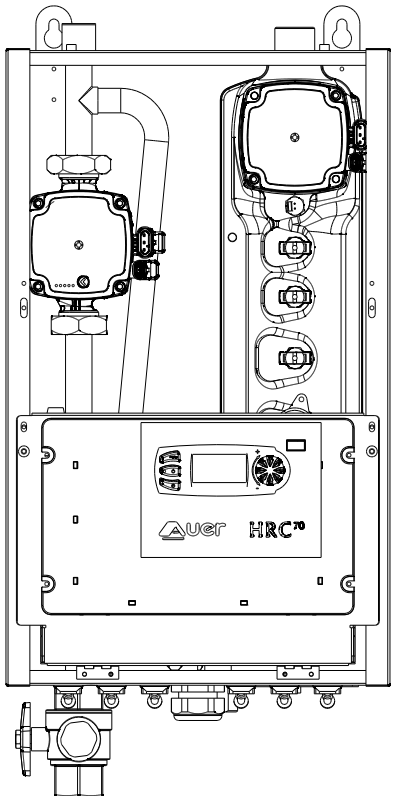
7 : Condensates drainage

2.2.2 - Pilot operation

The Pilot must always remain connected to the Heat Pump.
It ensures the decoupling of the water flow from the Heat Pump and the heating circuit(s) (radiators, underfloor heating or fan coil units).

The Pilot comes pre-assembled with a removable front panel that allows access to all the other parts of the appliance.

The front of the appliance is made up of an electronic display screen with control buttons and an electronic circuit board containing all the electrical connections.

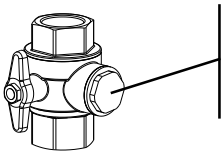


2.3 - Accessories (included)

The components described below are included with the Pilot but they are not pre-assembled:

→**Outdoor sensor**

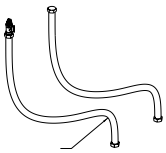
→ **1" valve** with (500µm) built-in filter which is used to protect the Heat Pump's plated heat exchanger



Cap which enables you to access the filter when the valve is closed

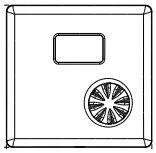
→**2 core sheathed cable linking the Heat Pump and the Pilot (lgth10m)**
It is pre-fitted to the Heat Pump, but needs connecting to the Pilot

→**Hydraulic connection kit** lgth 1.5m



2.4 - Accessories available to order

→**Interactive room temperature sensor** enables you to control the temperature of the heating zone it is installed in (**Ref. 751009**)



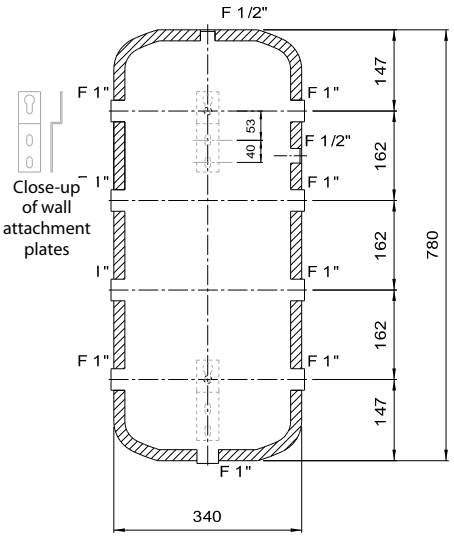
→**2 core sheathed cable for linking the Heat Pump and the Pilot** (lgth 20m)
To be used instead of the 10m-long cable which is included with the appliance (**Ref. 751005**)

→**Non chrono-proportional wireless room thermostat -TH^{Rnc}-**
(Type on/off). Programmable thermostat with wireless radio frequency transmission. Needed when it is not possible to wire a link between the Pilot and room thermostat (**Ref. 710172**).

→**Anti-frost element**
Used to prevent frost from forming on the inside of the condensates pipe. (**Ref. 751004**)

→**DHW or pool sensor** (**Ref. 710029**)

→**Onix 50 CF8**
Wall-hung, insulated buffer tank with 50 litre capacity and 8 1" connection holes (**Ref. 422013**). For coupling with one radiator circuit or for coupling with 2 circuits (radiators, underfloor heating, DHW...). Essential for coupling with an existing boiler.
Dimensions: :
380mm Ø
Height: 770mm



3 - INSTALLATION

3.1 - Installing the HRC^{70}

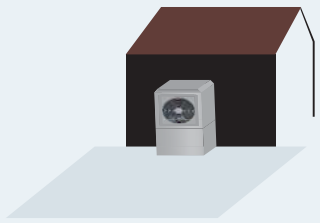
The Heat Pump must always be transported in a vertical position, even during installation. It should be transported using a forklift truck. Do not use the hydraulic connections to move the appliance, take hold of it using the four bottom corners.
The installation must be carried out by a qualified installer, taking all necessary precautions to avoid any risk of accident or any material damage.

3.1.1 - Installation site

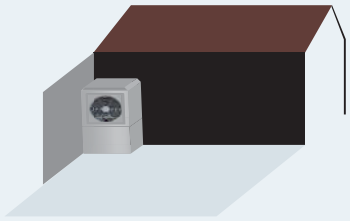
The Heat Pump is specifically designed to be installed outdoors, in an open space which is not subject to excessive dust. Under no circumstances must it be installed in enclosed premises.
It is designed to operate in rain, but it can also be installed under a shelter as long as it is well ventilated (the opening should be large enough to ensure that air can flow freely to the air intake point and rejection points on the fan).

Noise levels coming from the installation

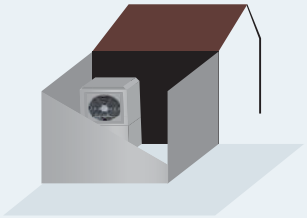
ON THE GROUND OR ON A PATIO
(open space)



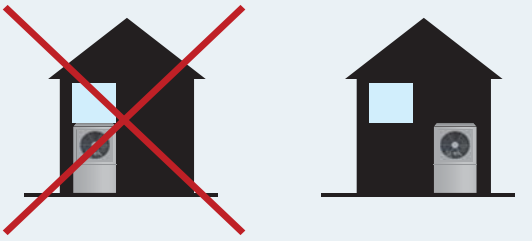
NEXT TO A WALL
+ 3dB (A)



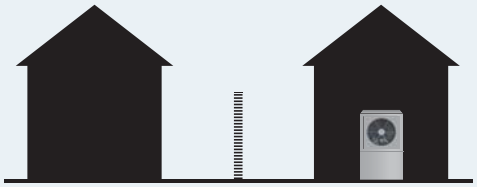
IN A CORNER
+ 6dB (A)



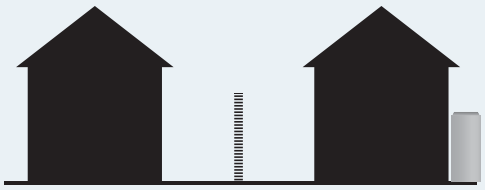
IN A YARD
+ 9dB (A)



UNDER A WINDOW **TO THE SIDE OF A WINDOW**



CORRECT



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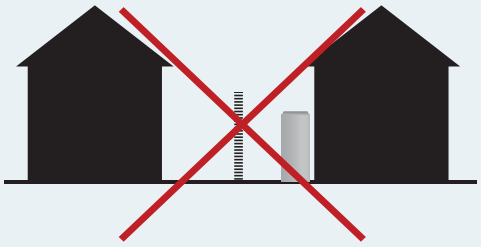
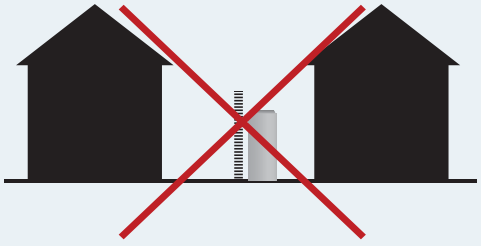
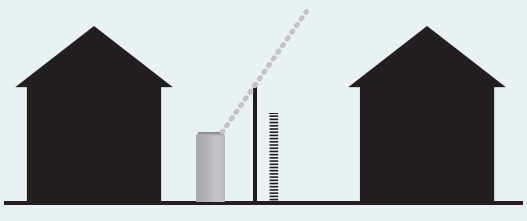


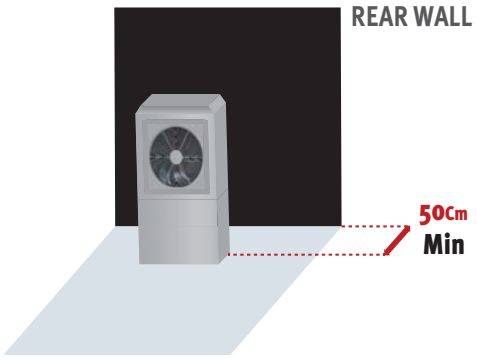


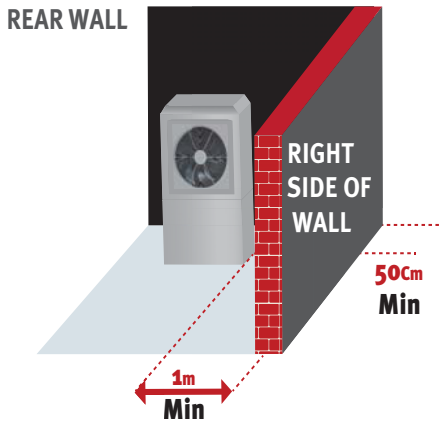


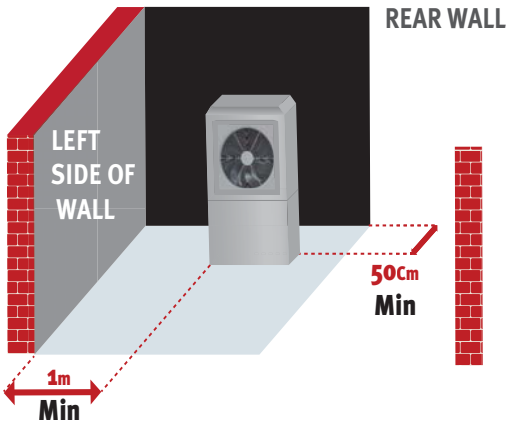
THE NOISE SCREEN MUST BE MADE FROM INSULATED MATERIALS

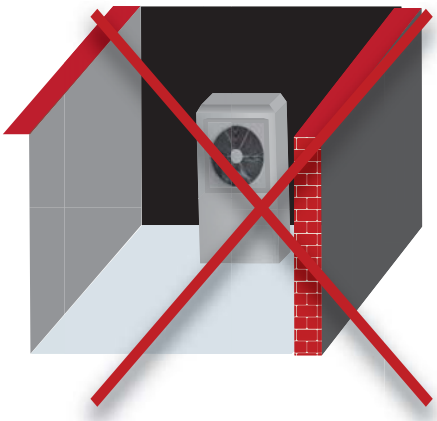
3.1.1.1- Heat Pump installation site

Minimum distances to respect when installing the Heat Pump (mm).





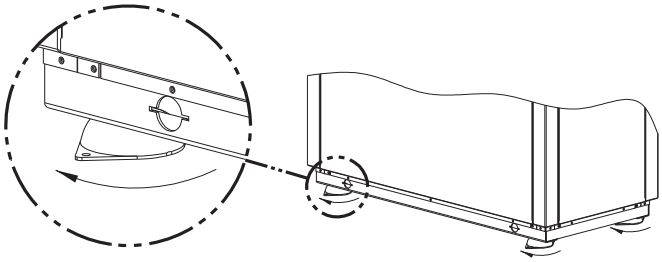




Always make sure the heat exchanger fins are protected when moving the appliance

The Heat Pump must be handled with care and not be subjected to any impacts, especially when being placed on the ground.

The Heat Pump must be installed on a hard and stable base which is sufficiently raised from ground level to avoid any risk of damage in case of flooding or snow.



- **The Heat Pump must only be installed outdoors.**
- **It is forbidden to install the appliance in enclosed, unventilated premises.**
- **Do not restrict or block air intake or rejection to the fan. No object should impede the flow of air over the heat exchanger. The Heat Pump should be placed out of the way of prevailing winds.**
- **Do not install the Heat Pump near sources of excessive heat, combustible materials or ventilation points on adjacent buildings.**
- **Do not install the Heat Pump near kitchen or workshop outlet ducts as this could result in a mixture of oil and air settling on the heat exchanger fins and hampering its performance.**
- **Do not install the Heat Pump in areas where inflammable gases or acid or alkaline substances are present as this could irrevocably damage the copper / aluminium heat exchanger.**
- **Avoid installing the Heat Pump in a location subject to noise reverberation or near to windows and corners of buildings.**
- **As the condensates drain trough slopes downwards, the Heat Pump must be on a level base.**
- **The Heat Pump must be easily accessible to faciliate inspections and maintenance.**

3.1.1.2 - Condensates drainage

When the appliance is running in frost protection mode, the condensed water must be drained off. In order for the condensates to drain properly, the drainage trough and hole must be kept clean and free of any debris such as leaves or grass.

If the condensates drainage pipe is connected to the rainwater drainage system we would advise you to use a siphon.

Do not use tools to remove ice, this could damage the heat exchanger.

The Heat Pump comes with a transparent, flexible drainage pipe for the condensates (20 / 25mm Ø) which does not overlap onto the outside.

Before activating the appliance, this flexible pipe must be connected to one of the two holes which are provided for this purpose:

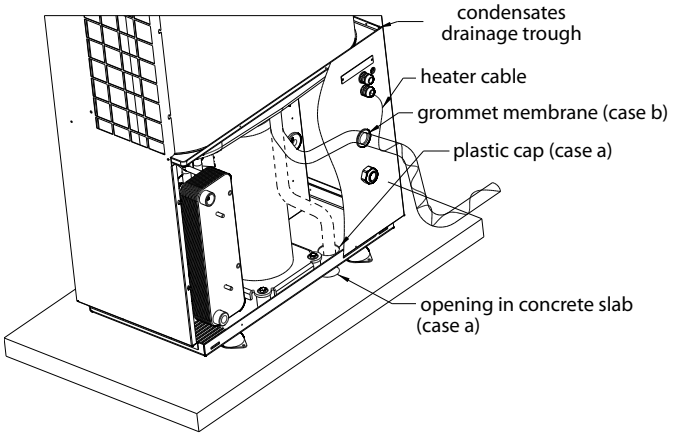
- Remove the back panel of the Heat Pump
- Position the pipe in the place you have chosen after drilling a hole in the grommet

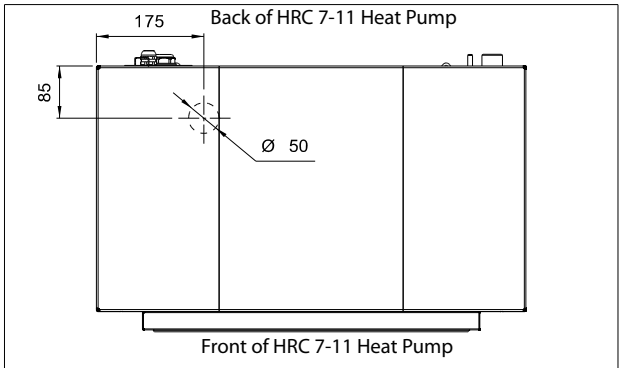
a - <u>Draining from underneath</u> the Heat Pump

This solution is recommended for minimsing the risk of ice at the condensates drainage point

b - <u>Draining from the back</u> of the Heat Pump

is an acceptable solution but in this case an external heater cable needs to be connected (Ref. 751004). Please refer to § "Heater cable for external condensates drainage" and also the instructions which are provided with it.

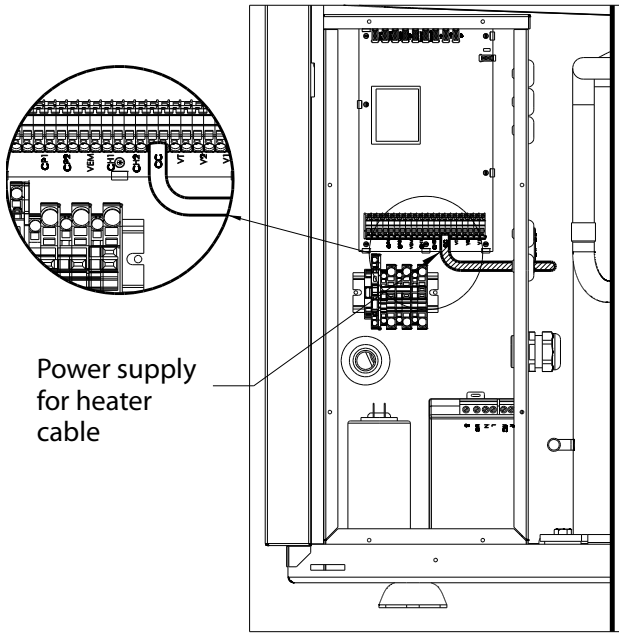




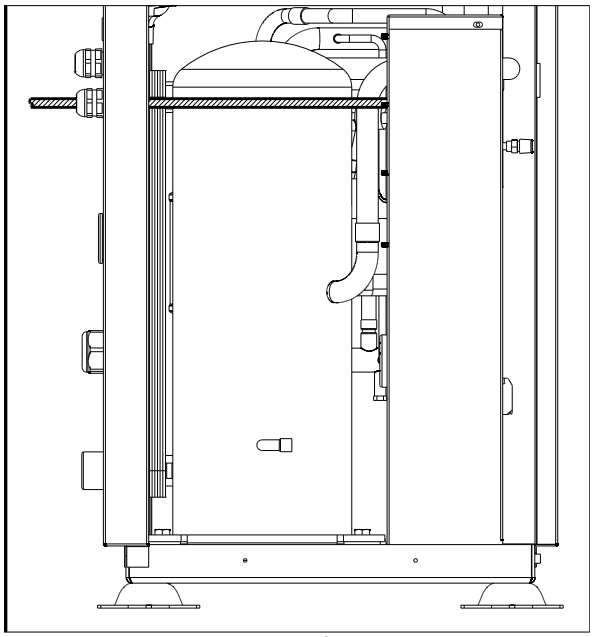
View from above, showing position of opening in concrete slab (case a)

3.1.1.3 - Heater cable for external condensate drainage

The Heat Pump is built with the option of adding a heater cable to prevent any frost forming on the condensates drainage circuit. This heater cable (option Ref.751004) is connected in the electrical box on the terminals marked CC on the electronics board. It must be installed in accordance with the instructions supplied with it, in or around the condensates drainage pipe, on the outside of the Heat Pump.



HRC70 7-11 front view



HRC70 7-11 side view

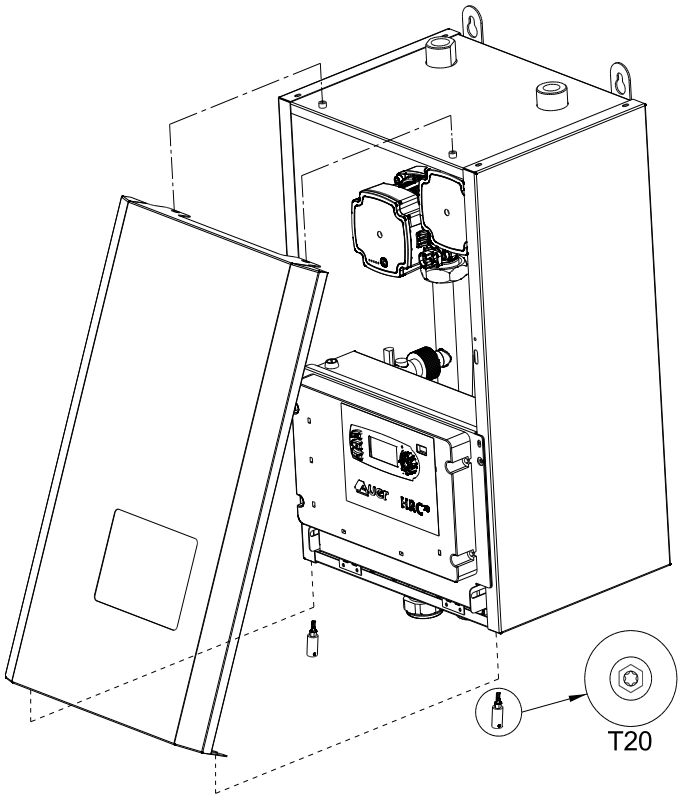
3.1.2 - Installing the Pilot

3.1.2.1 - Installation site

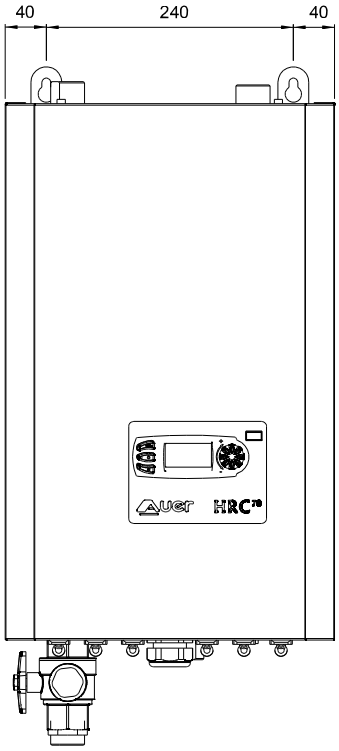
The Pilot should be installed in premises which are protected from frost and and bad weather conditions. It should be installed as close as possible to the Heat Pump and not exceed the maximum distance. The maximum distance depends on the diametre of the piping and the amount of elbows used (see the "Hydraulic connections" table). The 2-core sheathed cable which provides the bus link between the Pilot and the Heat Pump measures 10m. If needed there is a 20m option available (Ref.751005).

3.1.2.2 - Fitting the Pilot to the wall

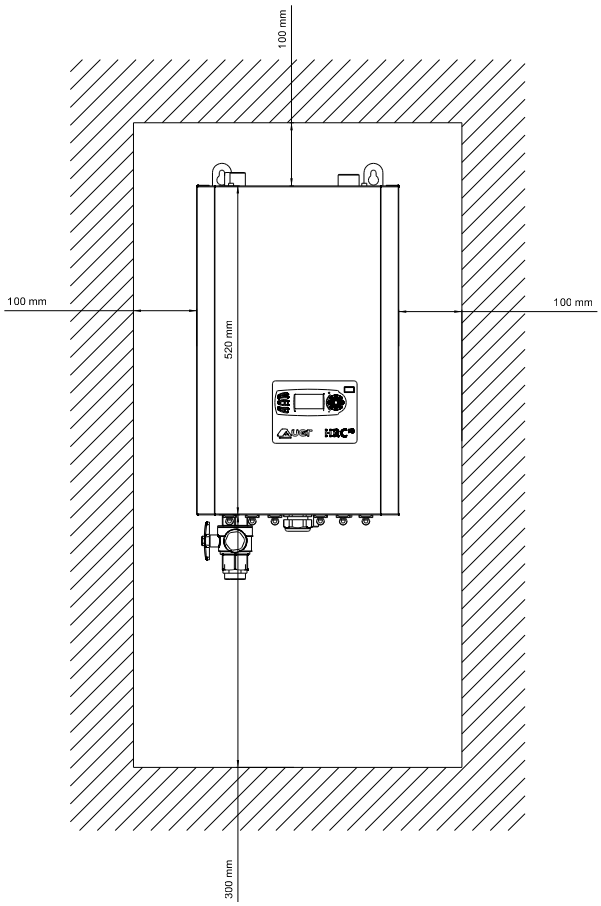
The Pilot must be fixed vertically to a strong supporting wall using three Ø8 lag screws.



Removing the front panel



3.1.2.3 - Fitting and placement



The Pilot must be fitted at least 300mm above any obstacles to enable the hydrualic connection to be made with the bottom of the appliance.

It should be fitted at least 100mm away from the ceiling to allow enough space to make the hydraulic connections.

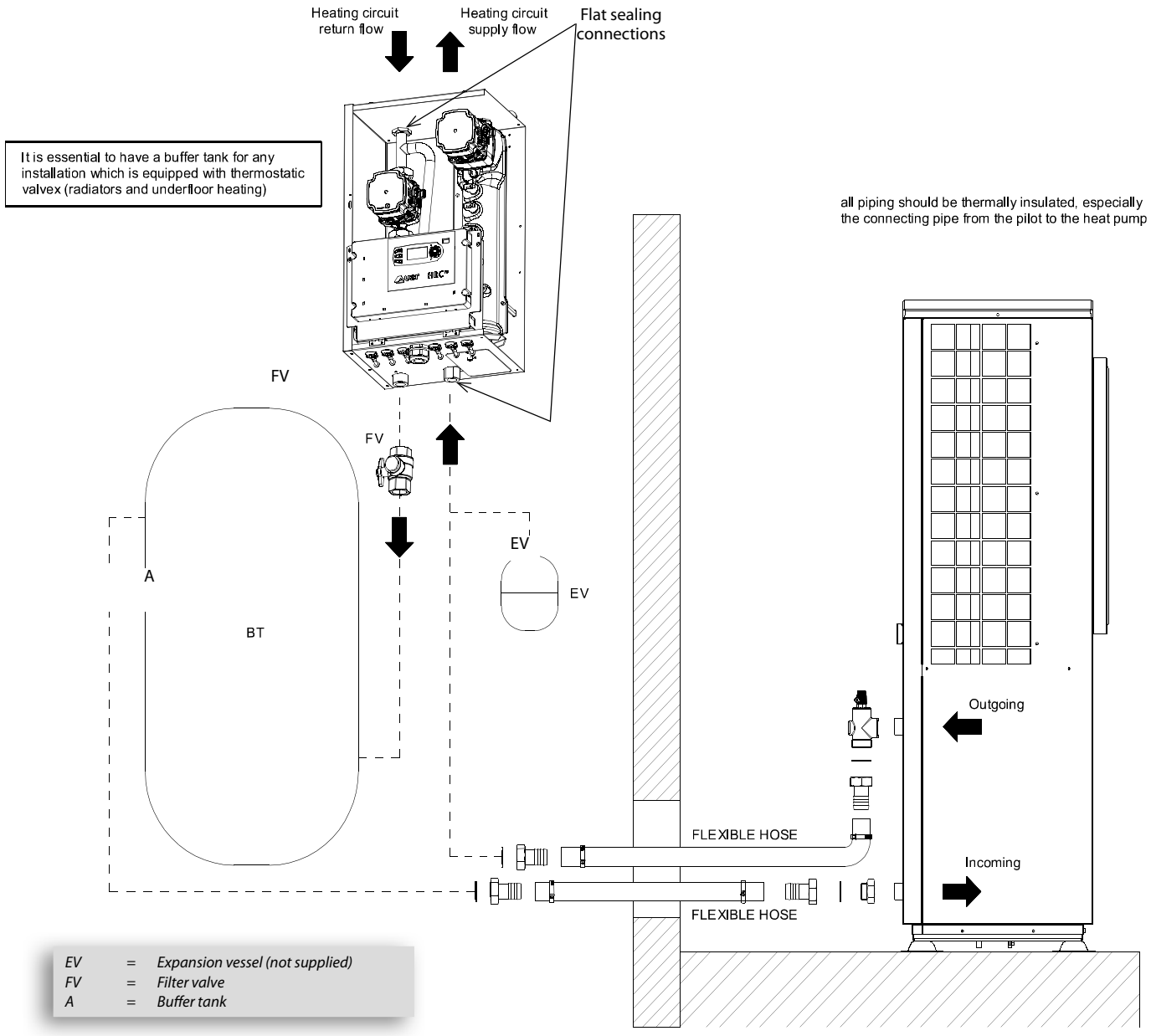
It must be fitted at least 100mm away from walls on either side.

3.2 - Hydraulic installation

3.2.1 - Plumbing connections

The Heat Pump is equipped with a hydraulic pressure relief valve set at 2.5 bar. A service pressure below this value should be maintained.

In order to ensure that the fluids can circulate properly it is advisable to check that the sizing is properly adapted to the circuit between the Heat Pump and the Pilot.



- Fit the tee along with the manual air valve onto the outgoing water outlet of the Heat Pump.
- Install two 30mm Ø flexible pipes of at least 1.5m in length to the water inlet and outlet holes on the Heat Pump (outside the building).
- Carefully insulate the pipes to minimise heat loss.
- Take care to respect a 240mm Ø minimum radius of curvature so as to avoid damaging or bending the flexible pipe.

These flexible pipes are used to decouple the Pilot from the rest of the hydraulic installation (they **MUST** be connected as the Heat Pump stands on silent blocks).

3.2.2 - Hydraulic connection: Heat Pump circuit

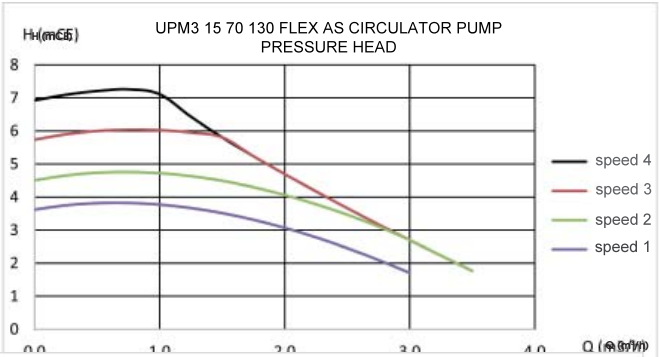
When the heat pump is running at full power the flow rate must be high enough to ensure that the temperature difference between the outgoing and incoming water is no greater than 5°C (take a temperature reading when the HRC^{70} is in heating mode and the system is fully functioning).

The hydraulic connection section between the Heat Pump and the Pilot must be sufficient.

Using the tables below, determine the minimum inner diametre of the connection piping needed depending on the distance* which separates the Heat Pump from the Pilot:

Heat Pump model	**HRC^{70} 7 & 11 kW**
Minimum nominal flow rate	1500 L/h
Maximum pressure	2.5 bar
Minimum piping Ø:	
if distance* between HP & Pilot < 10m	22/24
if distance* between HP & Pilot < 15m	24/26
if distance* between HP & Pilot < 25m	28/30
if distance* between HP & Pilot < 50m	32/34

** total distance both ways*



Make sure that all sections of piping are fitted with functional and accessible air valves.

The hydrualic connection between the Heat Pump and the Pilot can be made using steel, copper or PEX piping with a diametre of at least 1".

The hydraulic kit must be fitted using flexible piping on the water inlet and outlet points of the Heat Pump in order to prevent any vibrations being transmitted to the heating system.

3.2.3 - Setting the four different pump speeds

Choose speed 3 or 4, depending on the distance between the Heat Pump and the Pilot.

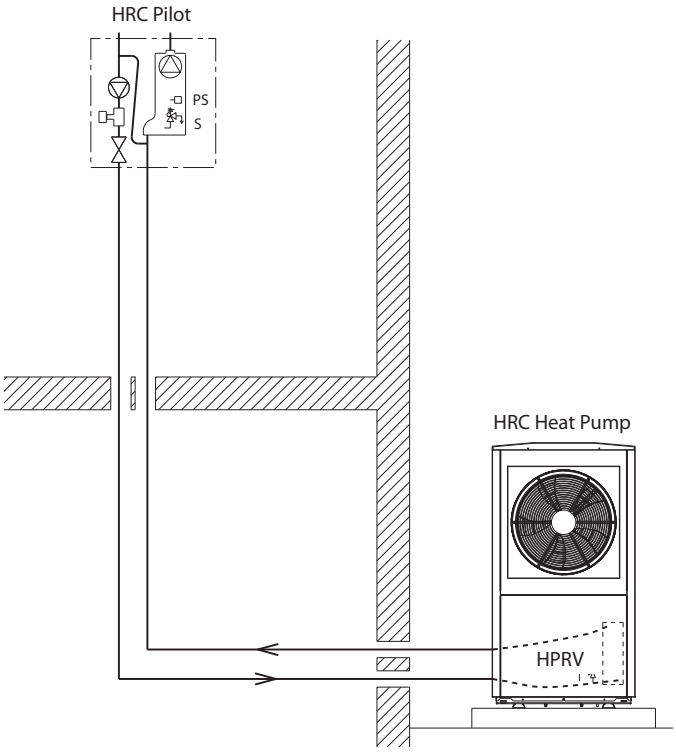
3.2.4 - Heat Pump and Pilot relief valve

The Heat Pump and the Pilot are both fitted with a pressure relief valve.
The pressure relief valve on the Heat Pump sets the maximum acceptable pressure in the installation (2.5 bar when hot). The maximum service pressure on the Heat Pump must, consequently, be lower than 2.5 bar.

Example : If the Heat Pump is positioned 5m below the Pilot , the pressure reading on the Pilot would be 0.5 bar less than the real pressure of the water in the Heat Pump. In this case, the maximum pressure for the Pilot would be 2 bar. Therefore it would be advisable to fill the heating circuit at an intermediary pressure (between 1 and 1.5 bar).

In case of operating with boiler back-up these relief valves **MUST** be fitted in addition to the ones which the boiler is already equipped with.

The connections and evacuation conduits for the pressure relief valves must be made from materials which are resistant to high temperatures and corrosion.



PS : Pilot pressure sensor
RV : Pressure relief valve for Pilot, set at 3 bar
HPRV : Pressure relief valve for Heat Pump set at 2.5 bar

3.2.5 - Desludging

We would advise you to fit a settling tank (not supplied) on underfloor heating installations.

3.2.6 - Heat Pump water inlet filter (supplied)

A 1" valve with a built-in 500µm filter must be fitted to the water inlet piping on the Heat Pump:

- Respect the flow direction of the filter (arrow on the valve)
- Install the 1" valve with filter on the inside of the building and ensure it is thermally insulated

Clean the filter several times as soon as the Heat Pump circulator pump has been activated (take care to switch the circulator pump off before cleaning).

- Clean the filter at least once a year.

3.2.7 - Heating circuit

• The installation MUST be rinsed and desludged before making the hydraulic connection with the heat pump.

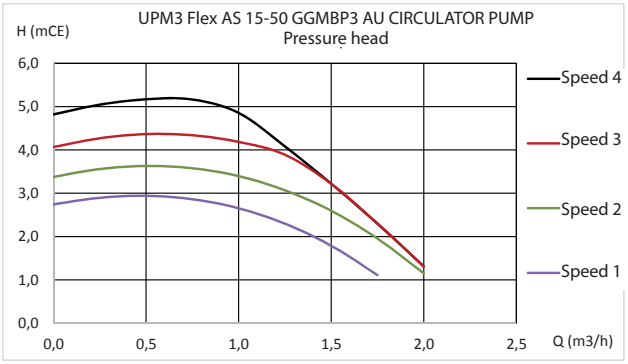
3.2.7.1 - Heating circuit flow rate

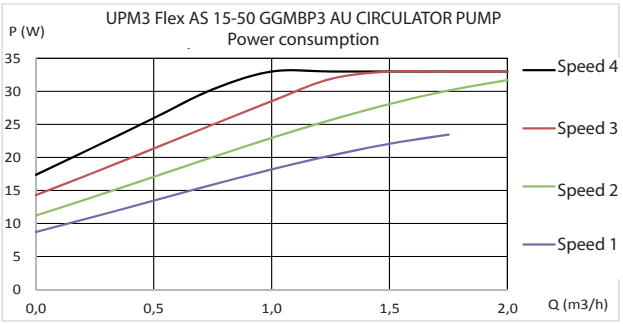
• For heating circuits with radiators, fan coil units or underfloor heating:
The flow rate must be sufficient to ensure that the difference in temperature between the leaving and return points is not over 15K in radiator or fan coil unit circuits or 7K in underfloor heating circuits.
For installations which have thermostatic valves, this test must be carried out with all valves open.

The heating capacity from the heat radiating sources determines the heating water flow rate and allows you to check that the sections, lengths and layout of the hydraulic distribution network are compatible with the Pilot circulator pump.

Adjust the speed (I, II, III, IV) of the UPM3 15-70 circulator pump which is fitted to the Pilot to the characteristics of the hydraulic circuit using the curve chart at top of next column: flow rate Q (m^3/h) / pressure head H (mCE).

For underfloor heating installations, the piping for the heating circuit must not be under 1" in diametre.





3.2.7.2 - Backflow prevention device

French law (articles 16.7 and 16.8 of the "Règlement Sanitaire Départemental") stipulates that a type CB backflow prevention device must be fitted. This device must be at different, non-regulated pressure zones, in accordance with the NF P 43-011 standard. This is also an obligatory requirement in other countries so it is important to check the current laws and standards in the country of installation and ensure that your installation is in compliance with them. The backflow prevention device is designed to prevent incoming heating water from going into the drinking water circuit. It must be connected to mains drainage.

3.2.7.3 - Degassing the heating circuit

All necessary measures must be taken to ensure that the installation can be continuously degassed. Automatic air valves should be placed at each high point of the installation and manual air valves should be fitted on each radiator.

3.2.7.4 - Insulating the piping

Insulants must comply with DTU 67.1 or the current regulations in the country of installation.

All visible piping and accessories (circulator pump, expansion vessel, valve, etc...) must be insulated. Remember to insulate the distribution manifolds and the return and supply flow pipes to the underfloor heating circuit; remember to insulate the piping which connects the Heat Pump to the Pilot.

3.2.7.5 - Expansion vessel

An expansion vessel needs to be fitted onto the heating circuit. See Appendix 4 for help on sizing.

3.2.7.6 - Frost protection and water treatment

See appendices A3 et A5.

3.3 - Installation advice for different types of transmitters and different uses

Thermostatic valves = MANDATORY buffer tank

If using thermostatic valves on radiators or underfloor heating loops it is **MANDATORY** to fit the 50-litre "ONIX 50 CF8" buffer tank (Ref. 422013) on the heat pump circuit.
Thermostatic valves: these valves must primarily be used for premises which receive high quantities of free calories from sunlight.

In an installation where only thermostatic valves are used there **must** be a bypass function in place (e.g. a differential valve).

It is **forbidden** to couple a thermostatic ambience control (sensor or thermostat) with radiators where thermostatic valves are fitted, in the same room.

In order to ensure full satisfaction from your room thermostat is is essential to follow the installation and assembly instructions when setting it up.

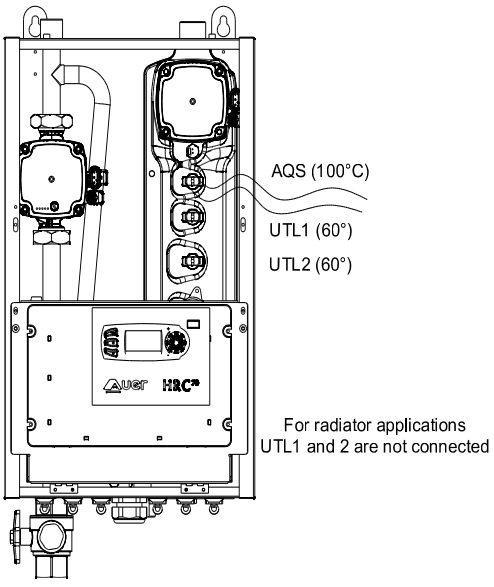
3.3.1 - For underfloor heating circuits

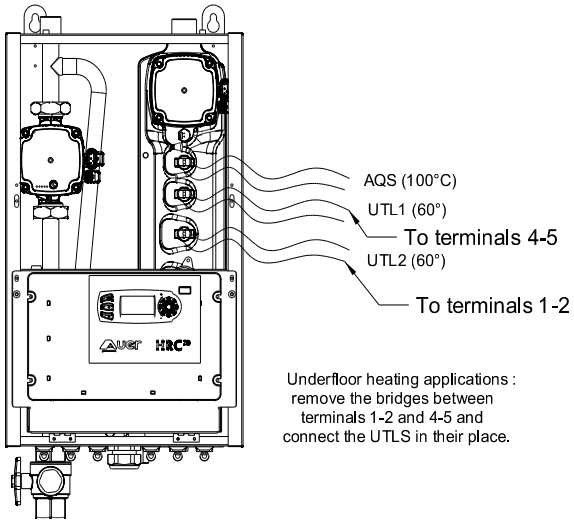
It is MANDATORY to connect the two underfloor heating temperature limiters on terminals 1-2 and 4-5

No buffer volume need be added as long as an underfloor heating loop without thermostatic valves is maintained. This loop without thermostatic valves enables sufficient heat reserve for heat pump de-icing cycles as well as enough inertia to eliminate short cycles.

Otherwise, a 50-litre buffer tank **MUST** be added to the Heat Pump return flow.

- Adjust setting 207 to a temperature equal to or below 50°C (see "Setting operating parametres").
- Replace the electrical bridges between terminals 1-2 and 4-5 by the underfloor heating temperature limiters (UTL 1 and UTL2) which are supplied with the appliance.





Both of these aquastats cut off the power supply to the underfloor heating circulator pump on circuits 1 (HPCP 1) and 2 (HPCP 2) in case of abnormally high temperatures on the underfloor heating circuit.

3.3.2 - For domestic hot water

Only possible when coupling with a radiator circuit

It is **mandatory** to fit a 50-litre decoupling tank and a circulator pump for the domestic water circuit.

Domestic hot water can be produced by the Pilot. The domestic hot water tank is heated by a primary water circuit connected to the Pilot (circuit n°2)(Accessory: DHW sensor, Ref. 710029).

It is important to equip the hot water tank with a suitably powerful heat exchanger (minimum 36kW).

To ensure effective coupling with the Heat Pump the surface of the water tank's primary heat exchanger must be at least 1.4m^2.

Using a water tank where the primary heat exchanger is around 36kW (1.5m^2) can lead to Heat Pump malfunction because of on / off cycles which are too long.

The domestic water circuit must be installed in compliance with regulations and best practices. It is particularly important to observe the following instructions:

- A pressure relief valve must be fitted onto the cold water inlet on the tank
- Do not fit a shut-off valve between the pressure relief valve and the tank.

NB : the pressure relief valve may let out a small amount of water when the DHW is being reheated: this is normal.

- In order to prevent this run-off if the pressure exceeds 4 bar:
  - Fit a pressure reducer on the cold water inlet
  - Fit a DHW expansion vessel between the pressure relief

valve and the tank.

- The number of elbows used and drops in pressure must be minimised, the plumbing fixtures used must be adapted to the installation.
- In regions where high levels of limescale are present in the water (TH > 15), we would advise you to fit an anti-scale device on the cold water inlet. The TH should be under 15.
- The concentration of chloride in domestic hot water should be less than 60mg/L (quality level required for drinking water for human consumption).

As the domestic hot water can reach temperatures of over 60°C (notably to protect against legionellosis), a thermostatic mixing valve MUST be fitted onto the DHW outgoing point to avoid risk of scalding.

3.4 - Electrical control connections

3.4.1 - Connecting the Heat Pump control

3.4.1.1 - 2-core sheathed connection cable

The Heat Pump is pre-fitted with a non-polarised 2-core sheathed cable (communication bus). This 10m cable is supplied with and pre-connected to the Heat Pump. It must be connected to the Pilot.

If the connection needed is longer than 10m, replace this cable with a 20m cable, which is available to order (Ref. 751005).

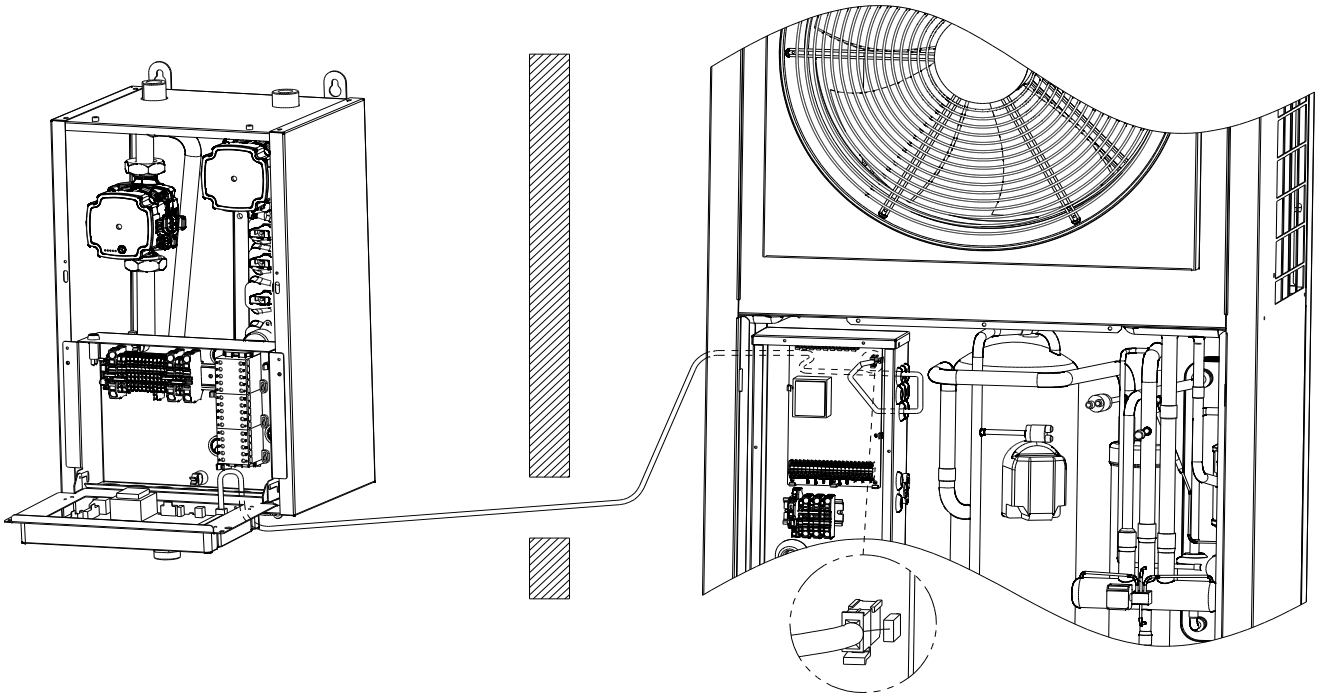


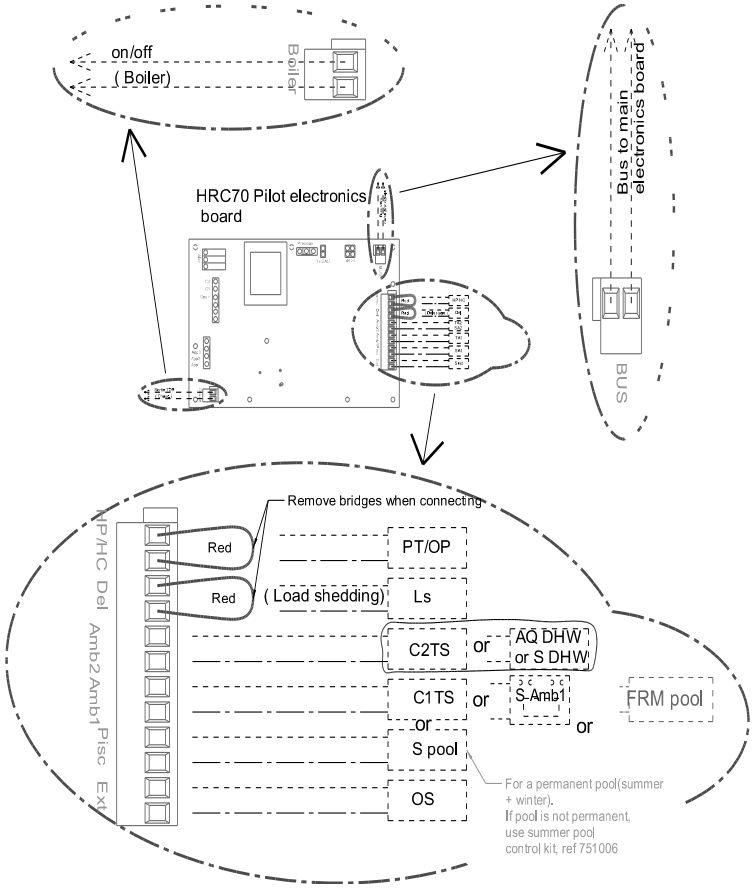
Diagram of connection to Pilot without the connection cable braided shielding on the Pilot being grounded.

- On the Pilot, cut the bus link to the right length: **LOOPS ARE FORBIDDEN.**
- On the Pilot, cleanly remove 10 cm of the shielding to prevent any short circuits.
- Connect the two wires (stripped to 10 mm) to the Pilot.
- **IMPORTANT:** DO NOT connect the bus link shielding to the ground of the Pilot.

Diagram of connection to the Heat Pump with MANDATORY grounding of the connection cable braided shielding (faston terminal near 2-point connector).

3.4.2 - Connecting the Pilot control

For a standard installation with one radiator circuit, the outdoor temperature sensor [a] and if applicable the room thermostat [b].



Screw terminal blocks for connection to the Pilot electronics board

1.12-point terminal (the circuit board marked Ext. ; Pisc. ; Amb 1 ; Amb 2 ; Del ; HP/HC)

Ext.[a] : Outdoor sensor (supplied, mandatory connection)

Pisc.[b] : Swimming pool aquastat or sensor. See § «Circuit 1 temperature control» to set the circuit 1 swimming pool sensor [1]

Amb 1 : Circuit 1 room thermostat (potential-free dry contact, non chrono-proportional, no IPD, etc...) or room temperature sensor with display for circuit 1 to set the circuit 1 temperature control or to control the swimming pool flow for circuit 1 [1]

Amb 2 : Circuit 2 room thermostat (potential-free dry contact, non chrono-proportional, no IPD, etc...) or circuit 2 DHW aquastat See § «Circuit 2 temperature control» to set ambient temperature or DHW temperature on circuit 2

Del : Load shedding input, used to partially or completely stop electrical back-up and the Heat Pump when the electricity is needed for other household uses. Remove the existing electrical bridge and connect the load shedding device's potential-free dry contact. Set to parametre PAR.218 [2] (see § «Setting operating parametres») which determines the level of authorisation for the electrical back-up and Heat Pump to run at (the factory setting is total load shedding for the Heat Pump and electrical back-up).

HP / HC : Peak-time / off-peak operation, used to stop partial or full operation of the electrical back-up and Heat Pump during peak hours. Remove the existing electircal bridge and connect the potential-free dry contact PT/OP. Adjust to setting PAR.217 [2] (see § «Setting operating parametres») which determines the level of authorisation for the electrical back-up and Heat Pump to run at (the factory setting is only for load shedding on the electrical back-up). The HP / HC and DEL contacts can also be used for load shedding on peak day pricing. By programming PAR.217 or PAR.218 on 7, only the boiler will run when the dry contact is open.

[1] : For a permanent swimming pool (summer + winter). If the pool is not permanent, please use the summer swimming pool control kit (Ref. **XXXXXXX**).

[2] : If both settings PAR.217 and PAR.218 are activated at the same time, the lowest authoristion level will be used on both inputs in case of simultaneous load shedding.

2. 2-point terminal (marked Chaud on PCB.)

Chaud. : on / off output (dry contact) to connect to the room thermostat input on the existing boiler. see § «Back-up section» for setting the boiler back-up. The boiler normally commands its own circulator pump. If this is not the case, relay the «chaud» dry contact so that one relay feeds two contacts:

- the first contact (NO) is used to start the burner on the boiler (room thermostat input).
- the second change-over contact is used to supply the boiler's heating circulator pump and to keep it running a few minutes (approx.5) after the boiler has stopped.

3. 2-point terminal (marked BUS on PCB)

BUS : Link between HRC[70] Heat Pump / HRC[70] Pilot by 2-core sheathed cable (10m cable supplied, 20m cable available on order Ref. : 751005).

• In order to avoid any problems which may occur when reading the temperature sensors, wire the control independently of any power cables (raceways) and avoid distribution boxes.

• The conductors must be made from electrolytic copper (there must be no rust on the stripped connection strands).

• Telephone wire must not be used (too brittle for connections).

• The diametre of the control cables must be between 0.5 and 1mm².

3.4.3 - Temperature controls

3.4.3.1 - Installation precautions

Where an installation includes thermostatic valves and a room thermostat or room temperature sensor the area where the room thermostat or room temperature sensor is installed **MUST** have radiators equipped with manual valves.

The temperature control must be positioned on an inside wall of the premises to be controlled by the appliance.

It must not be installed on an outside wall.

Do not position the temperature control near to a window, a curtain or a door. Avoid installing it in an alcove, a cupboard or behind wall coverings or hangings.

Do not place it above a heat source (e.g. radiator, fireplace) or on a wall which has a chimney behind it.

Do not place it in strong sunlight or in strong lighting.

Fit the sensor at 1.5m from ground level and at least 50cm from neighbouring walls. Insulate the end of the electric sheath, connecting it to the appliance to prevent any draughts from affecting the reading.

3.4.3.2 - Room thermostat

Only connect one of the following:
- **ROOM TEMPERATURE SENSOR with DISPLAY (Ref. 751009)**
- **WIRELESS ROOM THERMOSTAT (Ref. 751010)**

Any other type of chrono-proportional thermostat could cause a malfunction and thus render the warranty null and void.

3.4.3.3 - Outdoor temperature sensor

It is mandatory to fit an outdoor temperature sensor.

Position the sensor on the coldest outside wall of the building (in general this is the north-facing wall). It should not be exposed to morning sunlight.

It is preferable to position the outdoor sensor in the middle of the wall or heating zone at a minimum of 2.5m above the ground.

Avoid placing the sensor:

• above windows, doors, air vents or any other heat sources

• Under balconies or gutters. In order to avoid errors in readings due to air circulation, insulate the end of the electric sheath where it connects to the sensor. Do not paint the outdoor sensor.

3.5 - Connecting to power supply

Make sure that the power supply is sufficient to supply both the Heat Pump and, if necessary, the electrical back-up, taking into account any other domestic usage of the electricity.
Power supply connection for each appliance must be done by a qualified professional with mains power switched off.

Your country's current rules and regulations MUST be respected (Standard C15-100)
- **The electric lines for general power supply to the circuits must be made in compliance with your country's current rules and regulations (standard C15-100).**
- **Standard C15-100 determines the cable section to be used depending on acceptable currents.**
- **Standard C15-100 determines the cable section to be used depending on the following factors:**
  - **Nature of the conductor:**
    - **. type of insulant, number of strands, etc...**
  - **Installation mode:**
    - **. influence of conductor and cable groups**
    - **. ambient temperature**
    - **. length of cables, etc...**

- **During transport electrical cables may accidentally loosen**
- **To prevent any risk of abnormal overheating check that the faston terminal connections are secure and that the screws are properly tightened.**

See § "Parts - electrical boxes"

Each appliance is pre-wired. However, it is necessary to connect the following elements to the relevant terminals:

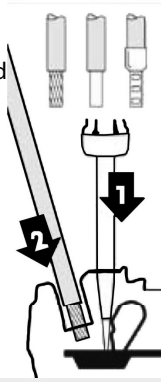
• Electricity supply to the power circuit of each appliance, seperately: the Heat Pump and the Pilot.
• The sensors, thermostat and load shedding device on the Pilot.
• The sheathed connection cable (2 core) between the Heat Pump and the Pilot (10m cable supplied).

Under no circumstances will the manufacturer be held responsible for any consequences which may arise due to incorrect choice or installation of power cable sections.

Terminal strip

The terminal strips are spring-loaded cage clamps. For handling, use one of the following:
- for 2.5mm² control terminals or 4mm - 6mm power terminals (tetra) use a 3.5 x 0.5 flat-head screwdriver
- For the 10mm² mains power terminals, (single phase), use a 5.5 x 0.8mm flat-head screwdriver

1 : Introduce the screwdriver into the window just above or below the identifcation number
2 : Insert the wire into the open cage clamp
3 : Remove the screwdriver.



N.B: The wires must be stripped to the following lengths:
- between 10 and 12 mm for 2.5mm control terminals
- between 18 and 20mm for the mains power terminals
- between 11 and 13mm for the intermediary power terminals

3.5.1 - Recommendations for connecting the system to the power supply

Check:

- **The input current**
- **The number and thickness of power cables**
- **Fuse or circuit breaker ratings**

The power supply must come from an electrical protection and sectioning device which complies with all current rules and regulations. This CE-stamped appliance complies with the essential requirements of the following directives:

- Low voltage n°2006/95/CE
- EMC n° 2004/108/CE

Check the the installation is equipped with a correctly sized and connected ground cable.

Check that the voltage and frequency of the general power supply fit requirements. The amount of variation in voltage permitted is:

230 V -10% à +6% 50Hz for single phase models + ground cable

400 V -10% à +6% 50Hz for three-phase models + neutral + earth cable.

3.5.2 - Connecting the Pilot to the power supply

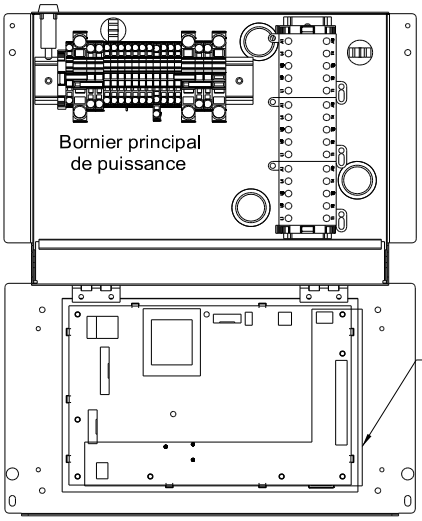
The Pilot must be protected beforehand by an all-pole circuit breaker (minimal distance to separate contacts = 3mm: EN 60 335-1) using either fuses or a thermal magnetic circuit breaker calibrated to the right power for the Pilot.

	Pilot		
Type of back-up	Without back-up or boiler back-up	6 kW electrical back up	6 kW electrical back up
Power supply voltage	230 V single phase	230 V single phase	400 V three phase
Electrical current requirements	2 A	30 A	10 A
Fuse calibration for mains switch [1]	32 A	32 A	12 A
Power supply by phase [2]	6mm² min. à 10mm² max.		2.5mm² min. to 4mm² max.
Number of conductors [2]	2x6mm²+T[*] min. to 2x10mm²+T[*] max.		4x2,5mm²+T min. to 4x4mm²+T max.

[1] or general bipolar circuit breaker

[2] The figures given here are indicative. They shoud be checked, and if necessary adjusted, depending on the installation conditions and current standards.

[*] the width of the ground cable should be equal to the width of the largest power cable.

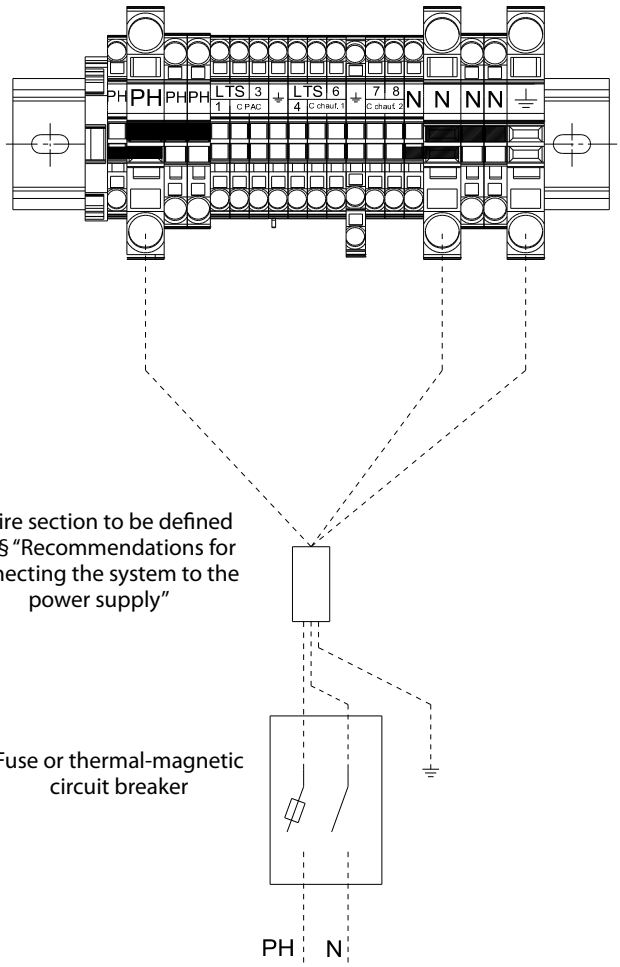


To access the terminals, remove the front faceplate of the Pilot and open the control box

3 control terminals on the electronics board:
- 12 point (HP/HC; DEL; Amb2; Amb1; Pixc; Ext)
- 2 point (shielded connection)
- 2 point (Chaud)

N.B: See electrical diagram in the appendix.

3.5.2.1 - Pilot: 230V single phase connection

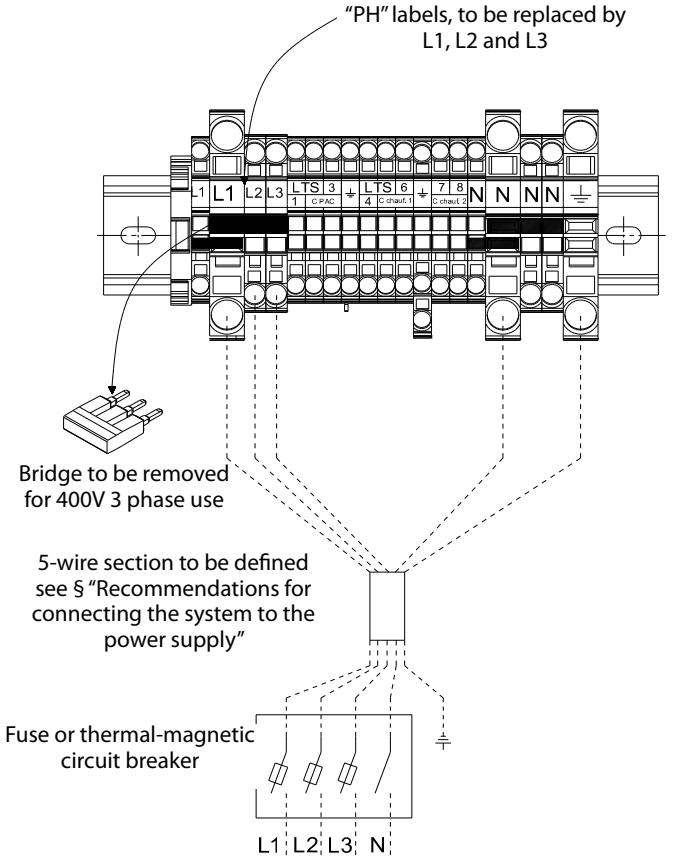


L1-L2-L3-N : Power supply Phase/Neutral 400V three-phase 50Hz
CPAC : Heat Pump circulator pump, pre-connected
Cchauf 1 : Circulator pump for heating circuit 1
ou Pisc : or primary circulator pump for swimming pool circuit
Cchauf2 : Circulator pump for heating circuit 2
ou ECS Primary circulator pump for domestic water
LTP1/LTP2 : Temperature-limiting safety aquastat (65°C) with manual reset to be connected between terminals 1-2 and 4-5 for underfloor heating applications.

3.5.2.2 - Pilot: 400V three phase connection

The Pilot is always pre-set at the factory for 230V single phase operation.

In order to operate in 400V three phase, you will need to remove a bridge between the three phase terminals (see diagram below).



L1-L2-L3-N : Power supply Phase/Neutral 400V three-phase 50Hz
CPAC : Heat Pump circulator pump, pre-connected
Cchauf 1 : Circulator pump for heating circuit 1
ou Pisc : or primary circulator pump for swimming pool circuit
Cchauf2 : Circulator pump for heating circuit 2
ou ECS Primary circulator pump for domestic water
LTP1/LTP2 : Temperature-limiting safety aquastat (65°C) with manual reset. It must be fitted at the start of the underfloor heating circuit (not supplied).

In case of a PERMANENT POOL: Disconnect the heating circuit circulator pump which is pre-wired to the HRC Pilot on terminals 5 and 6 and reconnect it to terminals 2 and 3. Then connect the Cchauf1 circulator pump for the swimming pool on terminals 5 and 6.

3.5.3 - Connecting the HRC^{70} Heat Pump to the power supply

ELECTRICAL INSTALLATION RECOMMENDATIONS

- It is the responsibility of the installer and the client to contact the electricity provider and ensure that the appliance is compatible with the power grid before connecting the HRC^{70} Heat Pump (see the information form which is an appendix to this document).

- The power grid impedance value must be less than the Heat Pump impedance Z_{max} (see § "Connecting the HRC^{70} Heat Pump to the power supply").

- If electrical installation standards are not respected, irreversible damage could be sustained to the HRC^{70} Heat Pump, which will not be covered by the manufacturer's warranty.

The HRC^{70} Heat Pump is CE-marked. It complies with the French standard NF C15-100 and the European standards EN 61000-3-3 et EN 61000-3-11, among others.

It is equipped with soft starters, which limit the start-up current to 45A for single phase and 60A for three phase.

The power supply cable should be carefully sized according to the following factors:

- maximum current
- the distance between the HRC^{70} Heat Pump and the power supply source
- overall protection
- the neutral operating system

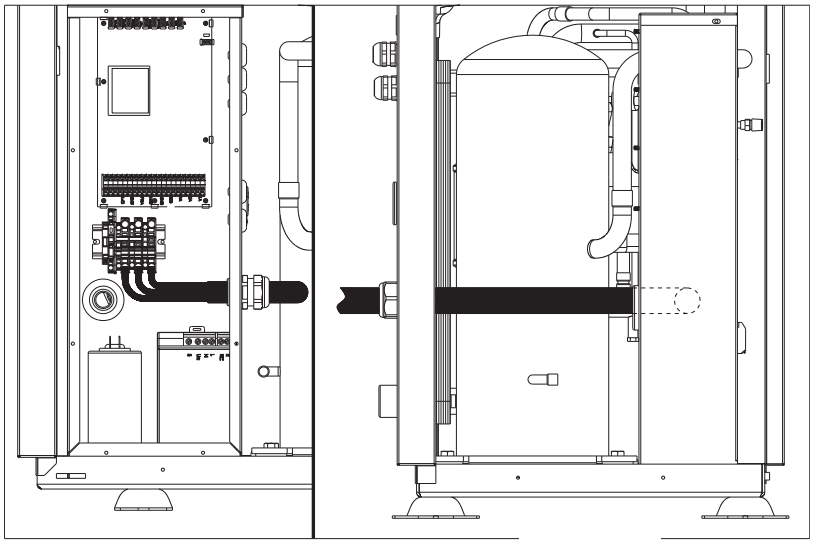
Take care to strip the cable before pushing it into the terminals, and make sure that the copper is in good condition.

A means of disconnection must always be fitted in compliance with the installation rules.

If the power supply cable is damaged it must be replaced by a suitably qualified professional.

To access the terminals, remove the panel on the bottom left hand side (2 screws) and open the electrical box (8 screws).

The electrical power supply cable should first be inserted through an exterior compression gland and then through a cable grommet on the electrical box.



Side view Front view

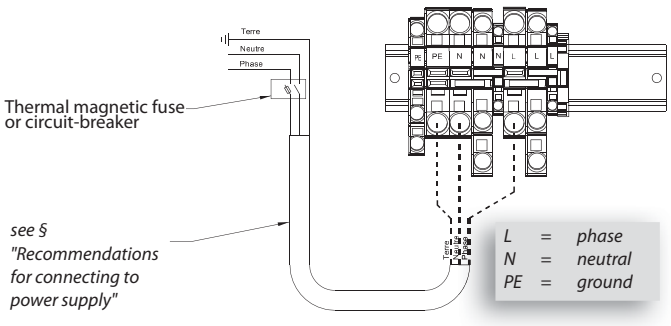
	HRC^{70} Heat pump		
HRC^{70} Heat Pump	**HRC^{70} 7 single phase**	**HRC^{70} 11 single phase**	**HRC^{70} 11 three phase**
Power supply voltage	230 V mono	230 V mono	400 V tri
Maximum power consumption	2.6 kVA	3.9 kVA	3.9 kVA
Maximum current requirements	15 A	21 A	9 A
Maximum start-up current	45 A	45 A	48 A
Compressor soft starter?	YES	YES	NO
Phi tangent when Heat Pump starts up	1.53	1.3	2.46
Heat Pump (Zmax) impedance (ohm)	0.181	0.206	-
Heat Pump regulation mode	Fixed speed	Fixed speed	Fixed speed
Circuit breaker size (1)	32 A	32 A	16 A
Power supply cable width per phase(2)	6 mm²	6 mm²	2.5 mm²
Number of conductors de conducteurs (2)	2x6 mm² + T(*)	2x 6 mm² + T(*)	4x 2.5 mm² + T
Back up heating elements (kVA)	See tables: "Connecting the Pilot to the power supply"		

(1) Dcurve bipolar or tetrqpolar circuit breaker

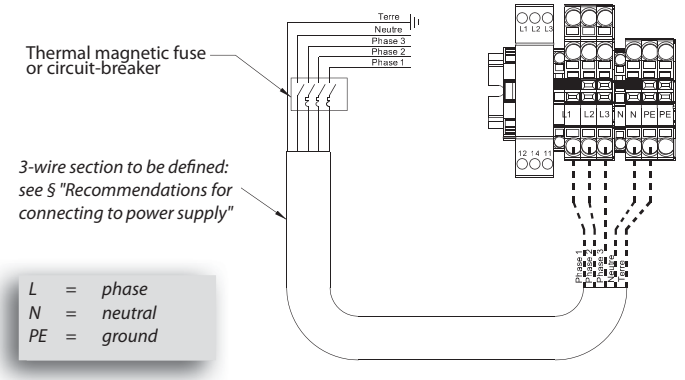
(2) The figures given here are indicative. They must be checked and modified if necessary according to conditions of installation and current rules and standards. If the length of the cable exceeds 15m or if the network could be subject to drops in voltage over 10V, use a thicker cable.

(*) The ground cable width must be equal to the width of the largest power supply cable.

3.5.3.1 -HRC[70] Heat Pump:230V single phase connection



3.5.3.2 -HRC[70] Heat Pump: 400V three-phase connection



- **Three-phase monitor relay for the HRC[70] Heat Pump (17kW and 25kW)**

  A phase monitor relay is installed to prevent a phase failure, which could damage the compressors. If the phases are reversed, it will stop the power supply to the Heat Pump.

CORRECT WIRING

INCORRECT WIRING

In case of INCORRECT WIRING:

Warning: never work with live voltage!

If the phase order is reversed or there is a phase missing, the relay cuts the power supply to the circuit board. A «BUS ERR» error message will appear. This is indicated on the phase monitor relay by the orange light at the top being off and the green light at the bottom being on. To correct the error, reverse the two phases on the mains power terminal.

When the Pilot is switched on, a "BUS ERR" error message will be displayed. Reverse the two phases on the three-phase power cable of the Heat Pump. Switch the power back on and check the voltage on each phase.

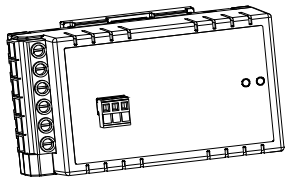
3.5.4 - Electrical protection for the compressors

The HRC[70] Heat Pump is equipped with a soft starter to limit the intensity of the current when the motor starts up, in compliance with the limits set by the NF C 15 100 standard (45A per phase for single phase).

The electrical protection devices for the compressors constantly monitor the current and voltage. In case of over voltage, under voltage or an abnormally high current, the compressor will be stopped.

- **Soft starter for the HRC7[0] Heat Pump when using a single phase system**

The soft start-up device constantly monitors the compressor by measuring the current and voltage. In case of over voltage, under voltage or an abnormally high current, the compressor will be stopped.



How it works:

- The soft starter controls the start-up phase until the motor reaches its stable operating speed.
- If the motor cannot start, it is because the power supply has been cut off by the soft start-up device.

  In order to protect the compressor, the motor will not be able to start up again until 5 minutes after it has been stopped.

Start-up errors:

- If the compressor fails to start up, two lights (green and red) will flash to indicate that there is an error (see § "Compressor start-up errors".

4 - COMMISSIONING

- All work carried out on the water circuits and electrical installations must be carried out by a qualified professional and in accordance with current rules and regulations.
- Fill the installation with water and treat the water.
- Purge the heating circuits (open the air valves situated on the highest points of the installation until all trapped air has been released).
- Check that all circuits are properly sealed.
- Check that the power supply voltage is correct at the mains switch.
- Check that all hydraulic connections have been properly tightened and that there are no leaks.
- Check that all the valves are open, that there is water in the heating circuit and that nothing is stopping the water from circulating freely in the heat exchanger and the hydraulic circuit.
- Check that the sludge valve is correctly fitted and that nothing is blocking its screen filter.
- Once all of these checks have been carried out, switch the appliances on.
- Configure the installation.

The appliance is pre-configured for the following system:

- 17 kW Heat Pump
- Heat Pump without back-up (neither boiler or electrical)
- 1 radiator circuit
- 1room thermostat to control radiator circuit temperature

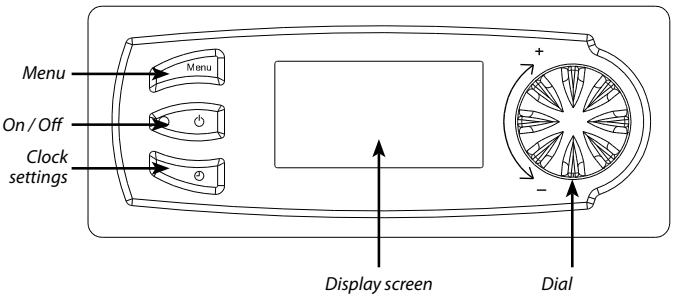
If necessary, this configuration can be modified using the "Installer" menu.

N.B: Frost protection for the Heat Pump

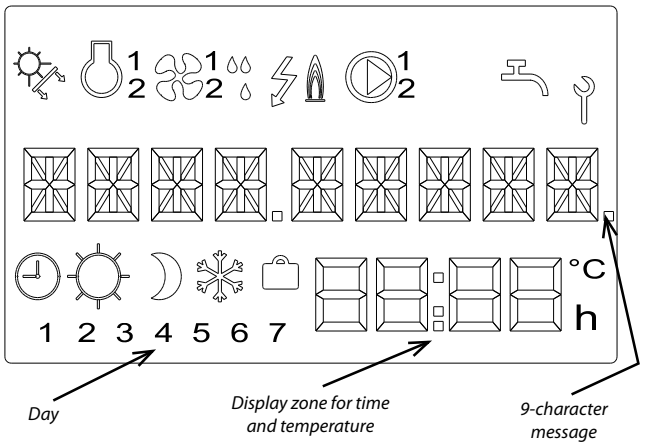
When the Heat Pump is switched off (temporarily or definitively), and the temperature of the outgoing water from the Heat Pump falls below 5°C, the circulator pump starts up and will only stop running when the water temperature reaches 11°C.

The installation must NEVER be switched on WITHOUT WATER in the heating circuit

4.1 - Control panel

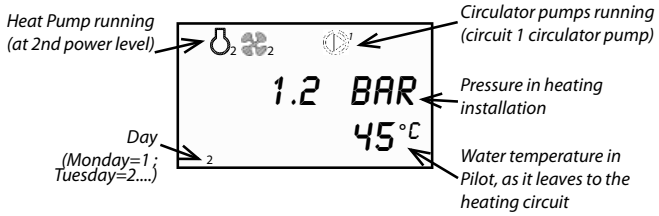


4.1.1 - Display screen: description of symbols and their meaning

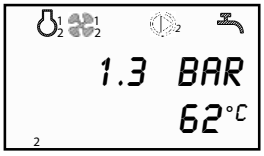


Symbol	Meaning
	Summer mode in progress
	Heat pump running (compressor and fan running)
	De-icing in progress
	Electrical back-up is running
	Boiler back-up request
	Heat Pump circulator pump running
1	Heating circuit 1 circulator pump running
2	Heating circuit 2 circulator pump running
	Domestic hot water production in progress
	Setting / setting display
	Time or programme is being set
	"Comfort" mode
	"Economy" mode
	"Frost protection" mode
	"Holiday" mode

4.1.2 - Commonly displayed symbols

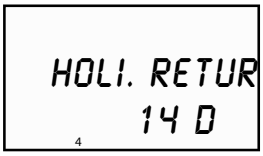


Example 1



- Tuesday
- Circuit 2 in use for domestic hot water
- Heat Pump running at third power level
- Water temperature at leaving point (of primary domestic water circuit): 62°C
- Pressure: 1.3 bar

Example 2



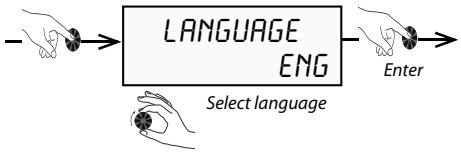
- Thursday
- Holiday mode in progress
- Holiday mode set to end in 14 days

4.1.3 - Unlocking

- Once the appliance has been switched on, or if the control box hasn't been used for more than 30 minutes, the control box will automatically lock. When in locked mode, the buttons become inactive.
- **To unlock the control box, press Menu and hold down for 4 seconds.**

4.1.4 - Language

- Press Menu.
- Turn dial to scroll through menu choices:



- Press Menu to return to main screen.

4.2 - Installer Menu

Accessing the installer menu:

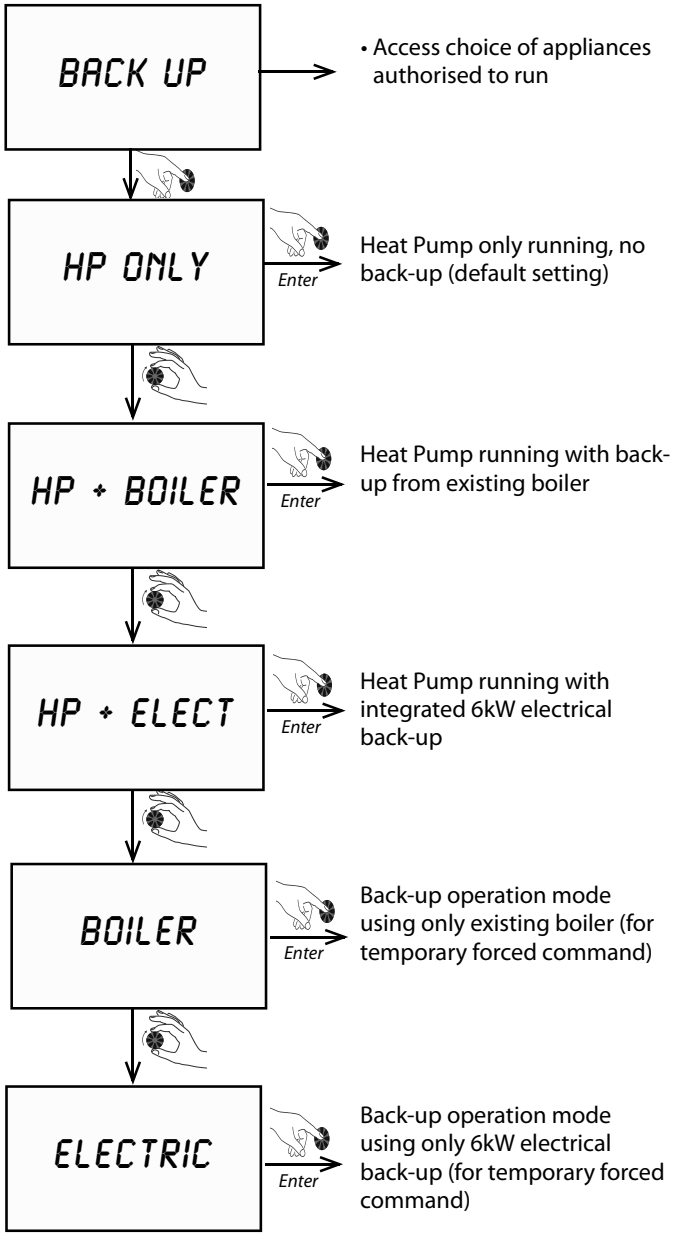
- Press Menu
- Turn dial until "INST. MENU" appears on screen
- Press and Menu
- **Hold them down simultaneously** for 3 sec.

- BACK UP
- CONFIGURATION
- SETTINGS
- DISPLAY
- DATA CALCULATIONS
- COUNTERS
- MANUAL
- RESET PARAMETRES

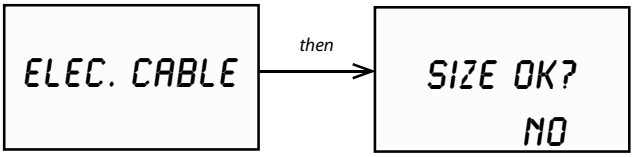
Access:

- values measured
- temperatures calculated
- programmed time periods
- counters / meters

4.2.1 - Selecting the right back-up for the installation

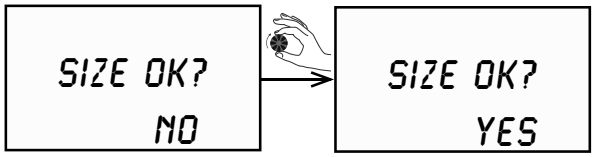


When the "HP + ELECT" or "ELECTRIC" options are offered, two warning screens will appear:



These screens serve to alert you to the fact that you are about to activate the electrical back-up

Is the HRC^{70} Pilot cable wide enough? Check in the § "Connecting the Pilot to the power supply" section to ensure that the diametre of the power supply cable is large enough to support the strength of the electrical current used by the appliance.



The option you select will only be activated after you have confirmed it.

4.2.2 - CONFIGURATION of the HRC^{70} Heat Pump and circuits

The "CONFIGURATION" sub-menu allows you to choose the Heat Pump model as well as the type of circuit and type of controls fitted. The settings specific to each configuration are automatically adjusted by the software.
See the hydraulics diagrams in the appendices.

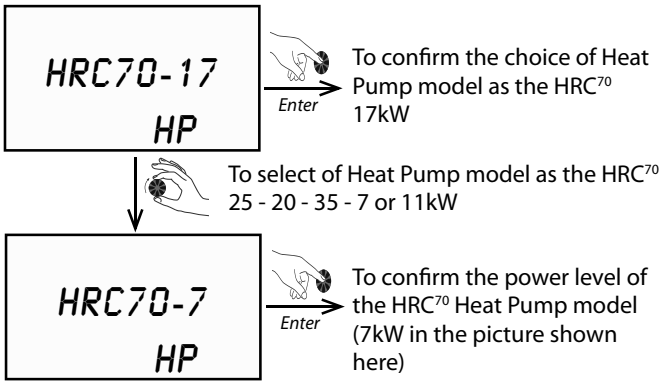
Press the dial to access the **HRC^{70} Heat Pump** options

4.2.2.1 - Heat Pump model

Select the Heat Pump Model which you have installed.

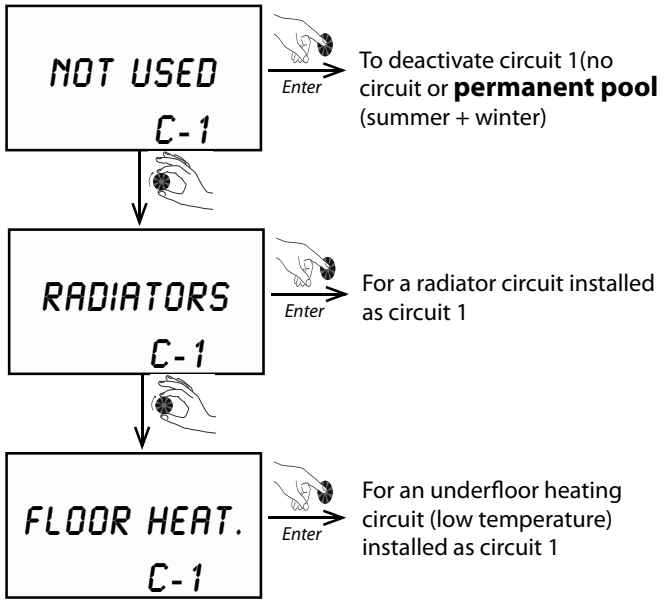
The different heat Pump Models will appear in the following order:

HRC^{70} - 17 / HRC^{70} - 25 / HRC^{70} - 20 / HRC^{70} - 35
HRC^{70} - 7 / HRC^{70} - 11

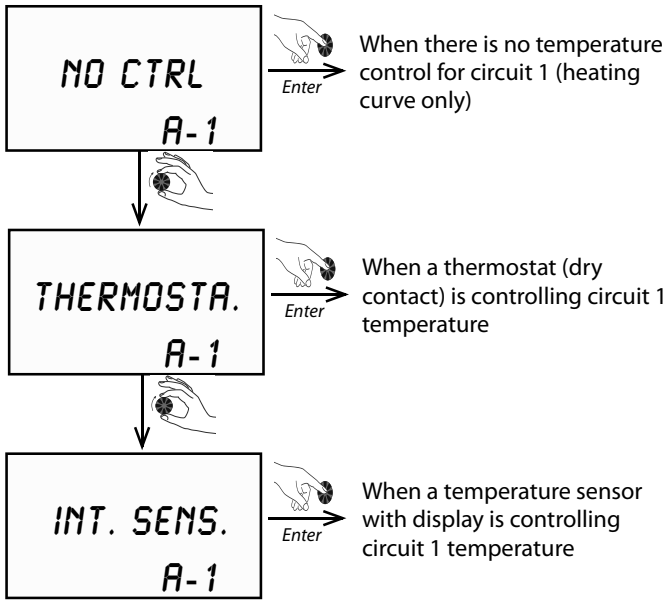


Exemple

4.2.2.2 - Configuring circuit 1



4.2.2.3 - Circuit 1 temperature control

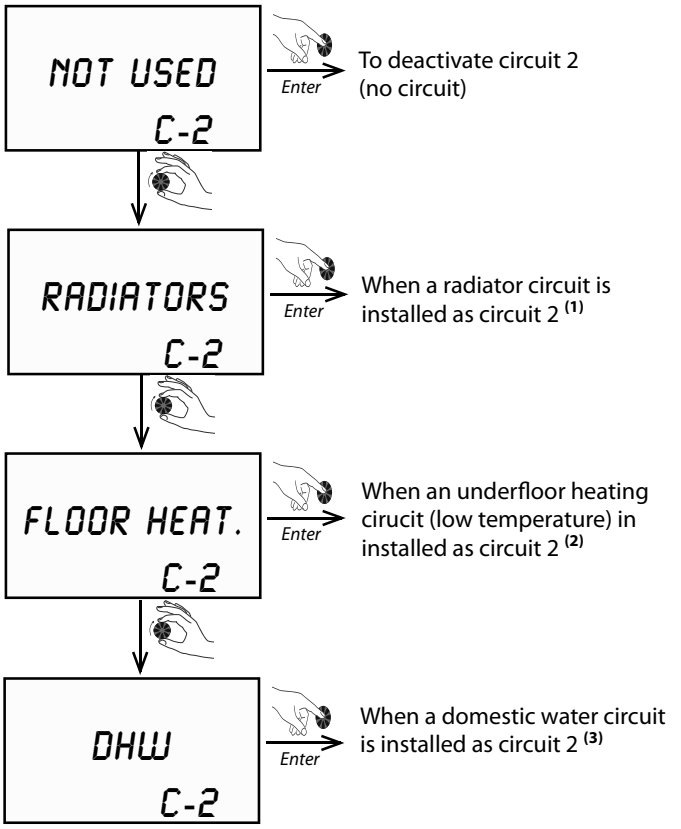


NB: If circuit 1 is an underfloor heating circuit, it is mandatory to fit a temperature control.

Connect one of the following ONLY:

- TEMPERATURE SENSOR with DISPLAY (Ref. 751009)
- ROOM THERMOSTAT (Ref. 710172)
Any other thermostat could cause a malfunction and thus render the warranty null and void.

4.2.2.4 - Configuring circuit 2



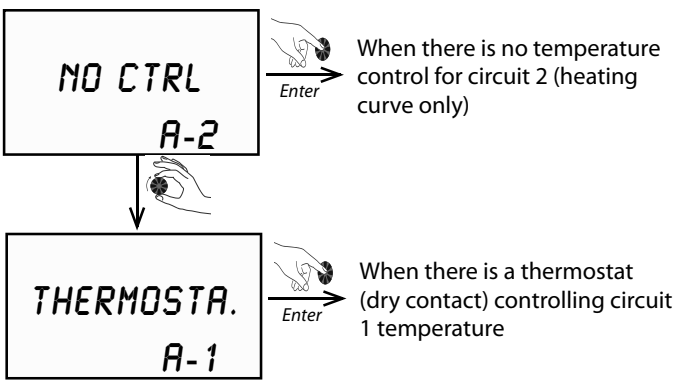
(1) It is only possible to have radiators for circuit 2 when circuit 1 is also a radiator circuit (or deactivated)

(2) It is only possible to have underfloor heating for circuit 2 when circuit 1 is also an underfloor heating circuit (or deactivated)

(3) It is only possible to have domestic water for circuit 2 when circuit 1 is also a domestic water circuit (or deactivated)

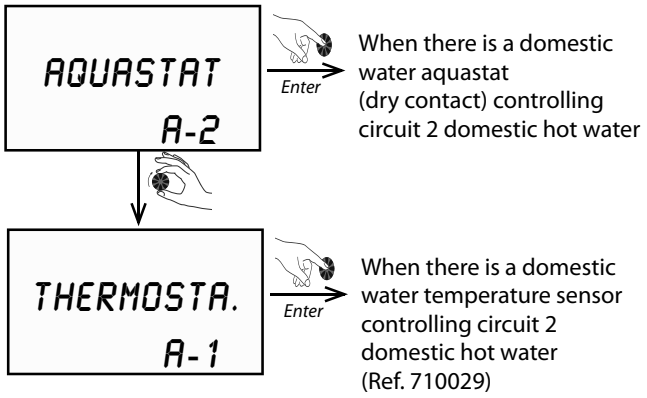
4.2.2.5- Circuit 2 temperature control

To select the temperature control or domestic water temperature control for circuit 2.



N.B: If circuit 2 is an underfloor heating circuit it is mandatory to fit a temperature control.

If circuit 2 is configured for domestic hot water production the two following options are available:



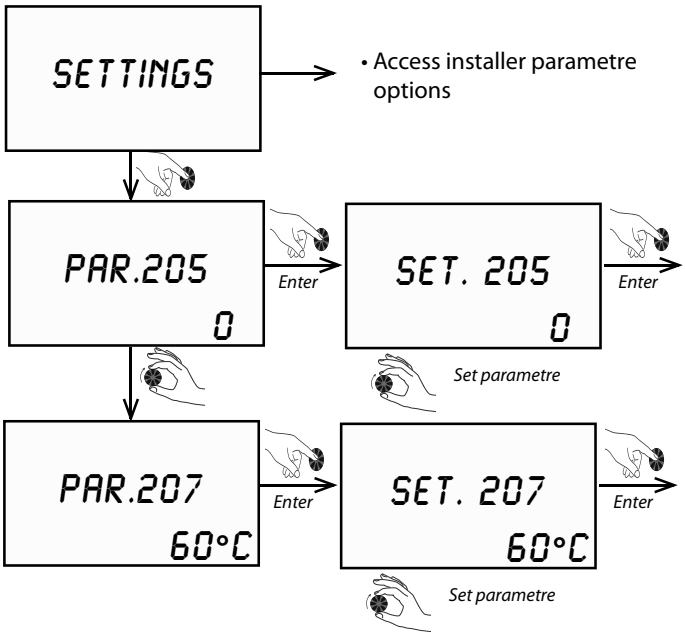
Connect ONLY:

- Room thermostat (Ref. 710172)

Any other thermostat could cause a malfunction and thus render the warranty null and void.

4.2.3 - SETTING operating parametres

Installer parametres PAR.205 to PAR.230



- Turning the dial towards + increases the parametre or setting number
- Turning the dial towards - decreases the parametre or setting number
- Press Menu at any time to return to initial "SETTINGS" screen

See the full list of parametres in the table on the next page:

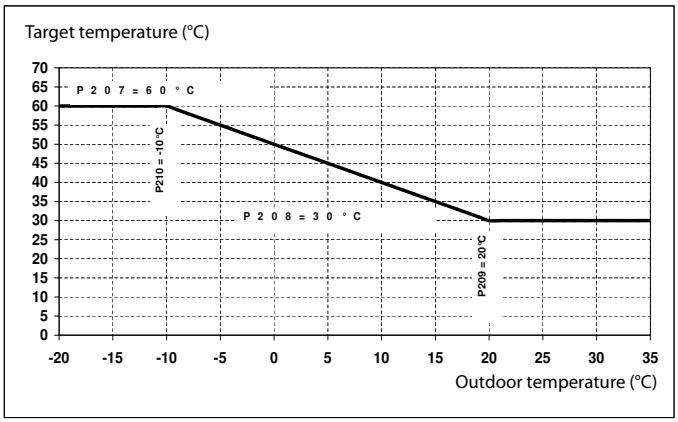
Use	Parametre	Function	Unit	Operating range	Factory setting
1 heating circuit only	PAR.205	Heating circulation controlled by the room temperature controller		0 = circulator pump runs constantly 1 = circulator pump controlled 2 = circulator pump runs constantly even with no heating request	0
Heating curve parametre	PAR.207	Max. heat pump water temperature	°C	PAR.208 to 70°C	70°C
Heating curve parametre	PAR.208	Min. heat pump water temperature	°C	20°C to PAR.207	30°C
Heating curve parametre	PAR.209	Max. outdoor temperature	°C	15 TO 25°C	20°C
Heating curve parametre	PAR.210	Min. outdoor temperature	°C	-20 TO 0°C	-10°C
	PAR.211	Difference between target temperature and maintained temperature	K	0 TO 30K	4K
	PAR.213	To lower heating curve in ECO mode periods	K	0K TO PAR.214	10K
	PAR.214	To lower heating curve in frost protection mode periods	K	PAR.213 TO 40K	20K
For heating circuit(s) only	PAR.215	Summer / winter mode time delay	hour	0 TO 48H	12H
For heating circuit(s) with temperature control	PAR.216	Heating advance when switching from "Holiday" mode to "Comfort" mode		YES / NO	NO
Remove electrical bridge (HP/HC) from hydro-electronic control and connect HP/HC electricity provider contact	PAR.217*	Authorisation level for stopping heat pump and electrical back-up from operating during peak time (HP / HC input)		0 = No operation authorised 1 = heat pump level 1 authorised 2 = heat pump level 2 authorised 3 = HEAT PUMP AUTHORISED 4 = heat pump authorised and level 1 electrical back-up 5 = HEAT PUMP AND LEVELS 1 &2 ELECTRICAL BACKUP AUTHORISED 6 = Authorised to operate fully 7 = Boiler authorised only	0
Remove electrical bridge (HP/HC) from hydro-electronic control and connect the loast shedding contact	PAR.218*	Authorisation level for stopping heat pump and electrical back-up from operating during peak time (DEL input)		0 = No operation authorised 1 = heat pump level 1 authorised 2 = heat pump level 2 authorised 3 = HEAT PUMP AUTHORISED 4 = heat pump authorised and level 1 electrical back-up 5 = HEAT PUMP AND LEVELS 1 &2 ELECTRICAL BACKUP AUTHORISED 6 = Authorised to operate fully 7 = Boiler authorised only	3
Circuit 2: domestic water circuit with domestic water sensor (circuit1 must be a radiator circuit) or deactivated	PAR.219	If there is a domestic water sensor: Differential sanitary heat demand	K	1 TO 10K	7K
		If there is a domestic water aquastat: Heat pump target temperature	°C	60°C	60°C
	PAR.220	DHW sharing		0 = DHW heated as priority 1 = Heating time shared between DHW and heating	1
	PAR.221	Anti-legionellosis cycle (IDHW is heated to 6°C every X days at 10pm)	days	0 = DHW heated as priority	0
Swimming pool circuit on circuit1 in addition to the heating circuit and swimming pool kit connected to the hydro-electronic control	PAR.222	Differential between heat pump target temperature and swimming pool target tempertaure (a gap which fixes the heat pump target temperature above the swimming pool target temperature)	K	0 TO 20K	5K
	PAR.223	Swimming pool heating advance before leaving "Holiday" mode	days	from 0 = no advance to 7 = 7 days	1 DAY
	PAR.224	Number of recording sequences per USB file	128mn sequence	1 to 255 sequences (of 128mn)	255
	PAR.225	Data recording period	mn	1 TO 240	1
	PAR.230	Choice of compressor		0 ; 1 OR 2	0

*If parametres PAR.217 and PAR.218 are both activated at the same time, the lowest authorisation level will be used on both inputs in case of load shedding s

4.2.3.1 - Setting the heating curve

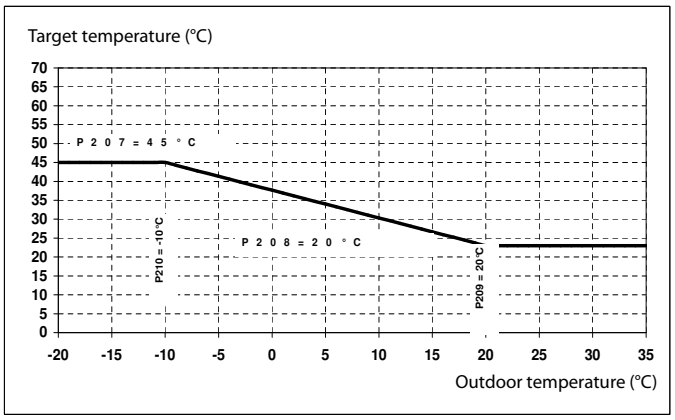
Parametres *PAR.207* to *PAR.210* enable you to adjust the heating curve to the mode and level you require.

- *PAR.207* = Max. Heat Pump temperature (°C) to min. outdoor temperature (*PAR.210*)
- *PAR.208* = Min. Heat Pump temperature (°C) to max. outdoor temperature (*PAR.209*)
- *PAR.209* = Max. outdoor temperature (°C)
- *PAR.210* = Min. outdoor temperature (°C)



Standard radiator settings:

- *PAR.207* = 60°C
- *PAR.208* = 30°C
- *PAR.209* = 20°C
- *PAR.210* = -10°C

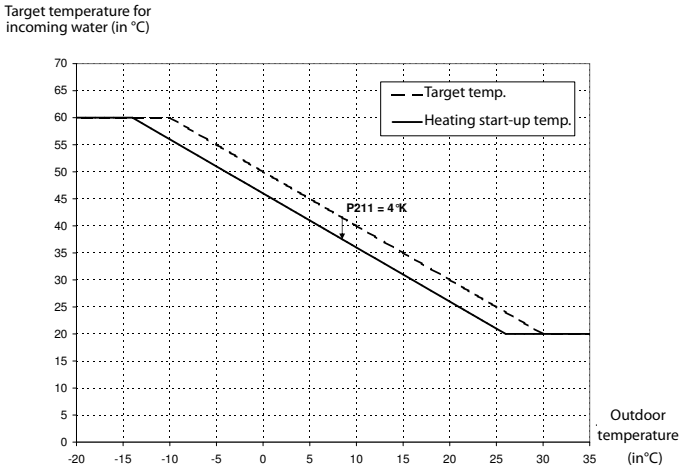


Standard underfloor heating settings:

- *PAR.207* = 45°C
- *PAR.208* = 20°C
- *PAR.209* = 20°C
- *PAR.210* = -10°C

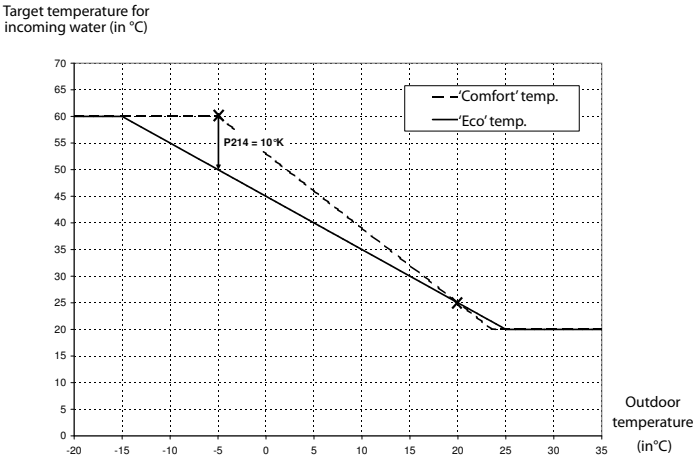
4.2.3.2 - Maintaining the target temperature (Comfort mode)

When position 2 of *PAR.205* is selected (*PAR.205* = 2), the difference between the target temperature and the lower temperature at which heating will automatically re-start can be adjusted using *PAR.211*.



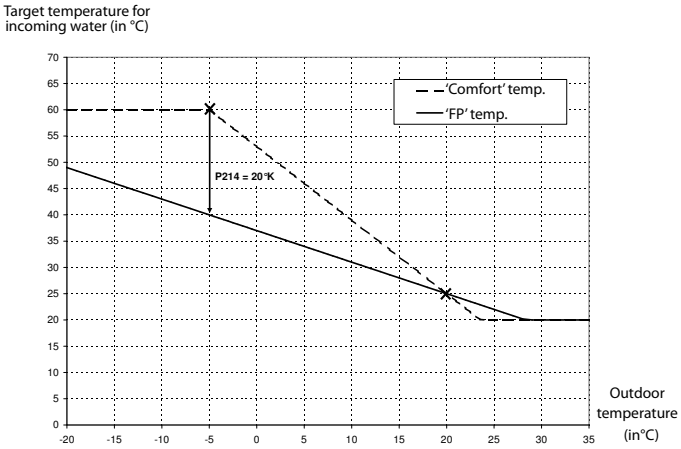
4.2.3.3 - Target temperature in 'Eco' mode

Parametre *PAR.213* is used to adjust the heating curve in Eco mode so that the temperature is lower than in Comfort mode.



4.2.3.4 - Target temperature in Frost Protection mode

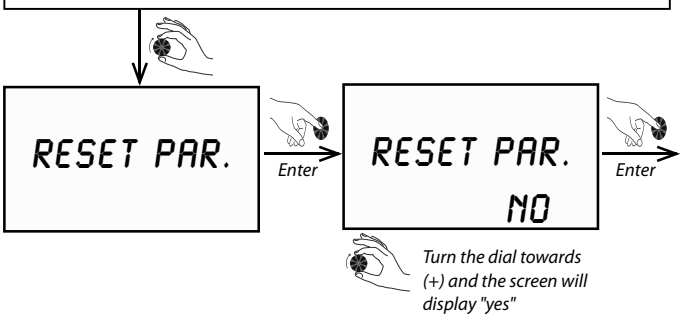
Parametre *PAR.214* is used to adjust the heating curve in Frost Protection (FP) mode so that the temperature is lower than in Comfort mode.



4.2.3.5 - Resetting installer parametres 205 to 230

Accessing the Installer Menu:

- Press Menu
- Turn the dial until the screen displays "INST. MENU"
- Press and Menu **at the same time**
- **Keep them held down simultaneously** for 3 sec.



Press Menu to return to "INST. MENU" screen.

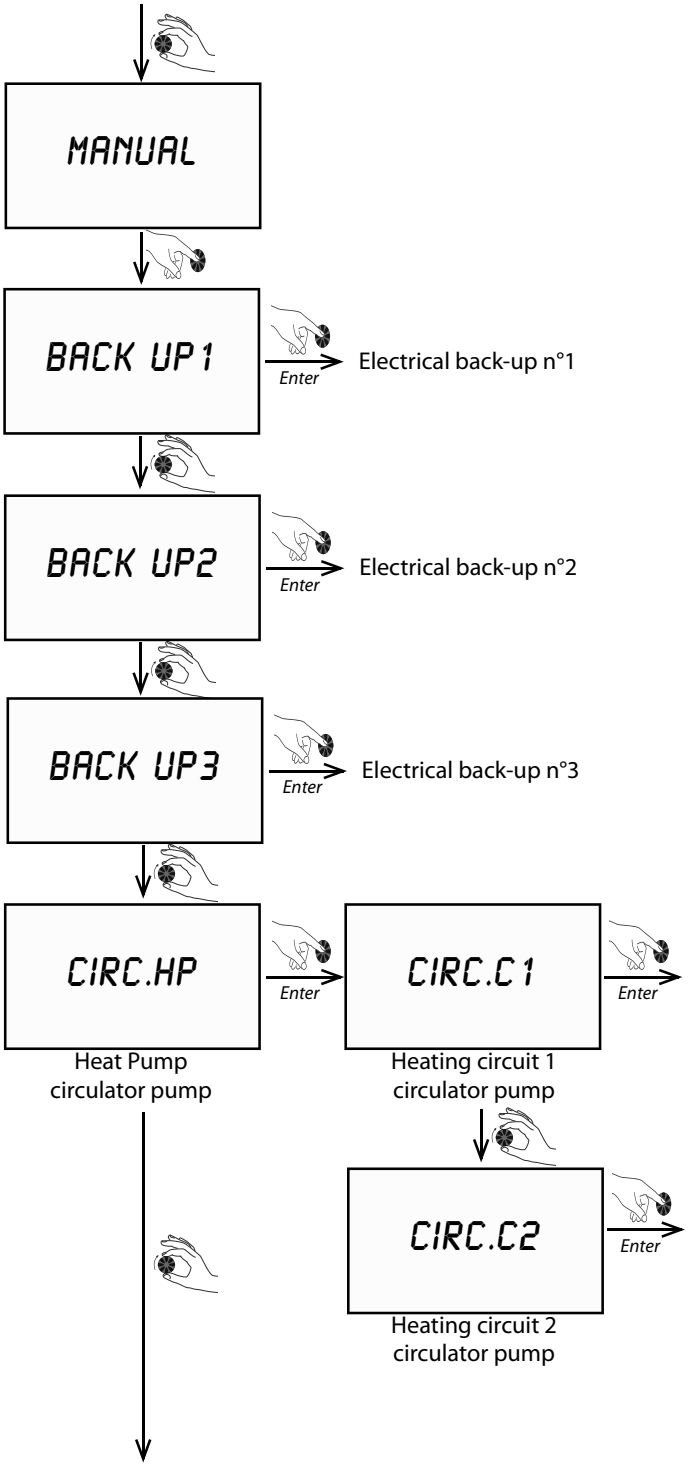
- Press "YES" to stop the installation.

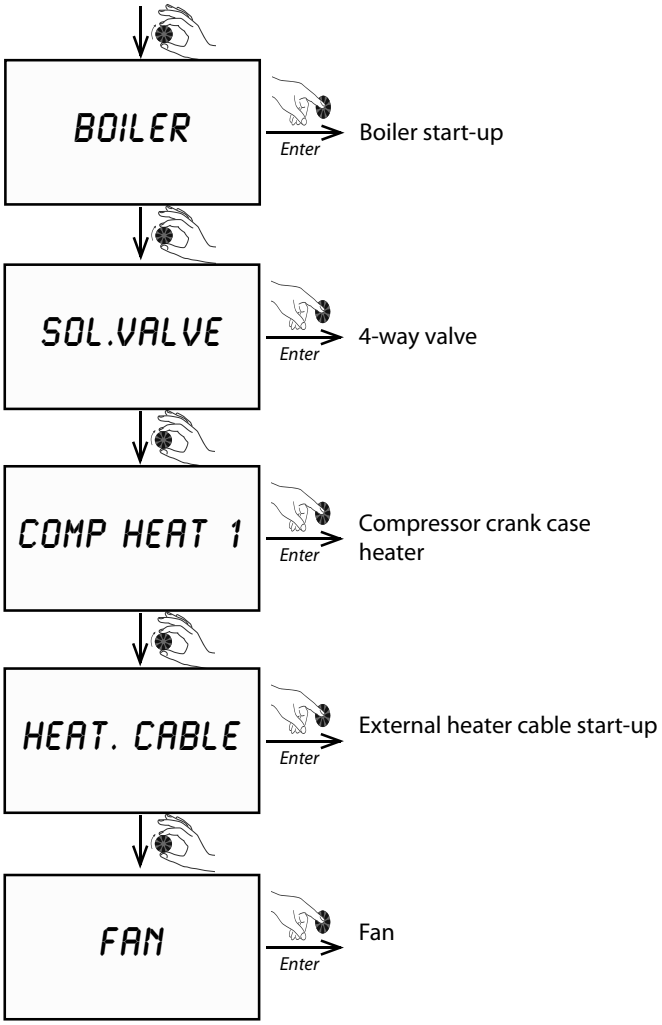
4.2.4 - FORCED COMMAND of the system

In order to diagnose errors occurring on Heat Pump components, certain elements can be manually engaged on a temporary basis.

Accessing the Installer Menu:

- Press Menu
- Turn the dial until the screen displays "INST. MENU"
- Press and Menu **at the same time**
- **Keep them held down simutaneously** for 3 sec.



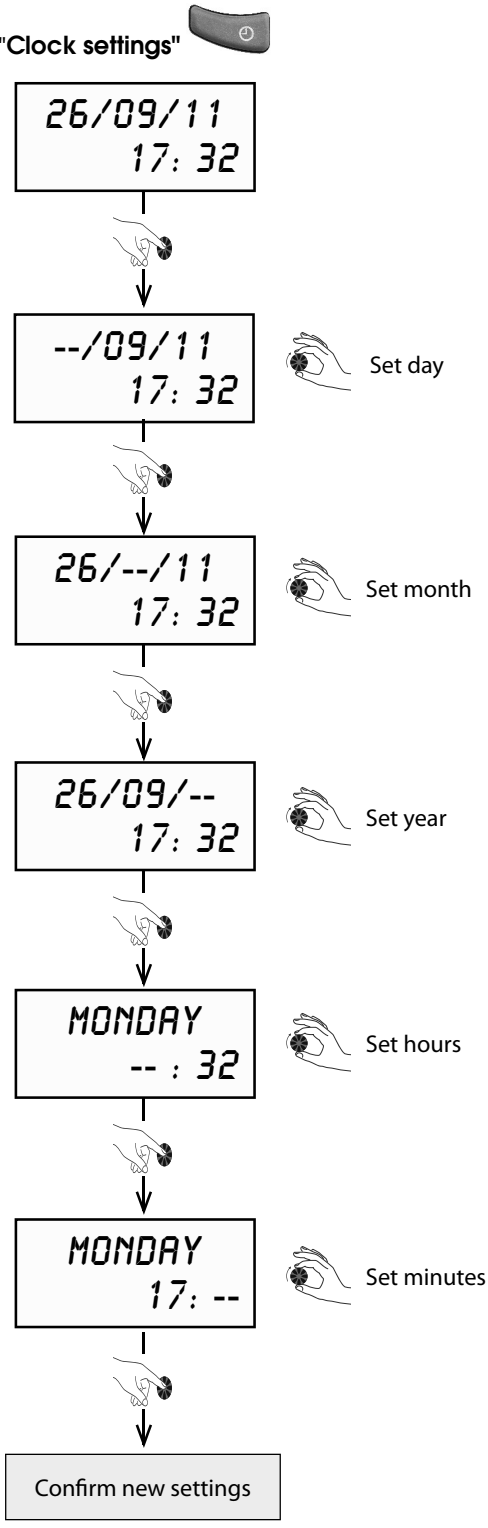


5 - USE

5.1 - Setting the date and time

Setting the date and time enables the system to automatically adapt to different heating modes. See § "Setting heating modes".

• Press "**Clock settings**"



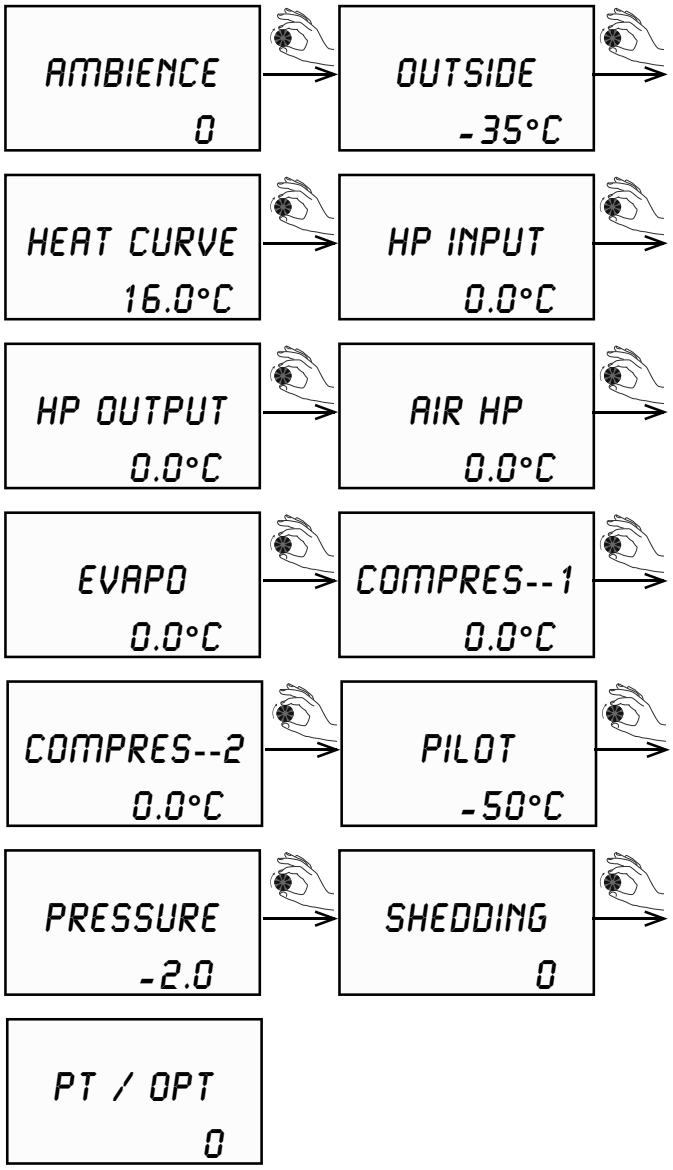
• Press Menu to return to main screen.

N.B: When the display is left inactive for a few minutes, it will revert to the normal display and backlighting will switch off

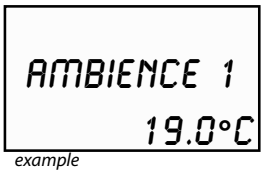
5.2 - Displaying the control values

To access the control data, such as pressure readings (in bar) and all the temperatures read by the sensors (in °C), press and hold down the dial for 3 seconds. While the dial is pressed down, "DISPLAY" will appear on the screen.

• Turn the dial to the right to scroll through the display options *(the values given below are examples)* :

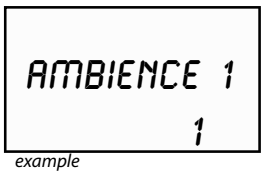


N.B: Temperature display
If 2 heating zones are set, the temperature is displayed for each zone



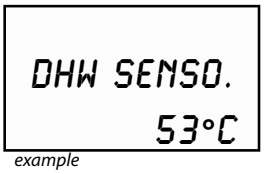
example

N.B: =If the heating zones are controlled by a thermostat rather than a room temperature sensor, the display will show: (heating request = 1 ; comfort mode= 0)



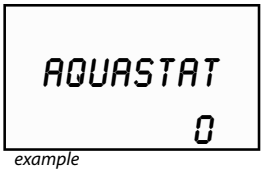
example

N.B: The screen only displays information for the DHW sensor if it has been set up. See § "Installer menu / Configuration"



example

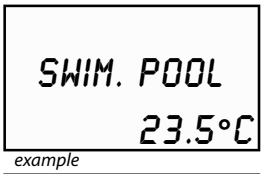
N.B: If the DHW zone is controlled by an aquastat (heating request = 1;
comfort mode = 0)



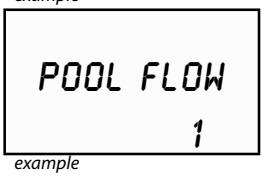
example

• Press on the dial or the Menu key to return to the main screen.

N.B: If the swimming pool kit is connected and activated, both the temperature and the flow rate (no flow rate detected = 0; flow rate detected = 1) will be automatically displayed.



example



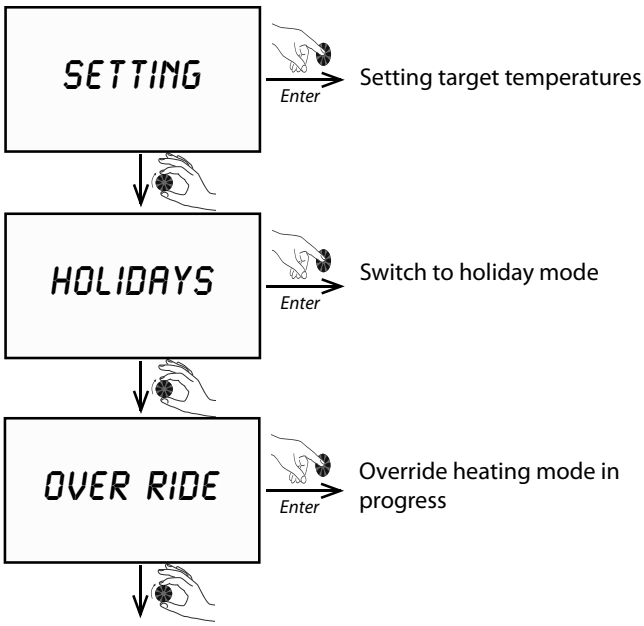
example

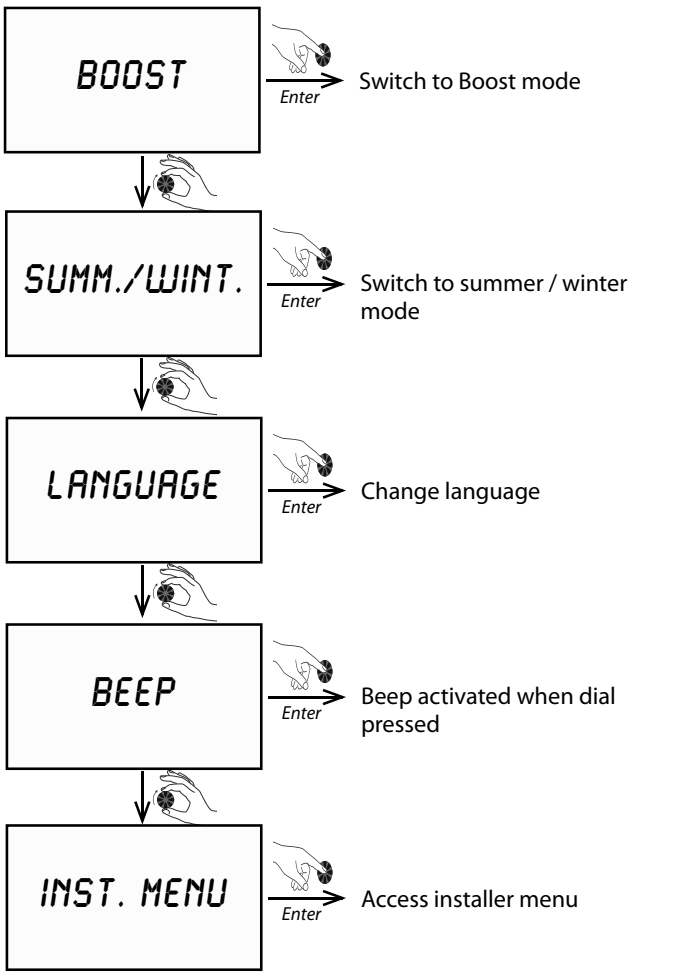
• Press on the dial or the Menu key to return to the main screen.

5.3 - User Menu

The User Menu allows you to access the settings for heating modes, operating and stopping the appliance, and also to view the temperatures in the installation.

• Press Menu to access the User Menu.

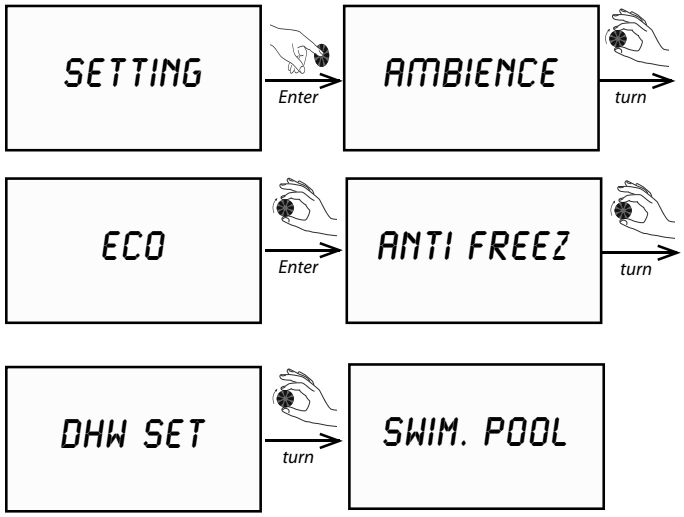




N.B: When the circuit(s) are controlled by a thermostat (ou aquastat for domestic hot water), the SETTING sub-menu will not appear.

5.3.1 - Setting target temperatures

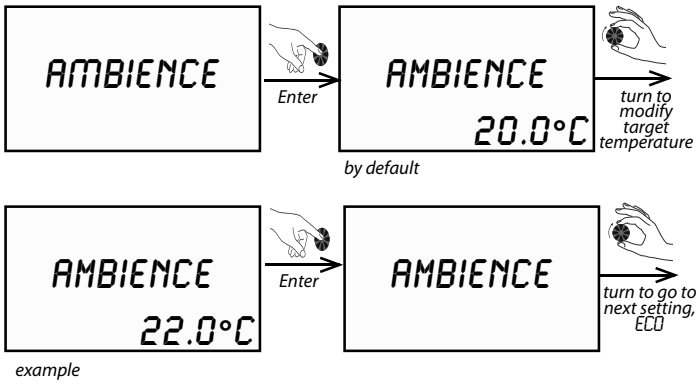
N.B: When 2 circuits are used for heating and each one has a room temperature sensor, the SETTING sub-menu offers the following options:
AMBIENCE 1 AMBIENCE 2 ECO 1 ECO 2 ANTI FREEZ 1 ANTI FREEZ 2



N.B: The temperature sensor is connected and the parametres set.

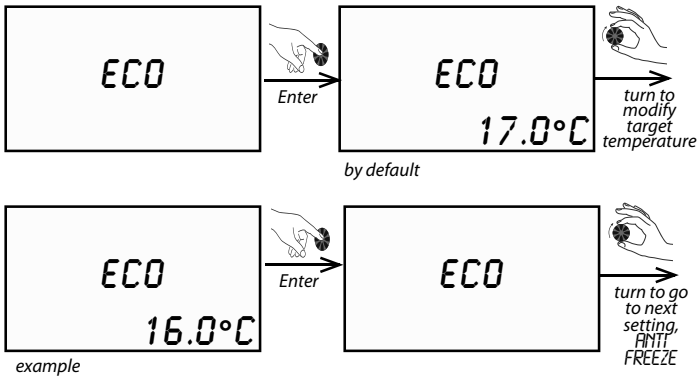
5.3.1.1 - Setting the AMBIENCE target temperature

N.B: Only when there is a room temperature sensor and display on circuit 1.



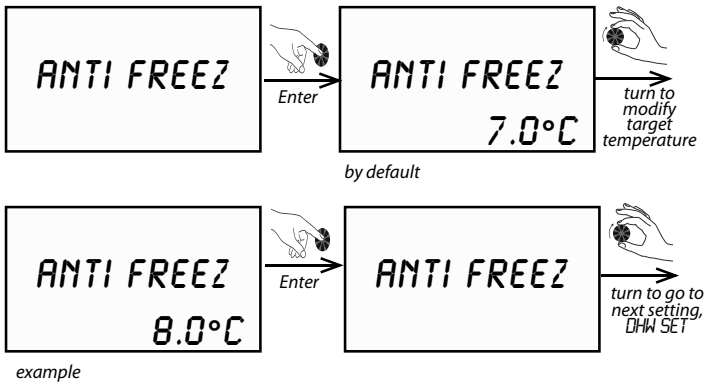
5.3.1.2 - Setting the ECO target temperature

N.B: Only when there is a room temperature sensor and a display



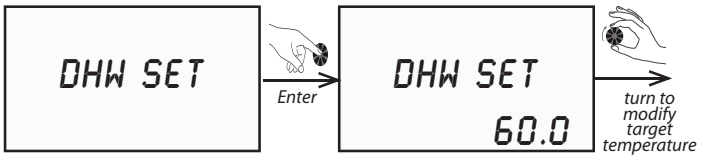
5.3.1.3 - Setting the ANTI FREEZ target temperature

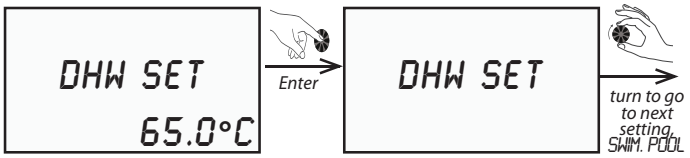
N.B: Only where there is a room temperature sensor and display



5.3.1.4 - Setting the domestic hot water temperature

N.B: Only for producing domestic hot water and when there is a domestic water temperature sensor.

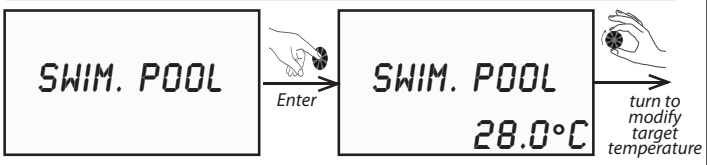


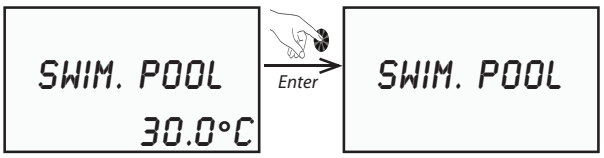


example

5.3.1.5 - Setting the SWIM. POOL temperature

N.B: Only where there is a swimming pool.



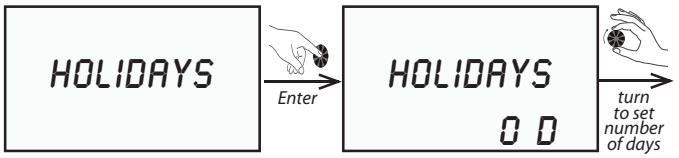


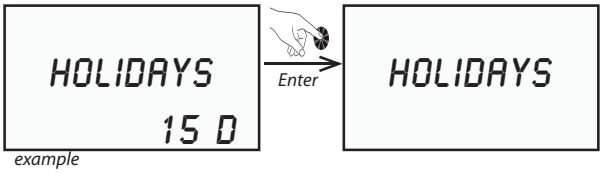
example

• Press Menu to return to main screen.

5.3.2 - Setting a VACATION period

The "VACATION" function enables you to put the appliance and the whole installation on standby whilst keeping the frost protection function active (water maintained at 11°C). This function can be programmed to run for between 1 and 99 days. It is effective as soon as the number of days has been validated.

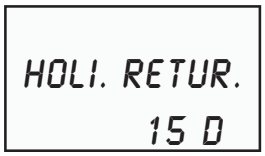




example

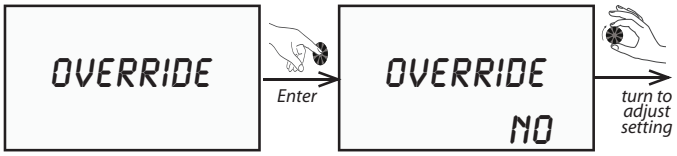
The number of days left on the display will decrease every day. "VACATION" mode will end automatically at the end of the programmed time period. The time period can be modified or stopped (through the User Menu) while holiday mode is in progress.

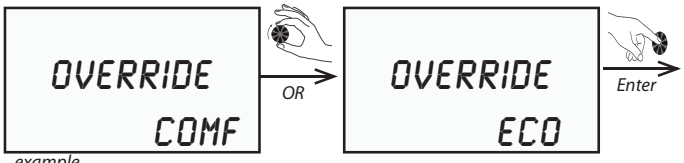
• Press Menu to return to the main screen, which will be showing:



5.3.3 - Temporary OVERRIDE of the programmed heating mode

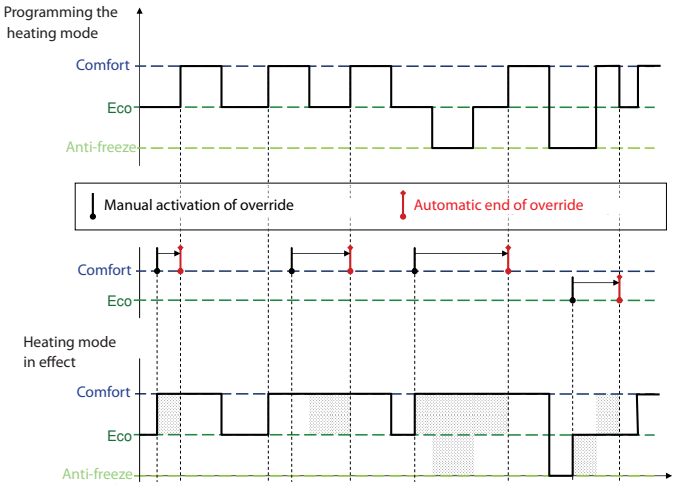
The programmed heating mode can be overridden, for example if you are home in a time period where the residence is usually empty and you require heating.





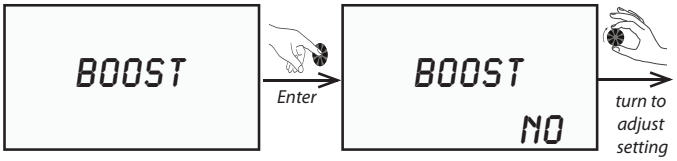
example

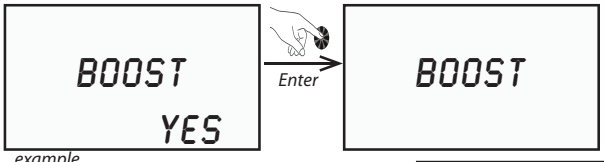
N.B:
- If the heating mode is overridden, it will apply to all circuits which are running
- The override will end when the next programmed cycle in the same heating mode starts up



5.3.4 - BOOST function

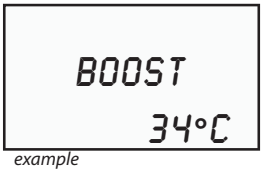
The BOOST function temporarily forces the operation of the Heat Pump and the electrical back-up or boiler back-up (if the latter is authorised) to speed up the rise in temperature during a heating cycle. It is automatically deactivated as soon as the heating curve target temperature is reached.





example

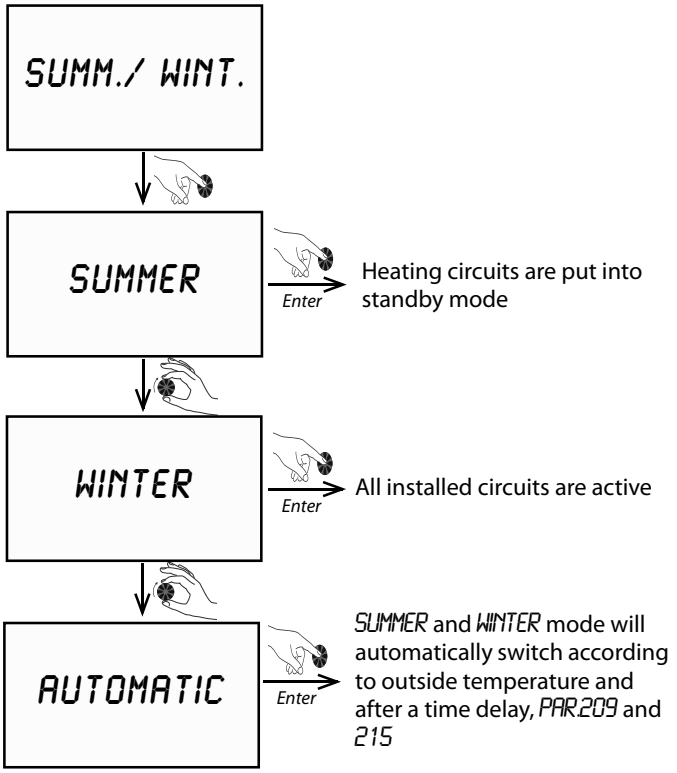
• Press Menu to return to the main screen, which will display



example

5.3.5 - Selecting *SUMMER / WINTER* mode

The *SUMMER / WINTER* mode enables you to switch modes manually:



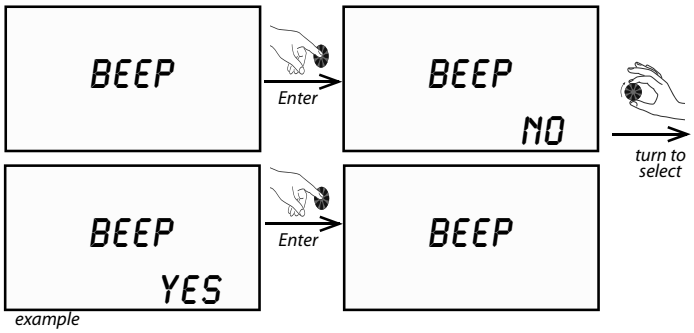
• Press Menu to return to main screen.

5.3.6 - Selecting the *LANGUAGE*

See § "Appliance configuration / Language".

5.3.7 - *BEEP* alert

• This menu is for choosing a sound alert for each press of the dial.



example

5.3.8 - Accessing the *INST. MENU*

• Press ⏲ then Menu and keep them held down simultaneously for 3 seconds to access the installer menu.

N.B: See §"Appliance Configuration / Installer Menu"

6 - MAINTENANCE AND REPAIRS

•In order to ensure the best performances from your HRC[70] Heat Pump it should be maintained.

• An annual maintenance check is recommended on the hydraulic heating circuit, to be carried out by a qualified professional.

•Any work undertaken on the refrigerant circuit MUST be carried out by a qualified professional with a category 1 certificate of aptitude

•Switch the appliance off before opening it

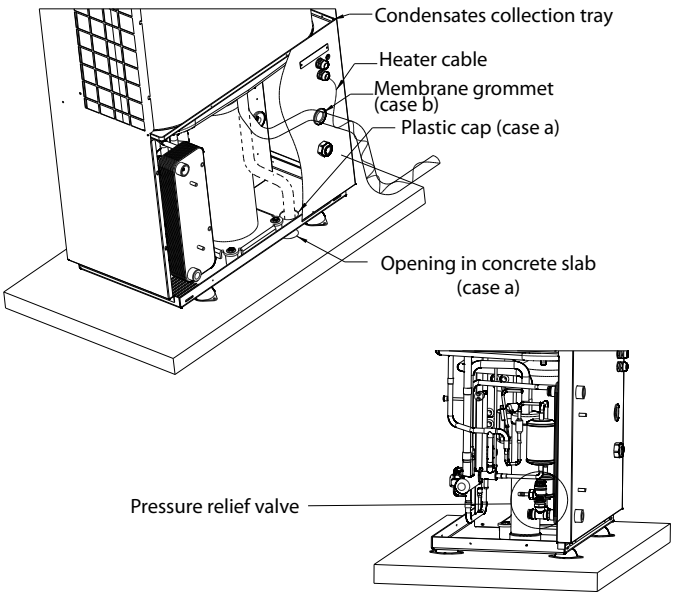
6.1 - General information

After the appliance has been running for a few days, it is advisable to check that the water circuit is watertight and that condensates are draining correctly.

N.B: In case of maintenance work or decommissioning an appliance, please respect all environmental protection instructions concerning recovery, recycling and disposal of consumables and components.

6.2 - Hydraulic circuit maintenance

6.2.1 - Water circuit condensate drainage



Checking the water circuit consists of removing sludge, checking the filters and stopping up any leaks that may have appeared. Clean or replace clogged or dirty filters.

Check from time to time that the condensates are draining properly:

- Remove the back panel
- Check the drainage hole for blockages
- Clean the condensates collection trough as deposits from air intake may accumulate here.
- Clean the flexible drainage hose

  Case a : drainage from underneath

  Cas b : drainage from the back

Check that the pressure relief valve is properly sealed. It should not leak if the water pressure is under 2.5 bar.

6.2.2 - HRC[70] Pilot

We would advise you to have an annual maintenance check carried out on the HRC[70] Pilot, which should be done by a qualified professional.

- When operating with electrical back-up, after the appliance has been running for a few days and then at least once a year, all the electrical power connections (switches and heating elements) should be checked to ensure that they are properly tightened.
- Clean the valve filter

6.2.3 - Heating circuit maintenance

- Release any trapped air in the HRC[70] Pilot.
- Check that the whole circuit is watertight, as well as the pressure relief valves.
- Check the hydraulic pressure. This should not be any higher than the water pressure in the expansion vessel. It should never be higher than 2.5 bar when hot. If the water pressure is low, check that all of the circuitry is watertight before adding more water.
- Check the composition and condition of the water in the heating circuit.
- Check the hydrualic circuit, cleaning the filter and checking the water quality (pH level, anti-freeze, etc.).

6.3 - Heat Pump maintenance

The HRC[70] Heat Pump contains type R290 refrigerant. This means that it is not subject to the regulations on the greenhouse effect an does not require an annual maintenance check by a qualified professional.

However, we would recommend that from time to time (at least once a year) the evaporator fins are cleaned if they have collected leaves or dust on them. This should be done by using a vacuum cleaner or spraying them with water.

Never clean the finned heat exchanger with high-pressure cleaning equipment: this could damage the fins.

In case of repair work on the HRC[70] Heat Pump, the refrigerant circuit or the electrical box, it is important to follow the instructions below:

Any work on the refrigerant circuit must be undertaken by a qualified professional with a category 1 certificate of aptitude. It is forbidden to release gas from the refrigerant into the atmosphere and it is obligatory to recover the refrigerant before doing any work on the circuit.

The HRC[70] Heat Pump uses a type R290 refrigerant. Given the flammable nature of this fluid, any work on the refrigerant circuit must be carried out using suitable equipment which complies with the current rules and regulations. When handling the fluid (recovery, draining or refilling), the machine must be disconnected from the power supply. Do not smoke or light flames (lighter, blow-torch) when handling the fluid. If it is necessary to work on the refrigerant circuit using a flame (a blow-torch) the refrigerant circuit must be drained and emptied beforehand and a nitrogen vacuum must be created.

6.4 - Electrical components maintenance

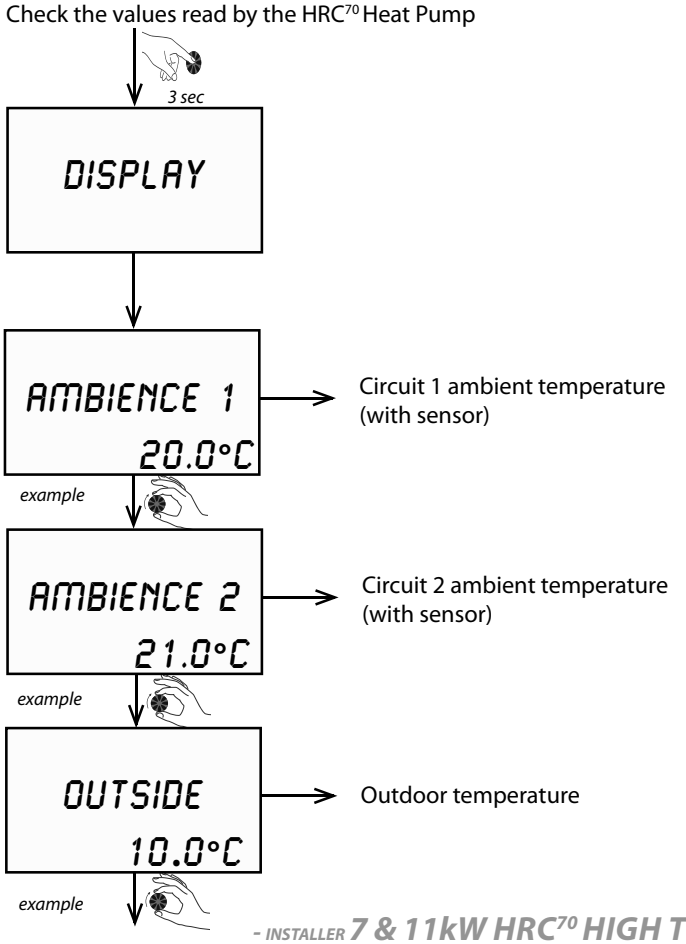
• Always disconnect the appliance from the power supply before accessing electrical terminals.
• Do not put water on any electrical parts.

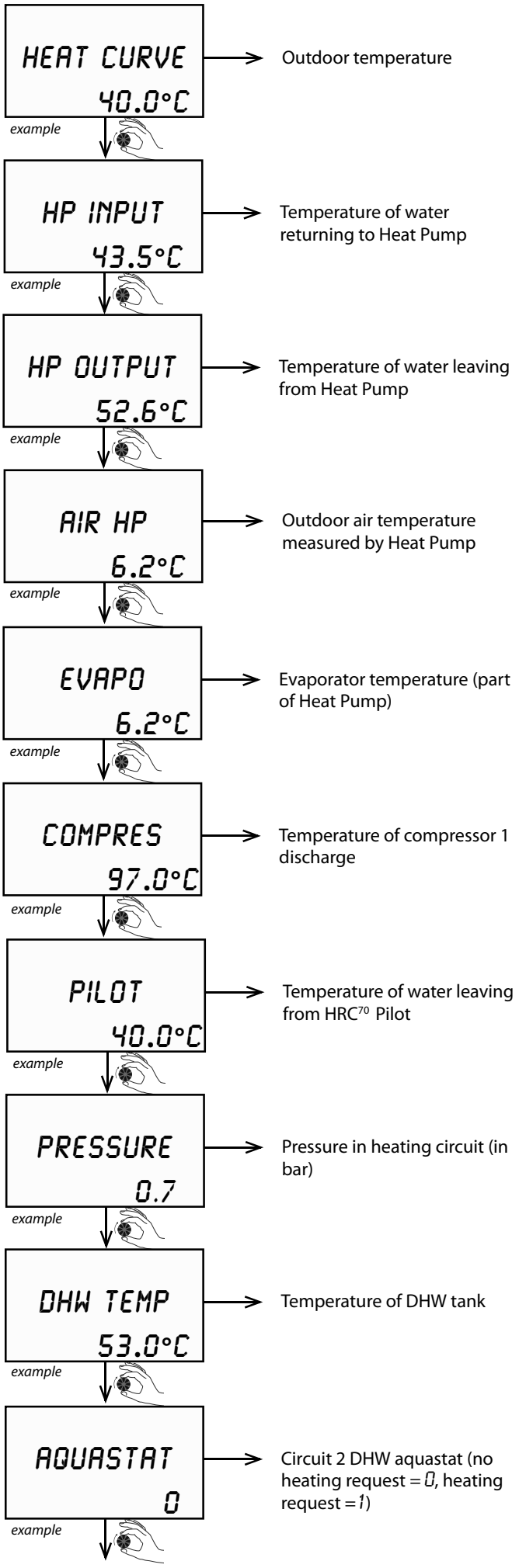
- Check on both the HRC[70] Heat Pump and HRC[70] Pilot that the electrical power supply cables are connected properly on the terminals.
- Check for oxidation or overheated areas on the electrical connections.
- Check that the cables are well-tightened on the compressor starters.
- Clean any dust from the electrical box and check the connections.
- Check that the ground cable is properly connected.

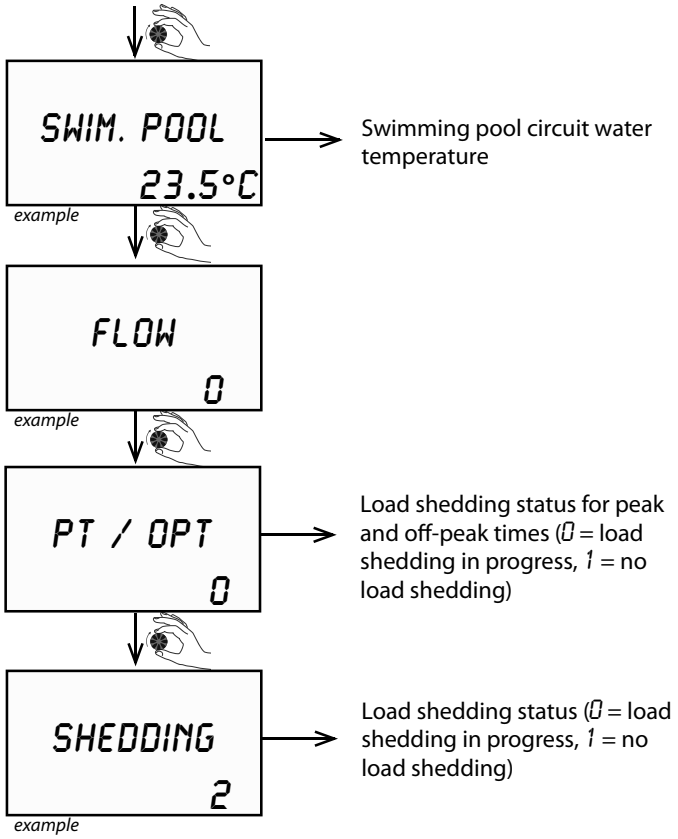
6.5 - Checking operating temperatures

6.5.1 - Accessing control readings and internal / external controls

Check the values read by the HRC[70] Heat Pump



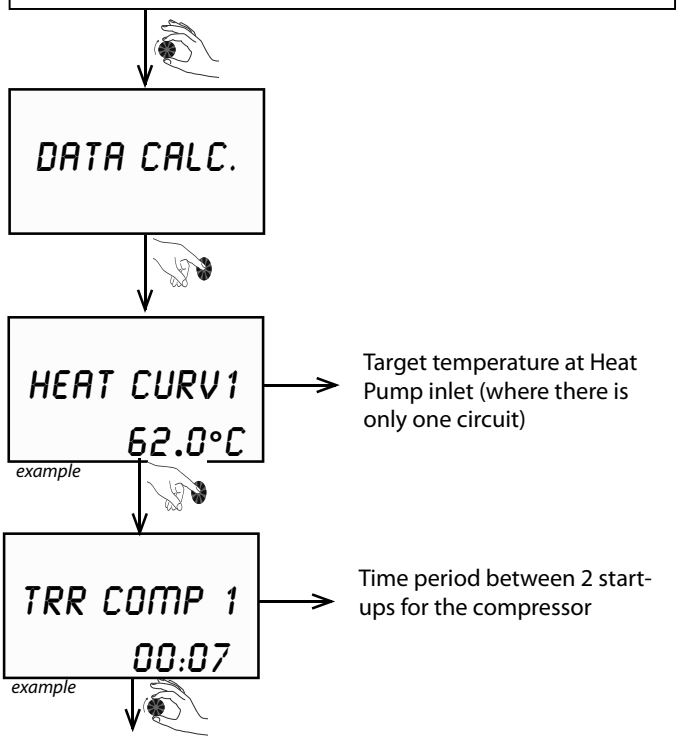


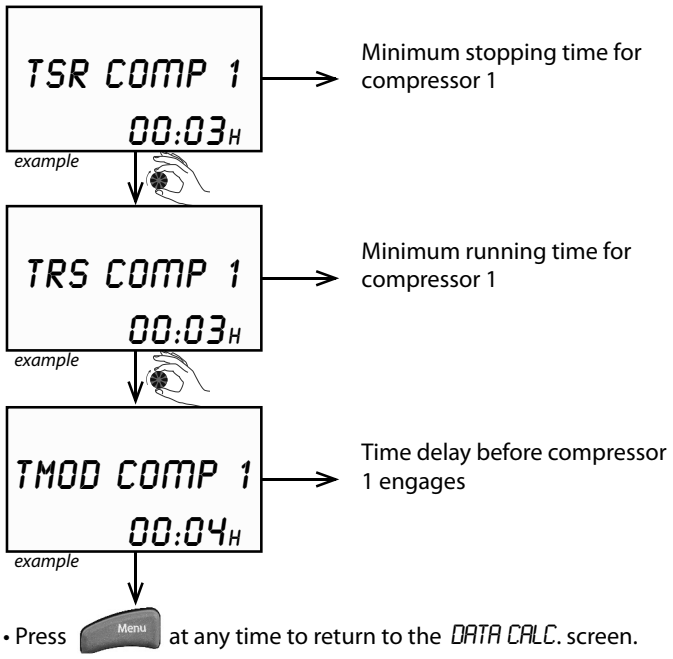


6.5.2 - Accessing calculated data

Accessing the Installer Menu:

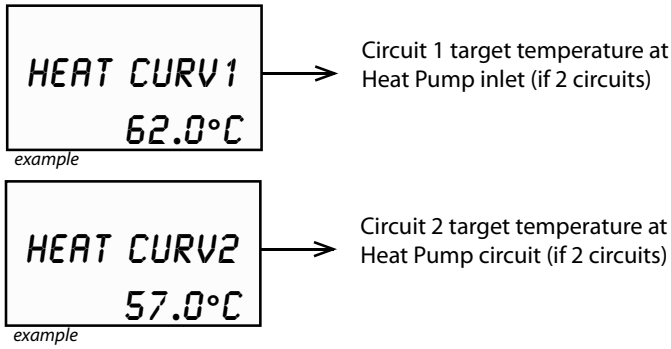
- Press Menu
- Turn the dial until the screen displays "INST. MENU"
- Press and Menu **at the same time**
- **Keep them held down simultaneously** for 3 sec.





- Press Menu at any time to return to the DATA CALC. screen.

N.B: If 2 circuits are configured, the heating curve is displayed for each circuit



6.5.3 - Accessing the meters

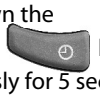
Accessing the Installer Menu:

- Press 

- Turn the dial until the screen displays "INST. MENU"
- Press  and 

at the same time
- **Keep them held down simutaneously** for 3 sec.

COUNTERS

Parametres 1 to 13 can be reset by pressing down the  and  keys simultaneously for 5 seconds:

Meter	Function	Unit
1	Zone 1 heating request	hour
2	Zone 2heating request	hour
3	Heating request for zone 1 as pool	hour
4	Heat pump operation (at least 1 power stage functioning)	hour
7	Compressor operation	hour
9	Boiler back-up request	hour
10	Electrical back-up operation stage 1	hour
11	Electrical back-up operation stage 2	hour
12	Electrical back-up operation stage 3	hour
13	De-icing cycles	number

6.6 - Problems which are not indicated by alarm or error code

Error not displayed on screen	Possible causes	Solutions
The Heat Pump will not start up	•The installation is in summer mode •The room thermostat is not sending a heating request	•Check values of parametres *PAR209* and *215* and switch to winter mode then auto •Check the room thermostat is properly connected to the Pilot and the power supply •Check that the room thermostat is configured correctly
	• No voltage at the terminals of the appliance	•Check the power supply to the Heat Pump (check that there is voltage and the values: compressor start-up is prevented if if voltage is too high or too low)
	•The circuit breaker cuts the power off at each start-up	•The circuit breaker nominal current is insufficient •Check the ground insulation on the compressors, the fan and other electrical components (e.g. the circulator pump) •The circuit breaker used on the Heat Pump will not allow motor start-up: install a D-curve circuit breaker •One of the Heat Pump components is defective
The Heat Pump starts up but does not produce enough heat	• The Heat Pump is too small to meet heating requirements	•Check that all start-up stages of the heat Pump engage properly •Check PT/OP and LS wiring and *PAR217* and *218* •Check that the Heat Pump back-up engages properly: it must be correctly configured. •No check valve on boiler •Check that electrical back-up is enabled •Check the value of the outdoor temperature sensor reading
	•Compressor not working	•Check condition of soft starters •Check three phase wiring
	•The compressor has been stopped by its internal safety device	•Check that operating conditions are within the authorised range

6.7 - Compressor start-up faults

GREEN light	RED light	Possible causes	Solutions
On	-	Running normally	-
Flashing	-	• Insufficient voltage	• Check the power supply voltage on the heat pump: it must be over 200 volts (minimum)
	2 flashes	• Abnormal drop in voltage during start-up	• Insufficient power grid voltage • Check the compliance of the power supply from the general meter to the heat pump • Contact your electricity provider to ensure that power grid sizing is adapted
	3 flashes	• Over-current at start-up	• Contact an AUER-approved technical centre
	4 flashes	• Internal starter defect	• Replace starter
	5 flashes	• Start-up process incomplete	• Check the power supply to the heat pump before and during start-up. It must not drop below 200 volts

6.8 - Alerts and errors which are signalled by the appliance

Faults are signalled by the back-lighting flashing and a sound signal.
Press the dial to stop the sound signal. The alarm will stop but the error will still be displayed.
If it is an automatic reset fault, the signal will disappear once the problem has been rectified.

If it is a manual reset fault, rectify the problem and then press on the dial to make the signal disappear. Manual reset faults are indicated with the following symbol:

N.B: The swimming pool sensor error is only signalled when the ohmic value is too low. The absence of a swimming pool sensor does not generate a fault because it either means that there is no swimming pool or that the swimming pool function has been deactivated.

To view the list of errors and find out how to rectify them, please refer to: "Operating errors" and "Error message codes".

6.9 - Error messages

6.9.1 - Errors and solutions

Display	Nature of error	Solutions
AIR HP ERR	**Heat pump air temperature sensor defect**	• check that the HP air temperature sensor is correctly connected to the HP electronic circuit board • check the coupler plug on the HP air temperature sensor • check the ohmic value of the sensor • replace the HP air temperature sensor
EVAPO ERR	**De-icing sensor defect**	• check that the de-icing sensor is correctly connected to the HP electronic circuit board • check the de-icing sensor cable • check the ohmic value of the sensor • replace the de-icing sensor
AMBIENCE ERR	**Room temperature sensor defect**	• check that the room temperature sensor is correctly connected to the HP electronic circuit board • check the room temperature sensor cable • check the ohmic value of the sensor • replace the room temperature sensor
AMBIENCE 1 ERR	**Room temperature sensor 1 defect**	• check that room temperature sensor 1 is correctly connected to the HRC Pilot electronic circuit board • check the room temperature sensor 1 cable • check the ohmic value of the sensor • replace room temperature sensor 1
AMBIENCE 2 ERR	**Room temperature sensor 2 defect**	• check that room temperature sensor 1 is correctly connected to the HRC Pilot electronic circuit board • check the room temperature sensor 2 cable • check the ohmic value of the sensor • replace room temperature sensor 2
BUS ERR	**Bus wire link defect**	• check that the HP is connected to the power supply • check that the bus wire is correctly connected to the HRC Pilot electronic circuit board (2 wires) without the ground. • check that the bus wire is correctly connected to the HP electronic circuit board (2 wires) without the ground. • three phased HP connected with 2 phases inversed • check the phase monitor (orange and green lights should be on) • check the condition of the 4A fuse on the outer unit
COMPRES ERR	**Compressor sensor defect**	• check that compressor sensor is correctly connected to the HP electronic circuit board • check the compressor cable • check the ohmic value of the sensor • replace compressor sensor
FLOW ERR	**Insufficient water flow rate or Absence of flow rate**	• check that the circulator pump is working properly (manual forced command) • check that there is voltage at the circulator pump terminal (qualified professionals only) • clean the filter valve • clean the circulator pump if necessary • check that the check valve is fitted the right way up
LOW FLOW ERR	**Low water flow rate**	• switch the circulator pump to speed 3 • clean the filter valve • check that the length and diameter of the piping is suitable • check that the capacitor input is not clogged
FLOW DETEC ERR	**Flow rate monitor malfunction**	• check the wiring of the flow rate monitor on the HRC Pilot electronic circuit board • check that the flow rate monitor vane is not stuck • check that the flow rate monitor has not been shunted
FREQ. DEFRO. ERR	**De-icing too often**	• check that the fan is working properly • check the condition of the heat exchanger • check that the heat pump air sensor and evaporator sensor are working properly • Evaporation pressure too low: Intervention needed on refrigerant circuit
LONG DEFRO. ERR	**De-icing phase too long**	• check that the fan is working properly • check the condition of the heat exchanger • check that the heat pump air sensor and evaporator sensor are working properly • check that the 4-way valve is working properly by a qualified professional
OUTSIDE ERR	**Outdoor temperature sensor defect**	• check that the outdoor temperature sensor 1 is correctly connected to the HRC Pilot electronic circuit board • check the outdoor temperature sensor cable • check the ohmic value of the sensor • replace the outdoor temperature sensor
CLOCK ERR	**Clock / timer defect**	• 1 - Press the clock key and set the date and the time • 2 -If the fault persists, replace HRC Pilot electronic circuit board
MEMORY ERR	**Memory card defect**	• replace HRC Pilot electronic circuit board

MODULE 96°C	**Outgoing heating water overheating defect > 80°C Temperature read is displayed**	• check the electrical back-up power relay system is functioning properly • check that the flow rate is sufficient from the back-up boiler • check the command status of the back-up boiler • check that the heating circulator pump is working properly
MODULE ERR	**HRC Pilot outgoing water sensor defect**	• check that the Pilot outgoing water sensor is correctly connected to the HRC Pilot electronic circuit board • check the HRC Pilot outgoing water sensor cable • check the ohmic value of the HRC Pilot outgoing water sensor • replace the HRC Pilot outgoing water sensor
HP OUTPUT 76.2°C	**HP outgoing water overheating defect > 75°C Temperature read is displayed**	• check condition of filter valve: clean filter • check that HP flow rate is sufficient • check that heating circulator pump is operating correctly
HP OUTPUT ERR	**HP outgoing water sensor defect**	• check that the HP outgoing water sensor is correctly connected to the heat pump electronic circuit board • check the HP outgoing water sensor cable • check the ohmic value of the heat pump outgoing water sensor • replace the heat pump outgoing water sensor
HP INPUT ERR	**HP incoming water sensor defect**	• check that the HP incoming water sensor is correctly connected to the heat pump electronic circuit board • check the HP incoming water sensor cable • check the ohmic value of the heat pump incoming water sensor • replace the heat pump incoming water sensor
EVAP. SENSO. ERR	**Evaporator sensor malfunctioning**	• check the heat pump air temperature sensor and evaporator sensor are operating correctly • check that the 4way valve is operating correctly • check that the compressor starter is not faulty • check that the evaporator sensor is not covered in ice
PROB COMP	**Compressor power supply fault**	• check that power grid is adapted to the heat pump's electricity requirements • check that the power supply voltage does not drop below 200W during start-ups • check for errors on compressor starter (see § "Compressor start-up errors") • check power supply voltage • check power connections from electrical box to compressor terminals • check compressor discharge sensor
STARTER ERR	**Smart starter error**	• check that power grid is adapted to the heat pump's electricity requirements • check that the power supply voltage does not drop below 200W during start-ups • check for errors on compressor starter (see § "Compressor start-up errors") • check power supply voltage • check power connections from electrical box to compressor terminals
SWIM POOL ERR	**Swimming pool sensor defect**	• check that the swimming pool sensor is correctly connected to the HRC Pilot electronic circuit board • check the swimming pool sensor cable • check the ohmic value of the swimming pool sensor • replace swimming pool sensor
OUT SENSO. ERR	**Outdoor temperature reading defective** **Outdoor sensor and HP air temperature sensor show very different values**	• check position of outdoor sensor • check values on both sensors (outdoor and HP air temp.) → if one of the sensors is giving an erroneous reading, check condition of sensor • check condition of cable and connections for each sensor • replace defective sensor
PRESSURE 0.2	**Insufficient water pressure**	• the water pressure in the heating circuit must be over 0.5 bars when cold. • check that the heating circuit is watertight and repair any leaks. • purge the air from the uppermost parts of the installation and the HRC Pilot. • check that the heat pump pressure relief valve is watertight. • check that the HRC Pilot pressure relief valve is watertight. • check that the expansion vessel is big enough for the volume of the installation
CUTO. LPRE	**HP low pressure**	• check that the fan is operating correctly (capacitor and electrical connections). • check the condition of the finned heat exchanger surface and remove anything which could be hampering the airflow through the rear grille (eg. leaves) • if completely iced over, switch off the heat pump and let the ice melt. Spray with hot water if necessary. • refrigerant leak, de-icing valve blocked or pressure reducing valve defect by a qualified professional
CUTO. HPRE 1	**HP high pressure error compressor 1**	• check condition of filter valve • check that heating network is properly purged • check that HP circulator pump is running properly • clean plated heat exchanger inlet • discharge valve or 4-way valve malfunction
CUTO. HPRE 2	**HP high pressure error compressor 2**	• check condition of filter valve • check that heating network is properly purged • check that HP circulator pump is running properly • clean plated heat exchanger inlet • discharge valve or 4-way valve malfunction
DHW TEMP ERR	**Swimming pool sensor defect**	• check that the DHW sensor is correctly connected to the HRC Pilot electronic circuit board • check the DHW sensor cable • check the ohmic value of th DHW sensor • replace DHW sensor

6.9.2 - Operating in case of error

When an error occurs the backlighting flashes.
Any defect which stops the appliance from operating is indicated by an alarm .
When the error needs to be manually rectified the symbol is displayed.

Display	Name	Source of defect	Consequence(s)	Repair & removing error message
AIR HP ERR	Air temperature sensor defect	HP air temp. sensor data is illogical	Target temperature = (max.water temp.+ min. water temp) / 2	Automatic after repair
AMBIENCE 1 ERR	Amb1 sensor defect	***Attention : the room temperature sensor with display should be entered as INT SENSOR for circuit 1 only*** • Room temperature control for circuit 1 is programmed in just as SENSOR and the data received is illogical or • It is not, so the swimming pool sensor is recognised and the data received is illogical	Heating request	Automatic after repair
AMBIENCE 2 ERR	Amb 2 sensor defect	***Attention : the room temperature sensor with display should be entered as INT SENSOR for circuit 1 only*** Circuit 2 is programmed as a radiator or underfloor heating circuit with room temperature sensor and the data received is illogical	Heating request	Automatic after repair
BUS ERR	BUS	2-core sheathed cable or BUS connector defect or fuse not working or electronics board(s) defect	**HP stopped, back-up only authorised**	BUS link or replacement fuse or replacement of electronics board / **Manual**
COMPRES- ERR	Compressor sensor defect	Compressor sensor data is illogical	**Compressor stops** and also the fan	Automatic after repair
	Compressor temperature defect	Compressor overheating (compressor temperature>115°C) more than 24 times in 24 hours	**Compressor stops**	**Manual**
FLOW ERR	Zero flow rate defect	"Zero flow rate" repeated after 8 attempts	HP stopped	**Manual**
LOW FLOW	Insufficient flow rate error	Difference in temperature too large between heat pump inlet and outlet	Normal operation	**Manual**
FLOW DETEC. ERR	Flow rate detector defect	Flow rate inlet = 1 and Heat pump CP outlet = 0	**No HP start-up = heat pump off and back-up on (if authorised)**	Automatic as soon as flow rate = 0 and HPCP = 0
	Zero flow rate error	Flow rate inlet = 0 HP circulator pump = 1	**No HP start-up**	Automatic with Hp circulator pump attempts = 1 every 2 minutes
FREQ. DEFRO ERR	De-icing too often	De-ices more than three times per hour	**HP stopped**, only electrical back-up runs (if authorised)	**Manual**
LONG DEFRO ERR	Defect: de-icing too long	"De-icing too long error" appears more than 8 times in 24 hours	**Heat pump stopped, electrical back-up only authorised**	**Manual**
	Error: de-icing too long	After 20 min. Tdégiv < 15°C	Operates normally	Automatic
EVAPO ERR	De-icing sensor error	De-icing sensor data is illogical	**Heat pump stopped, electrical back-up only authorised**	Automatic after repair
OUTSIDE ERR	Outdoor sensor defect	Outdoor sensor data is illogical	HP air temperature replaces outside temperature if outdoor sensor is unplugged	AutomaticA2:E30 after repair

CLOCK ERR	Clock / timer	1 - clock not set 2 - PCB fault	Permanently operates in **eco** mode (heating modes ignored)	Replace electronics board **Manual**
MEMORY ERR	Memory	Memory defect	**HP stopped** **and backup stopped**	Replace electronics board **Manual**
MODULE 96°C	Overheating at HRC Pilot outlet	"Module outlet overheating error" repeated more than 12 times in 24h	**Compressor** **and back-up stopped**	**Manual**
	Overheating at HRC Pilot outlet	Outgoing water temp. > 80°C	Compressor and back-up stop briefly	Automatic as soon as outgoing water temp < 80 – 10°C
HP OUTPUT ERR	HP outgoing water temp sensor defect	HP outgoing water temp. sensor data is illogical	**HP stopped, back-up** **only authorised**	Automatic after repair
HP OUTPUT 76.2°C	Overheating defect at HP outlet	"HP outlet overheating error" repeated more than 10 times in 24h	**Compressor** **and back-up stopped**	**Manual**
	Overheating error at HP water outlet	HP outgoing water temp > 75°C	Compressor and back-up stop briefly	Automatic as soon as outgoing water temp. < 75 – 10°C
HP INPUT ERR	HP incoming water temp. sensor	HP incoming water temp. sensor data is illogical	**HP stopped, back-up** **only authorised**	Automatic after repair
PROB COMP	Compressor power supply defect	Problems at start-up, power grid not suitable, insufficient voltage, progressive start-up defective	**Compressor stopped.** **Heat pump attempts compressor start-up every hour.**	**Manual** **after normal operation has resumed**
STARTER ERR	Smart starter error	Problems at start-up, power grid not suitable, insufficient voltage, progressive start-up defective	**Compressor stopped.** **Heat pump attempts compressor start-up every 20 minutes**	**Manual**
EVAP. SENSO	Evaporator sensor data illogical	The values read by the air and evaporator sensors are illogical while a compressor is running.	**Defect displayed, heat pump** **still operational**	**Manual** **after normal operation has resumed**
PILOT ERR	Outgoing water temp. sensor defect	Outgoing water temp. sensor data is illogical	**Backup stopped**	Automatic after repair
SWIM. POOL ERR	Swimming pool sensor defect	Ohmic value of swimming pool sensor is too low	**No heating request** **for swimming pool**	Automatic after repair
OUT SENSO ERR	Outdoor sensor positioning error	Air temp. – Out. > 15K or Out – Air temp. > 15K	Temperature for heating curve = (Air temp. + Out.)/2	Automatic
PRESSURE ERR	Pressure sensor defect	Pressure detector disconnected or defective	**HP and back-up stopped**	Automatic after repair
PRESSURE 0.2	Insufficient water pressure	Pressure measured by pressure sensor < 0.3 bar	**Both compressors stopped** **and back-up** **and** circulator pumps after 2 min.	Automatic as soon as pressure > 0.5 bar
CUTO. HPRE	HP cutout	HP pressure switch on	Compressor stopped	**Manual**
CUTO. LPRE	Low pressure error	LP pressure switch on	Compressor stopped	**Automatic when** **low pressure switch off** **Manual after 3 errors** **in the same hour**
DHW TEMP. ERR	DHW temp. sensor error (Amb2 input on electronics board)	Circuit 2 is programmed as domestic water circuit with DHW sensor and the data readings from this sensor are illogical	No domestic hot water request	Automatic after repair

6.10 - Extracting the USB files

In case of breakdown, please send the following information to the AUER technical assistance service:

- The customer's name and full contact details
- Name and full contact details of the installer of the appliance
- Equipment references:
  - Model
  - Outer unit serial n°
  - HRC^{70} Pilot serial n°
- Error message displayed on HRC^{70} Pilot
- USB files (USB file extraction procedure is described opposite).

To extract the USB file from the HRC^{70} Pilot, please follow this procedure:

1) Take a USB stick (preferably one which is blank and formatted)

2) Insert the USB stick into the USB port in the front of the HRC^{70} Pilot

3) *"USB STICK"* will be displayed on the screen with 3 dashes underneath the message

From this moment on, do not touch either:
- the USB stick , or
- the keys on the HRC^{70} Pilot

4) After a few minutes, the message *"REMOVE USB STICK"* will appear.

You can now remove the USB stick, **but be sure not to do it before this message is displayed.**

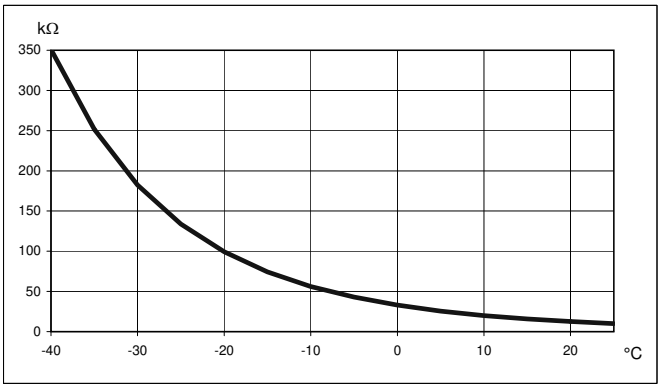
5) Two files named "*C4E.txt*" and "*C4E00... .txt*" are generated onto the USB stick.

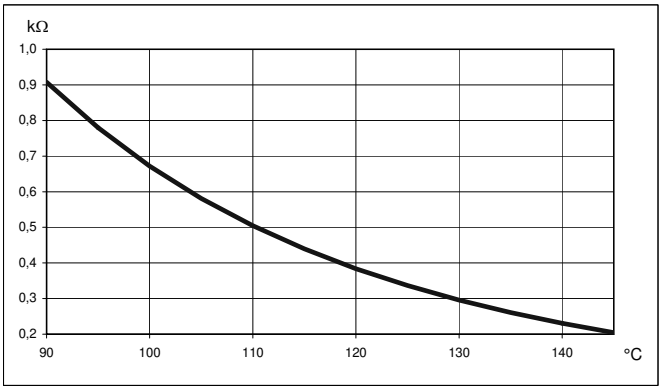
The second file contains the heat pump operating history and should be about 5Mo.

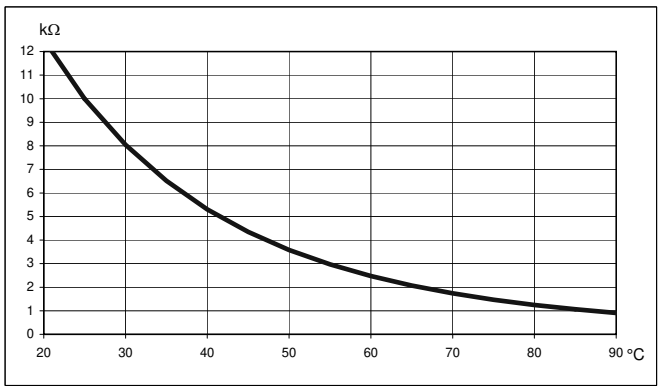
6) Send both of these files to the AUER technical assistance service, along with the essential information mentioned opposite.

6.11 - Sensor data curve charts

6.11.1 - Water inlet and outlet HRC^{70} Heat Pump and HRC^{70} Pilot De-icing sensor - Air intake sensor - Sensors fitted to compressors 1 and 2 - Swimming pool sensor - DHW sensor







Temp. (°C)	Sensor value (KOhms)	Temp. (°C)	Sensor value (KOhms)	Temp. (°C)	Sensor value (KOhms)	Temp. (°C)	Sensor value (KOhms)
-40	351.078	10	20.017	60	2.472	110	0.504
-35	251.277	15	15.768	65	2.068	115	0.439
-30	182.451	20	12.513	70	1.739	120	0.384
-25	133.827	25	10.000	75	1.469	125	0.336
-20	99.221	30	8.045	80	1.246	130	0.296
-15	74.316	35	6.514	85	1.061	135	0.261
-10	56.202	40	5.306	90	0.908	140	0.231
-5	42.894	45	4.348	95	0.779	145	0.204
0	33.024	50	3.583	100	0.672		
5	25.607	55	2.968	105	0.581		

6.11.2 - Outdoor sensor

Temp. (°C)	Resist. R (KOhms)	Temp. (°C)	Resist. (KOhms)	Temp. (°C)	Resist. (KOhms)	Temp. (°C)	Resist. (KOhms)
-30	171 800	-11	61 930	8	24 947	27	11 079
-29	161 817	-10	58 880	9	23 853	28	10 645
-28	152 994	-9	56 004	10	22 800	29	10 231
-27	144 697	-8	53 280	11	21 819	30	9 804
-26	136 894	-7	50 702	12	20 879	31	9 460
-25	129 800	-6	48 263	13	19 986	32	9 101
-24	122 646	-5	45 950	14	19 137	33	8 759
-23	116 145	-4	43 769	15	18 300	34	9 434
-22	110 025	-3	41 699	16	17 565	35	8 054
-21	104 261	-2	39 739	17	16 839	36	7 749
-20	98 930	-1	37 881	18	16 151	37	7 456
-19	93 713	0	36 130	19	15 500	38	7 176
-18	88 888	1	34 453	20	14 770	39	6 909
-17	84 339	2	32 871	21	14 168	40	6 652
-16	80 047	3	31 371	22	13 590	41	6 408
-15	76 020	4	29 948	23	13 039	42	6 173
-14	72 174	5	38 600	24	12 514	43	5 947
-13	68 564	6	27 317	25	12 000	44	5 731
-12	65 153	7	26 101	26	11 535	45	5 522

6.12 - Decommissioning and disposal

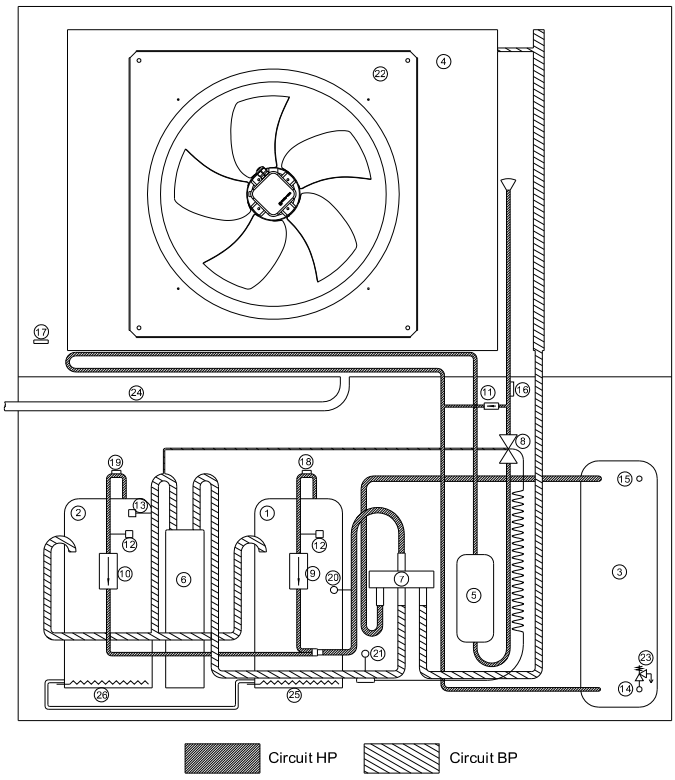
In accordance with current laws, no equipment must be disposed of without the refrigerant gas, recyclable metallic parts and the oil contained in the compressors having been recovered beforehand.

NOTES / MAINTENANCE

Date	Worker	Work carried out	Refrigerant recovery Refrigerant charge

7 - SPARE PARTS

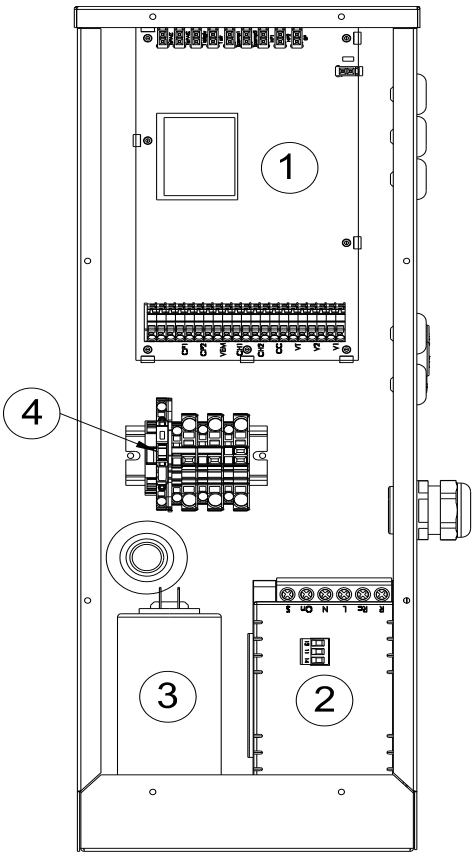
7.1 - HRC^{70} Heat Pump



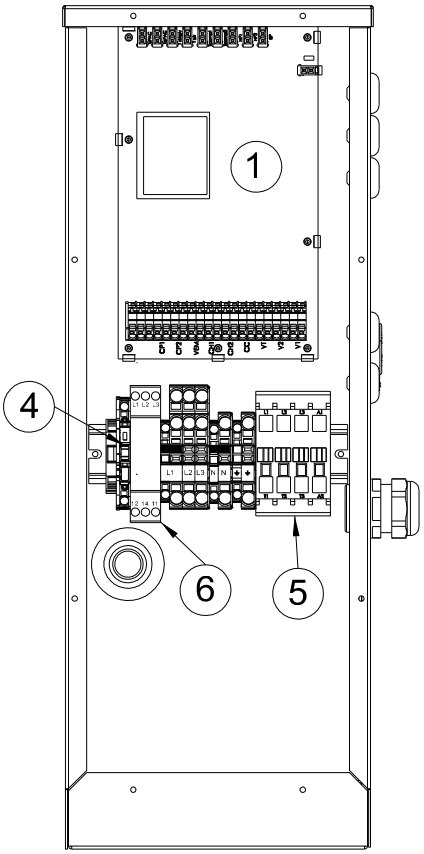
Number	References HRC^{70} Heat Pump model			Product
	7 kW Single phase	11 kW single phase	11 kW three phase	
1	4992030		4992033	Compressor
2	1472831			Plate-type condenser
3	1472839			Evaporator
4	1472837			Tank filter
6	1472834			Suction accumulator
7	1472835			4-way valve
8	1472840			Thermostatic expansion valve
9	1239192			Compressor check valve
10	1239169			High pressure switch
11	1239190			Low pressure switch
12	1243955			Water inlet temperature sensor
13	1243955			Water outlet temperature sensor
14	1243950			De-icing sensor
15	1243950			Outdoor air temperature sensor
16	1243950			Compressor temperature sensor
17	1472730			HP pressure tap
18	1472730			LP pressure tap
19	4592243			Fan set
20	1239128			2.5 bar safety valve
21	0610191			Condensates drainage pipe
22	1243963			Compressor heating belt

7.2 - Electrical boxes

7 and 11 single phase



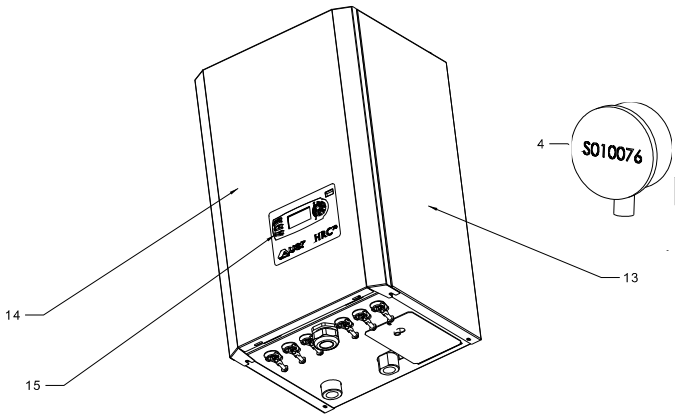
11 three phase

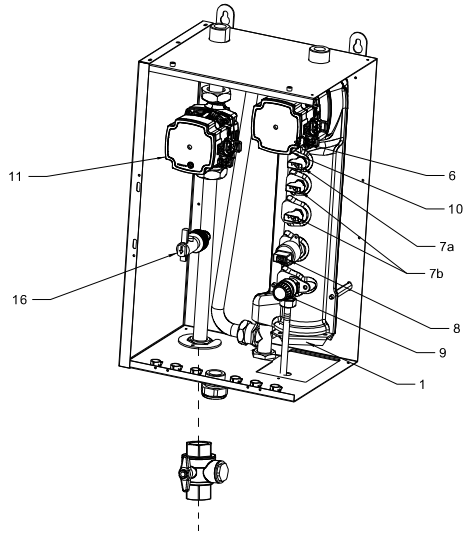


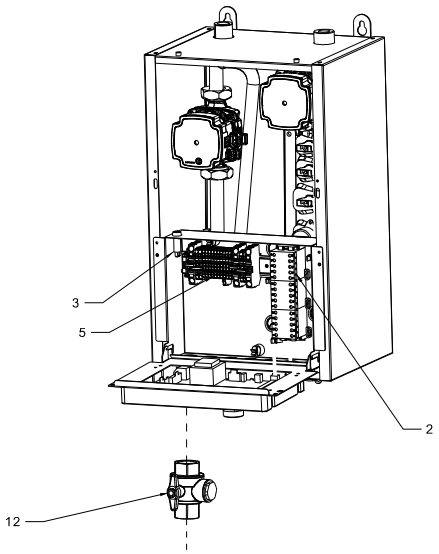
Number	Reference	Product
1	1244348	Heat Pump C4 electronics board
2	1244415	Single phase compressor soft starter
3	1243959	45 F compressor capacitor
4	1243147	4 fuse
5	1243847	Contactor
6	1949123	Phase monitor

	Reference points on schematic wiring diagram	
Electrical connections attached with screws	DC	Compressor starter
	RCP	Phase monitor relay
	KMC	Compressor contactor
	K1 to K3	Electrical stage contactor
	BUS	2-core sheathed connection cable
Electrical connections with Faston terminals	C	45µF compressor capacitor
	K	Compressor
	AQS	110°C safety aquastat
	T	6 Kw electric immersion heater

7.3 - Pilote HRC^{70}







N°.	Symbol	Reference	Product
1		1243947	Electric immersion heater
2		1243561	Contactor
3	F	4990743	Fuse holder
4	OS	1244401	Outdoor sensor
5		1244050	Terminal
		1244357	Single phase wiring
6		1243693	Temperature sensor
7a	AQSC	1238802	100°C safety aquastat (yellow)
7b	UTL1 UTL2	1243400	60°C safety aquastat (black)
8	WP	1243661	Water pressure sensor
9	HPSV	1239094	3 bar safety valve
10	CPH	1244446	GGMBP3 15-50 circulator pump
11	HPCP	1243662	UPM3 20-70 130 circulator pump
12	FV	1239114	1" FF filter valve
13		4485251	Side panel
14		4485259	Front panel
15		4592258	Control box
16		1239171	Flow rate monitor

8 - WARRANTY

The warranty covers the HRC^{70} Heat Pump and HRC^{70} Pilot components for a period of two (2) years, starting from the date the appliance was activated, if the warranty voucher was sent back to the manufacturer. In the absence of this document, the date of manufacture will be used to determine the start date.

If the appliance is commissioned by an AUER-approved technical centre you will be entitled to an extra year on your warranty: a comprehensive warranty will apply for the first year (parts, labour and on-site support) followed by two more years for parts.

The appliance is guaranteed against all manufacturing defects, provided that it was installed according to the instructions provided in this manual and in compliance with all current rules and regulations in the country of installation. All electrical connections should comply with the C15-100 standard.
Under no circumstances does a faulty part warrant the replacement of the whole appliance.

The warranty only applies to parts which we (AUER) identify as having been defective at manufacture. If necessary, the part or product should be returned to the manufacturer, but only with prior agreement from our technical department. Labour, transport and packaging costs are the responsibility of the user. Repairs on a device will not result in compensation.

The parts warranty ends at the same time as the appliance warranty. The warranty only applies to the appliance and its components and excludes any part or installation - electrical or hydraulic - external to the appliance. The warranty will not apply where there has been no maintenance, insufficient or improper maintenance carried out on the appliance.

It is essential to carry out regular annual maintenance on your appliances and installation to ensure sustained use and durability. This maintenance should be carried out by your installer or by an
AUER-approved technical centre. If it is not, the warranty will be null and void.

All work on the refrigerant circuit MUST be carried out by a qualified professional with a category 1 certificate of aptitude. It is forbidden to release refrigerant into the atmosphere. It is mandatory to recover the refrigerant fluid before any work is undertaken on the circuit. The HRC^{70} Heat Pump uses
type R290 refrigerant. Given the flammable nature of this fluid, all work must be undertaken with suitable equipment and in accordance with current regulations.
If an appliance is presumed to be the cause of any damage, it must not be moved or tampered with before an expert assessment has been carried out.

8.1 - Warranty limits

8.1.1 - General information

The warranty does not apply to defects or damage caused by situations or events such as:

- Misuse, abuse, negligence, improper transport or handling
- Incorrect installation, or installation which has been carried out without respecting the installer and user instructions and best practice.
- Insufficient maintenance
- Modifications or changes carried out on the appliance
- Impact from foreign objects, fire, earthquakes, floods, lightning, ice, hailstones, hurricanes or any other natural catastrophe
- Movement, imbalance, collapse or settling of the ground or the structure where the appliance is installed
- Any other damage which is not due to product defects.

AUER does not guarantee against discolouration or damage sustained due to air pollution or the appliance being exposed to chemical products or bad weather conditions.

AUER products are not guaranteed against dirt, grime, stains, rust, or marks which have occurred naturally on the surface of the appliances. **AUER** is not responsible for variations in colour.

8.1.2 - Cases (non limited) for exclusion from warranty

8.1.2.1 - Heating circuit water

Cases (non limited) for exclusion from the warranty:

- Not rinsing the heating circuit
- Using rainwater or water from a well
- Not treating the water for filling the heating circuit according to the instructions in the installer instruction manual

8.1.2.2 - Handling

Cases (non limited) for exclusion from the warranty:

- Any damage sustained by impacts or falls during handling after delivery from the factory.
- Deterioration in the condition of the appliance where it has not been handled in compliance with the instructions provided in this manual.
- Deterioration in the condition of the HRC^{70} Heat Pump because it has been leaning to the side or laid flat.

8.1.2.3 - Installation site

Cases (non limited) for exclusion from the warranty:

- Placing the HRC^{70} Pilot in a place where it could be subject to ice or other bad weather conditions
- Lack of protection against frost and ice for the appliances and installation
- Installing the Heat Pump on ground which cannot support its weight or fitting the HRC^{70} Pilot on a vertical surface which is not adapted to the weight of the appliance
- Not respecting a horizontal position for the Heat Pump
- Not positioning the appliances in accordance with the instructions in the installer manual.

Costs incurred due to access difficulties are not the manufacturer's responsibility.

8.1.2.4 - Electrical connections

Cases (non limited) for exclusion from the warranty:

- Faulty electrical connection which does not comply with the current national installation standards
- Not following the connection diagrams in the instruction manual
- Power supply being significantly over or under the required voltage
- Failure to comply with supply cable sections
- Absence of, or insufficient, electrical protection throughout the appliance (fuses / circuit breakers, grounding etc.)

8.1.2.5 - Hydraulic connections

Cases (non limited) for exclusion from the guarantee:

- Inversing the incoming / outgoing water connections
- Water pressure superior to 2.5 bar
- Absence of, incorrect fitting of or obstruction of pressure relief valve
- External corrosion due to piping not being correctly sealed or condensates not draining properly
- Unsuitable connections for draining and recovering condensates
- Installation which does not comply with the instructions provided in the installer manual.

8.1.2.6 - Accessories

The warranty does not cover faults or defects resulting from:

- installation of accessories which do not comply with our recommendations
- use of accessories which were not provided by us.

8.1.2.7 - Maintenance

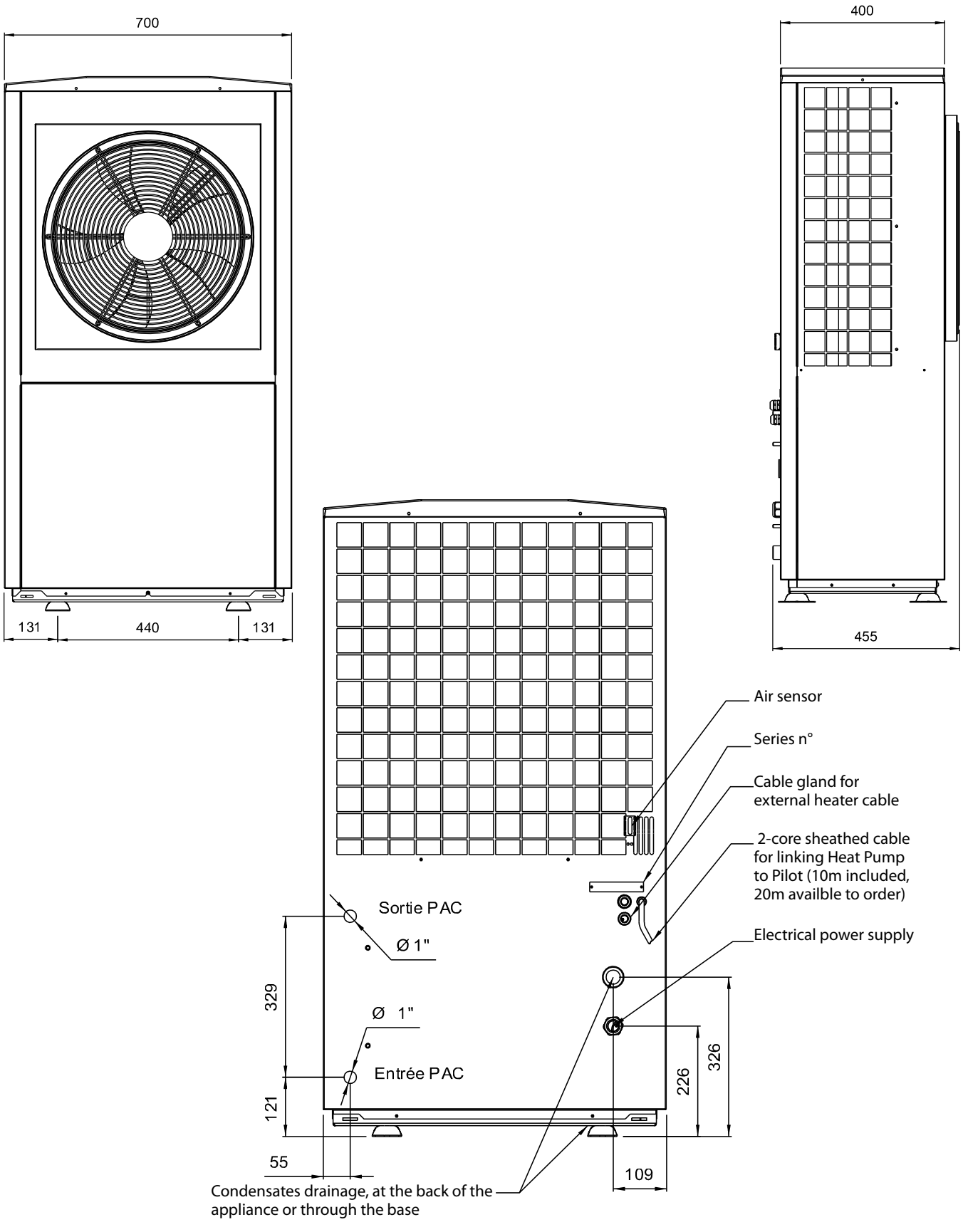
Cases (non limited) for exclusion from the warranty:

- Not respecting maintenance instructions given in the installer manual
- Not maintaining:
  . the evaporator
  . the condensates drainage system
- Not using parts issued by the manufacturer
- Outer casing and bodywork being subjected to any external damage
- Abnormal sludge levels
- Not cleaning the protective filters.

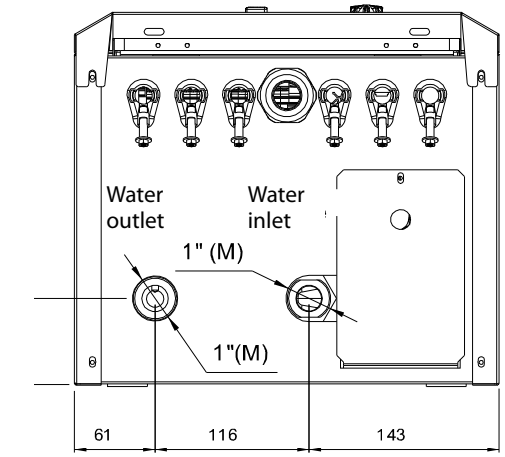
APPENDICES

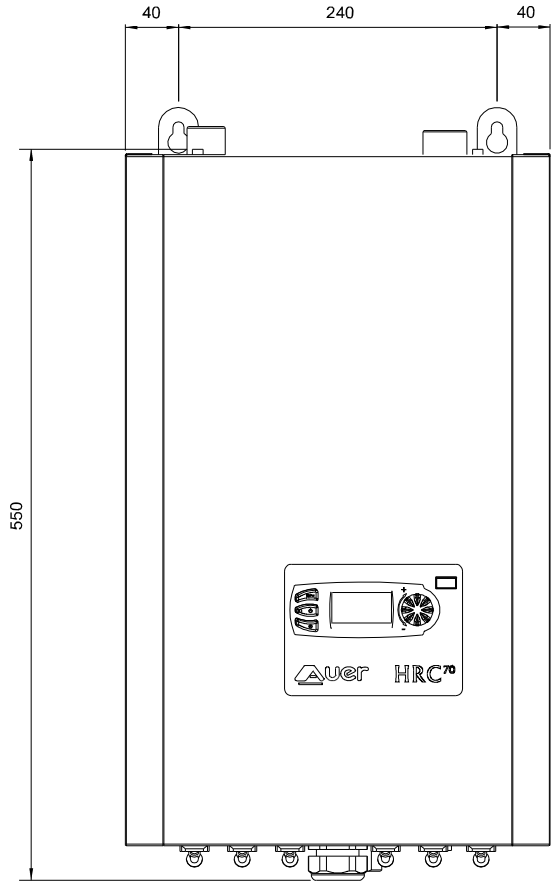
A1 - Dimensions

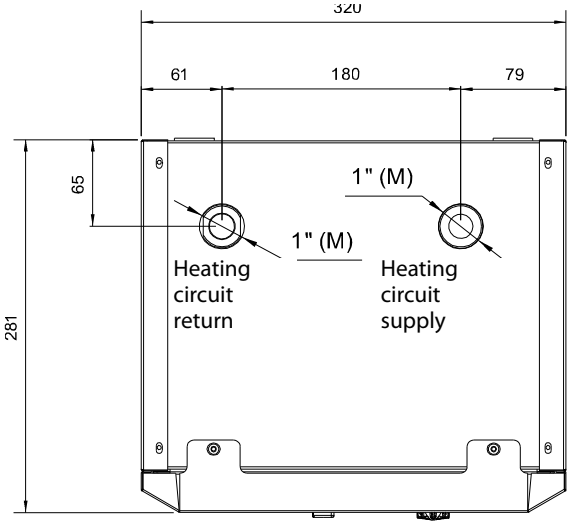
A1.1 - HRC70 Heat Pump



A1.2 - HRC^{70} Pilot







A2 - Technical specifications

A2.1 - HRC^{70} Heat Pump

	HRC^{70} 7	HRC^{70} 11	HRC^{70} 11
	Single phase 151291	Single phase 151231	Three phase 151241
Normative data EN 14511	Monobloc Heat Pump with hydraulic connection		
Heat output (A7W35)	7.1 kW	10.1 kW	10.1 kW
Power consumption (A7W35)	1.78 kW	2.6 kW	2.6 kW
COP (A7W35)	4	3.9	3.9
Heat output (A2W35)	6 kW	8.4 kW	8.4 kW
Power consumption (A2W35)	1.82 kW	2.6 kW	2.6 kW
COP (A2W35)	3.3	3.25	3.25
Heat output (A-7W65)	4 kW	6 kW	6 kW
Max. water temperature	70°C		
R290 refrigerant	0.75 kg		
Outdoor air temperature range	-20°C to +40°C		
Single phase	230V single phase		400V three phase
Maximum start-up current	15 A	21 A	9 A
Soft starter	included		NO
Main circuit breaker	32 A		16 A
Min power cable width	3 x 6 mm²		5 x 2.5 mm²
Main body	steel		
Dimensions (H x L x D)	1300 mm x 700 mm x 400 mm		
Weight without water	108 kg	115 kg	115 kg
Nominal water flow rate	1350 L/h	1550 L/h	1550 L/h
Hydraulic connection	1" / 26/34 male		1"
Max. hydraulic pressure	3.1 bar		
Condensates drainage pipe Ø	20 / 25 mm		
Air flow rate	3500 m^3/ h	4500 m^3/ h	4500 m^3/ h
Adjustable silent blocks	included		
Overall noise levels in accordance with EN 12102	at 1m 58.2 dB(A)		

A2.2 - HRC[70] Pilot

Power supply		230V single phase	400V three phase
Dimensions (H x L x D)		550mm x 320mm x 280mm	
Weight without water		22 kg	
Hydraulic connections		26 / 34	
ack-up sources	**Electrical integrated**	0 to 6kW three phase or single phase	
	oiler	control possible	
Max. current re uirements		30 A	10 A
Current protection fuse		32 A	16 A
Min. power cable width		3 x 6 mm²	5 x 2.5 mm²
Max. water pressure		2.5 bar	

A3 - Frost protection

In cases where the HRC[70] Heat Pump cannot run (outdoor temperature outside the operating range) if a back-up source is authorised to run (boiler or electrical) it will automatically be protected from frost and ice because the circulator pump will run and extract heat from the heating circuit, which has its temperature maintained either by the HRC[70] Pilot electrical back-up or by boiler back-up.
The water temperature remains at 5°C or over.

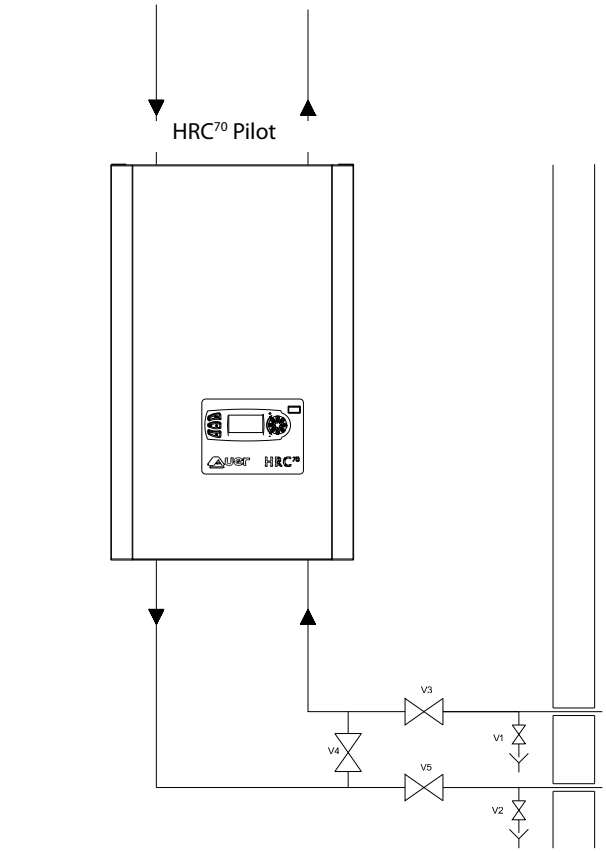
In all cases the piping must be properly insulated.

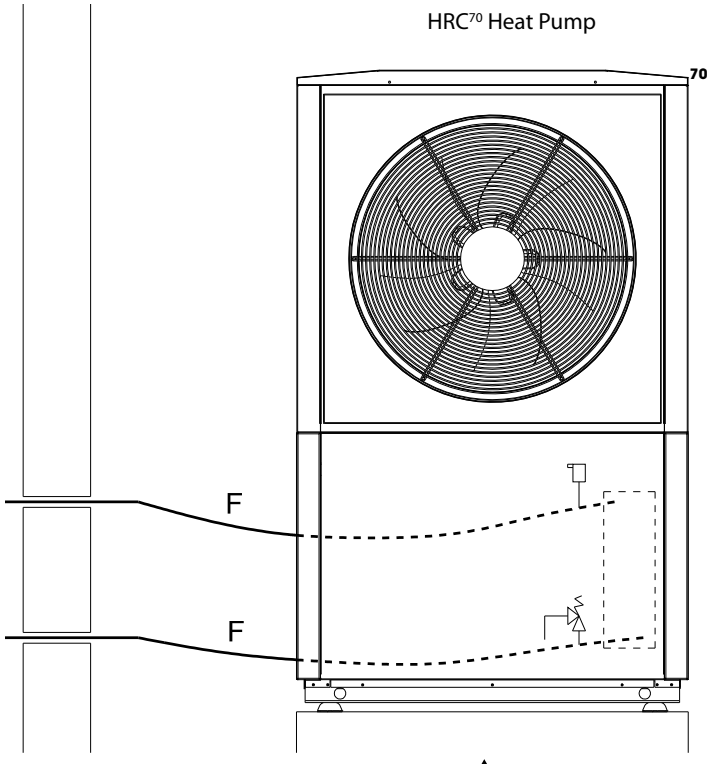
Underground piping should also be installed within protective guttering.

However, for installations without a back-up source or the Heat Pump or Pilot being switched off during the winter period (e.g: stopping accidentally, use in a second home etc...), it will be necessary to provide additional protection against frost and ice.

Apply glycol to the heating circuit (with a minimum concentration of 25% glycol) or make sure you have the hydraulic circuit draining measures in place for the HRC[70] Heat Pump and its accessories, as explained below.

Diagram for draining equipment





V1 - V2 : Draining valves
V3 - V4 - V5 : Isolating valves

Ensure that the HRC[70] Heat Pump is drained

When running normally:
- V1 - V2 and V4 are closed
- V3 and V5 are open

In case of being switched off in winter:
- V3 and V5 are closed
- V1 - V2 and V4 are open

A4 - Sizing the expansion vessel

- For an installation with radiators
  The expansion vessel on the boiler may be sufficient.
  Check that the capacity of the existing expansion vessel corresponds to the total volume of the installation (when calculating the total volume of the installation you should take into account 60L for the HRC[70] Pilot water tank and the volume of the surge tank, if applicable).
- Sizing the expansion vessel
  The volume of the expansion vessel which is required for the HRC[70] Heat Pump depends on the height of the installation. You will need to adjust the pre-charged pressure of the expansion vessel and check that the capacity is equal to the total volume of the installation:

Height of installation (m)		2.5	5	7.5	10	12.5	15
Pre-charged pressure (bars) (1)		0.25	0.5	0.75	1	1.25	1.5
Volume of water in installation covered by 1 litre of the expansion vessel (litres) (2)	25% glycol	15.9	14.5	13.0	11.6	10.1	8.7
	30% glycol	15.6	14.2	12.7	11.3	9.9	8.5
	35% glycol	14.7	13.4	12.1	10.7	9.4	8.0
	40% glycol	14.0	12.7	11.4	10.2	8.9	7.6

(1) : Deflate and check pressure in expansion vessel if necessary

(2) : As a guideline, take into account:

- 11 litres per kW heating capacity for steel radiators + 50 litres buffer tank volume
- 13 litres per kW heating capacity for cast iron radiators + 50 litres buffer tank volume
- 17 litres per kW heating capacity for underfloor heating + buffer tank overcapacity (if applicable)

Or, if known, use exact volume.

Example
- *Installation with12kW cast iron radiators*
- *Height of installation = 10m*
- *Frost / ice protection with 25% glycol*

Total volume of installation = 12 x 13 + 50 = 206 litres
1 litre of expansion vessel covers11.6 litres of installation volume, so here you would need an expansion vessel with a minium volume of 18 litres (206 / 11.6).

N.B.1 : The values given here are for a radiator installation (water at 80°C). For an underfloor heating installation, multiply these values by 2.

N.B 2 : The concentration of monopropylene glycol should not be less than 25%.

A5 - Programming heating modes

Time periods with different heating modes can be programmed for each day and each circuit. The installation will automatically follow programmed heating modes. This is not recommended and should be avoided with a Heat Pump as it is preferable not to lower the temperature.

Accessing the heating mode setting

- Press the  key and hold down for 3 sec.
  - The screen will display
  - When the symbol disappears, release the  key.

where there are several circuits: if not, access directly on day to be programmed

Circuit 1

RADIATOR 1 or HEAT. FLOOR 1

Display depends on configuration programmed

Circuit 2

RADIATOR 2 or HEAT. FLOOR 2 or SANITARY 2

Both circuits at the same time

CIRC. 1-2

Enter the circuit you wish to programme and access the day of the week to programme

MONDAY → TUESDAY

Select day to be programmed

Confirm day to be programmed

MODIF PRG. → NEW PRG.

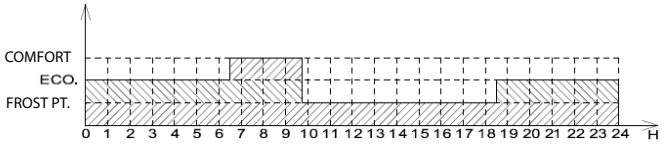
COPY SUN. → COPY PROG.

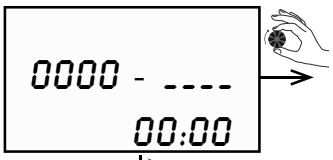
SEE PROG.

Confirm required operation

A5.1 - Creating a new programme

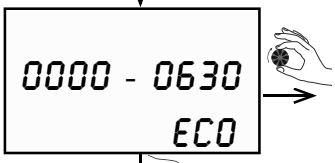
Programmes can be created at 15-minute intervals up to 7 times in 24 hours. For example, the following programme could be created for a Monday:





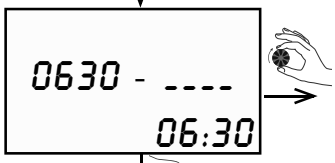
The screen displays 00:00h (at the bottom)
• Turn the dial to 06:30h

Confirm end time of 1st programmed time period



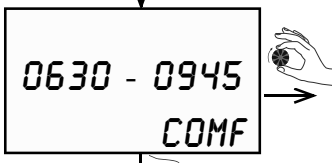
The screen displays "COMF" (comfort)
• Turn dial, to the left, to "ECO"

Confirm "ECO" mode



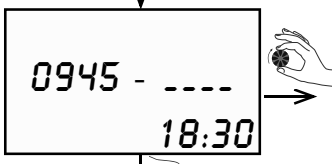
• Turn dial to 09:45h

Confirm end time of 2nd programmed time period



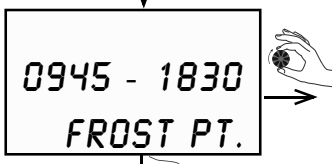
• The screen displays "COMF" (comfort)

Confirm "COMF" mode



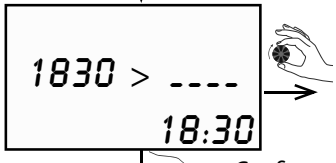
• Turn dial to18:30h

Confirm end time of 3rd programmed time period



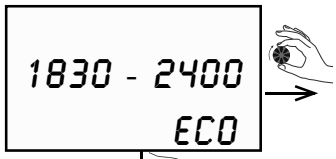
The screen displays "COMF" (comfort)
• Turn dial to the left, to "FROST PT." (frost protection mode)

Confirm "FROST PT." mode



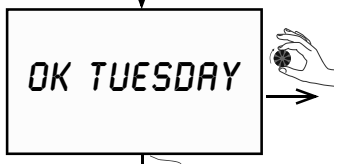
The screen displays 18:30 (end time = start time)

Confirm end time of 4th programmed time period

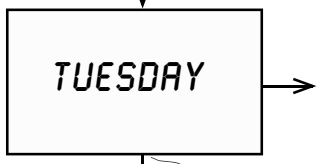


The screen displays "COMF"(comfort)
• Turn dial to the left to "ECO"

Confirm "ECO" mode



A message appears to confirm the programming for Monday. After 1 sec, it will switch to the following day.



The screen displays the next day

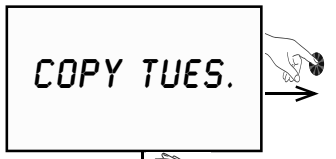
Start programming for Tuesday

• Press  to confirm and quit programming heating modes.

A5.2 - Copying existing programmes

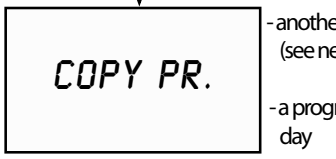
The first programme, which will be suggested by default, will be the programme from the day before. The dial enables you to access programmes from other days, or pre-recorded programmes.

For example, for a Wednesday:

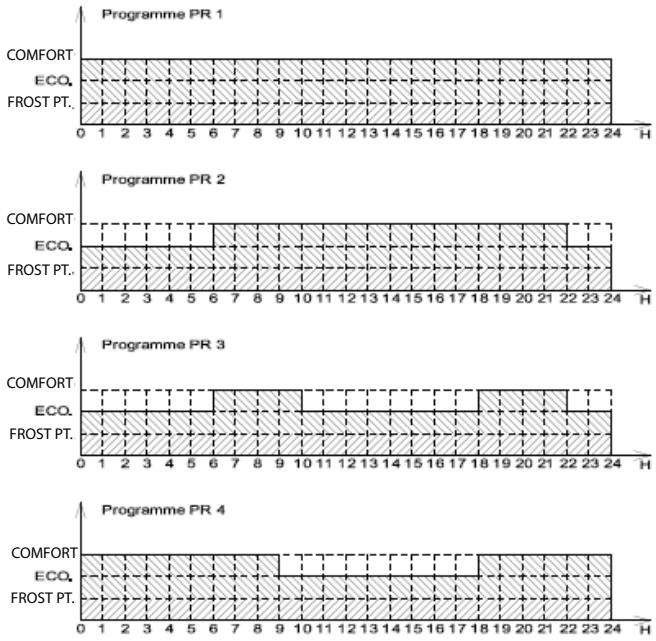


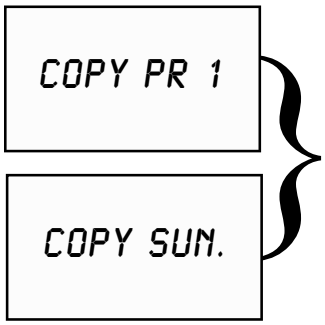
• Confirm to copy Tuesday's programme

• Turn dial to select either:



- another pre-recorded programme, *PR1* to *PR4* (see next page)
- a programme created previously for another day





• Turn dial to select another programme to copy

• Confirm to copy the selected programme

The screen will revert to the day being programmed, i.e. here it would be Wednesday

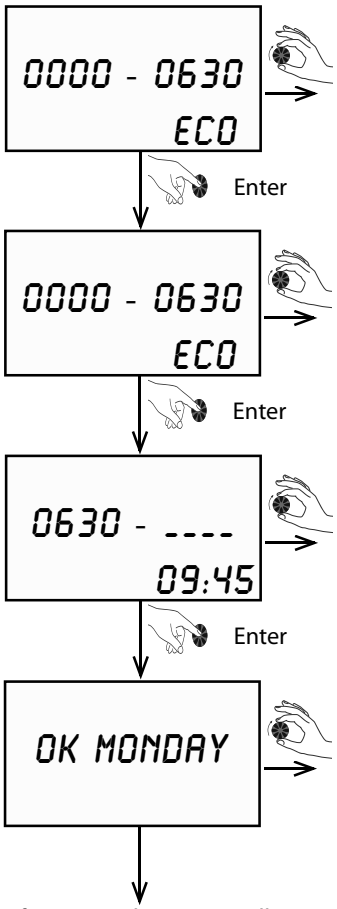
• Press key to confirm and quit programming heating periods.

A5.3 - Changing a programme

The first programme, which will be suggested by default, will be the programme from the day before. The dial enables you to access other programmes (other days or pre-recorded).

For example, for a Monday:

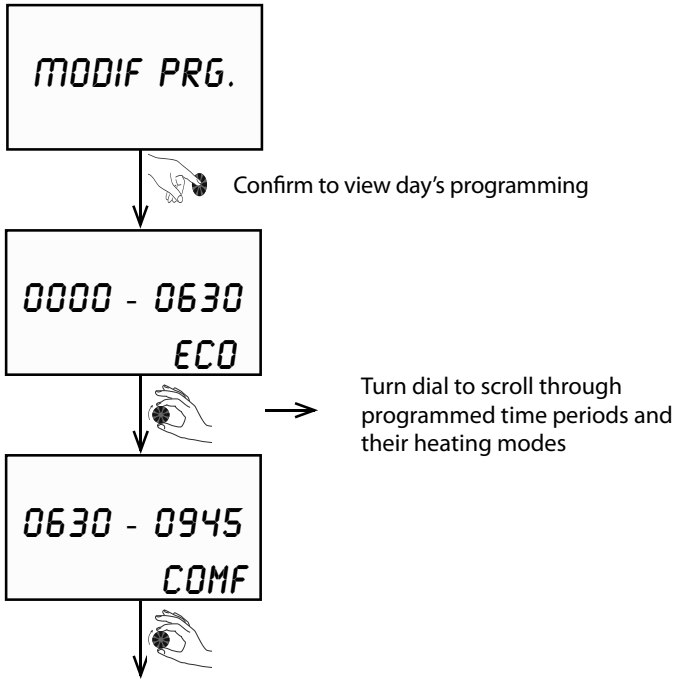
Confirm to change programme

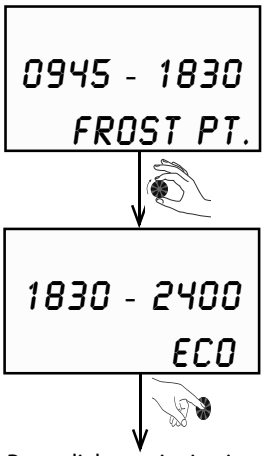


After 1 sec., the screen will automatically switch to the next day.

• Press the key to confirm settings and quit heating mode programming.

A5.4 - View programme





Press dial to quit viewing programming for given day.

A6 - Heating circuit water treatment

A6.1 - Preparing the hydraulic circuit (rinsing)

Before installing the HRC[70] Pilot and HRC[70] Heat Pump, the installation must be rinsed with a suitable product.

This helps to eliminate all traces of soldering waste, grout, grease, sludge, metallic particles etc. in radiators, underfloor heating etc.

This prevents any of the abovementioned waste getting into the HRC[70] Heat Pump heat exchanger or blocking the filter which is fitted on the incoming water inlet.

A6.2 - Water for filling

Several different types of material are used to make a heating circuit. Instances of corrosion may occur through galvanic coupling in new and old installations alike.

The water circuit must only be filled using untreated (unsoftened) water from the drinking water circuit. **If water from any other source (e.g. a well or a drill-hole) is used, the warranty is rendered null and void.**

A6.3 - Heating circuit treatment

Central heating installations MUST BE CLEANED to eliminate debris (copper, fibres, soldering waste) which can come from setting up the installation or from chemical reactions between metals.

Furthermore, it is important to PROTECT CENTRAL HEATING INSTALLATIONS FROM RISKS OF CORROSION, LIMESCALE AND MICROBIOLOGICAL DEVELOPMENT by using a corrosion inhibitor which is suitable for all types of installations (steel radiators, cast iron, PEX underfloor heating).

PRODUCTS USED FOR HEATING WATER TREATMENT MUST BE APPROVED BY YOUR LOCAL OR NATIONAL PUBLIC HYGIENE AND HEALTH AUTHORITY.

We would recommend the use of SENTINEL products for preventative and curative heating water circuit treaatment.

• Fitting the appliance onto new installations (under 6 months)
- Clean the installation with an all-purpose cleaning product to eliminate installation debris (copper, fibres, soldering waste), for example SENTINEL X300 or SENTINEL X800
- Rinse the installation thoroughly until the water is clear and completely free of impurities.
- Protect the installation from corrosion with an inhibitor (for example SENTINEL X100), or from corrosion and frost with an inhibitor and antifreeze agent (for example SENTINEL X500 or SENTINEL R600).

• Fitting the appliance onto existing installations
- De-sludge the installation with a product for eliminating sludge from the installation (for example SENTINEL X400 or SENTINEL X800).
- Rinse the installation thoroughly until the water is clear and completely free of impurities.
- Protect the installation from corrosion with an inhibitor (for example SENTINEL X100), or from corrosion and frost with an inhibitor and antifreeze agent (for example SENTINEL X500 or SENTINEL R600).

The corrosion inhibitor:
- limits limescale formation
- prevents "pinhole" corrosion
- prevents sludge accumulation and the spread of bacteria in new installations (algae in low-temperature circuits)
- prevents hydrogen formation
- eliminates noise from generators

Treatment products from other manufacturers may be used if they guarantee suitability to all the materials used in the installation and they offer effective corrosion resistance.

A6.4 - Frost protection

In cases where the HRC[70] Heat Pump cannot run (outdoor temperature outside the operating range) if a back-up source is authorised to run (boiler or electrical) it will automatically be protected from frost and ice because the circulator pump will run and extract heat from the heating circuit, which has its temperature maintained either by the HRC[70] Pilot electrical back-up or by boiler back-up.

However, in case of installation without a back-up source or the Heat Pump or Pilot being switched off during the winter period (e.g: stopping accidentally, use in a second home etc...), it will be necessary to provide additional protection against frost and ice so that you do not need to drain the Heat Pump's hydraulic circuit which is situated outside the building.

Monopropylene glycol should be used as an anti-freeze agent with an added corrosion inhibitor.

Do not use mono-ethylene glycol (toxic product)

Choose the % of glycol according to the minimum outside temperature to protect the water circuit from ice (it should not be less than 25%):

Outdoor temperature (°C)	-10	-15	-20	-25
% of glycol needed	25	30	35	40

When using a pure product that needs to be diluted with water, mix the water, anti-freeze and inhibitor together outside before putting it into the installation.

RENDERING THE WARRANTY NULL & VOID

Any deterioration in the condition of the appliances which is due to unsuitable quality of filling water and / or corrosion in the absence of treatment products as described above and / or improper degassing of the installation will result in the warranty being rendered null and void.

- **Regularly check the Ph levels and % of glycol in the installation**
- **Never top up glycol in your installation without measuring the Ph to check that the drop in the glycol % is not due to deterioration in the glycol.**
- **When the Ph is acidic (<7) replace all of the glycol after having drained and rinsed the installation beforehand.**

A7 - Performance tables

A7.1 - HRC^{70} 7 kW Heat Pump

C7

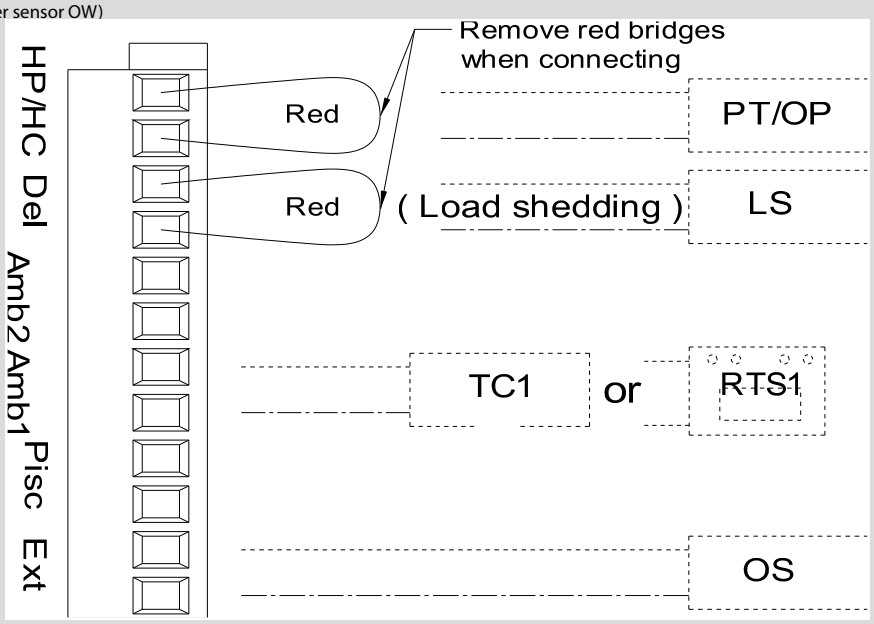
Outdoor temperature Air	Supply temperature Water	Thermal power output Max.	Electrical power consumption Max.	COP
15°C	35°C	8.4	1.6	5.1
15°C	45°C	8.1	2.1	3.9
15°C	55°C	7.7	2.5	3.1
15°C	65°C	7.3	2.8	2.6
7°C	35°C	7.1	1.8	4.0
7°C	45°C	6.7	2.0	3.3
7°C	55°C	6.4	2.4	2.7
7°C	65°C	6.1	2.7	2.2
0°C	35°C	5.6	1.7	3.3
0°C	45°C	5.4	1.9	2.8
0°C	55°C	5.2	2.2	2.3
0°C	65°C	4.9	2.5	2.0
-7°C	35°C	4.7	1.6	2.9
-7°C	45°C	4.5	1.9	2.4
-7°C	55°C	4.4	2.1	2.1
-7°C	65°C	4.2	2.3	1.8
-15°C	35°C	4.0	1.5	2.6
-15°C	45°C	3.9	1.8	2.2
-15°C	55°C	3.8	2.0	1.9
-15°C	65°C	3.5	2.1	1.7
-20°C	35°C	3.5	1.8	2.0
-20°C	45°C	3.4	1.7	2.0
-20°C	55°C	3.3	1.8	1.8
-20°C	65°C	2.9	1.8	1.6

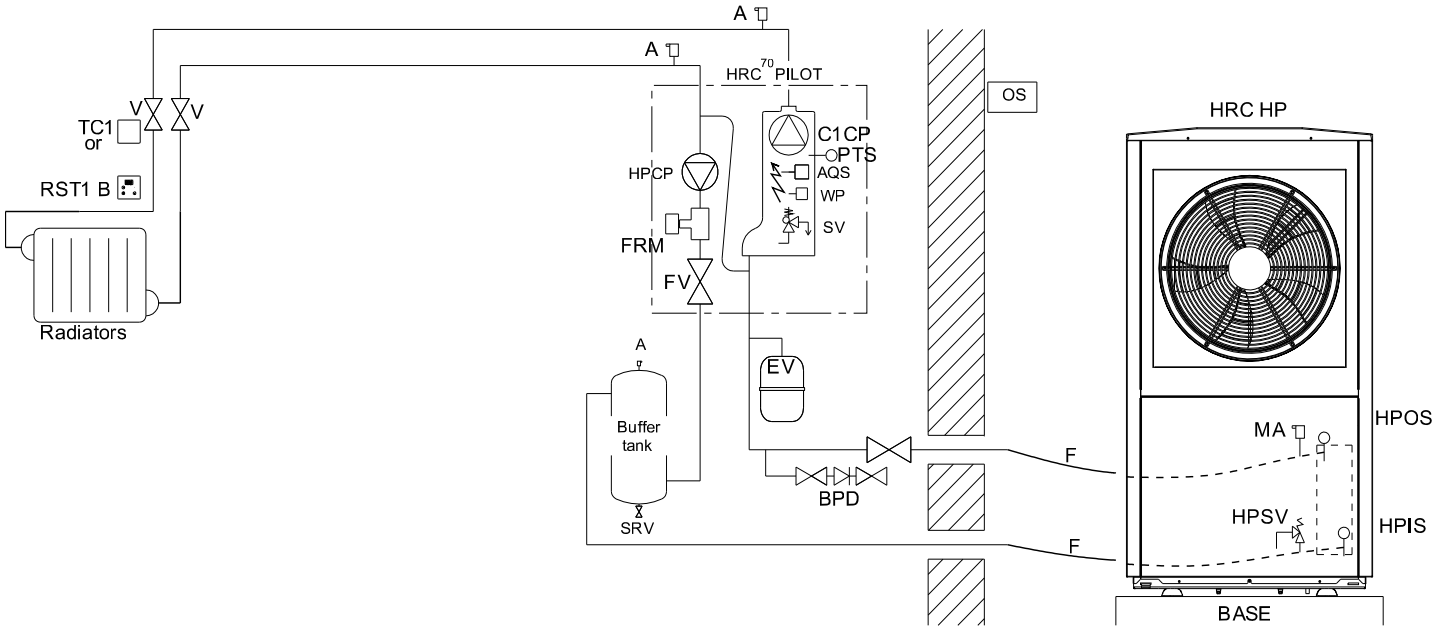
A7.2 - HRC^{70} 11 kW Heat Pump

Outdoor temperature Air	Supply temperature Water	Thermal power output Max.	Electrical power consumption Max.	COP
15°C	35°C	12.4	2.4	5.3
15°C	45°C	11.9	3.0	4.0
15°C	55°C	11.4	3.6	3.2
15°C	65°C	10.7	4.1	2.6
7°C	35°C	10.1	2.6	3.9
7°C	45°C	9.9	2.9	3.4
7°C	55°C	9.5	3.4	2.8
7°C	65°C	9.0	3.9	2.3
0°C	35°C	8.2	2.6	3.2
0°C	45°C	7.9	2.8	2.8
0°C	55°C	7.6	3.2	2.4
0°C	65°C	7.3	3.7	2.0
-7°C	35°C	6.9	2.4	2.9
-7°C	45°C	6.7	2.7	2.5
-7°C	55°C	6.4	3.1	2.1
-7°C	65°C	6.1	3.4	1.8
-15°C	35°C	5.9	2.2	2.7
-15°C	45°C	5.8	2.5	2.3
-15°C	55°C	5.5	2.9	1.9
-15°C	65°C	5.2	3.0	1.7
-20°C	35°C	5.2	2.4	2.2
-20°C	45°C	5.1	2.4	2.1
-20°C	55°C	4.8	2.6	1.8
-20°C	65°C	4.3	2.5	1.7

Hydraulic schematic diagram -1 RADIATOR CIRCUIT - -pool possible-

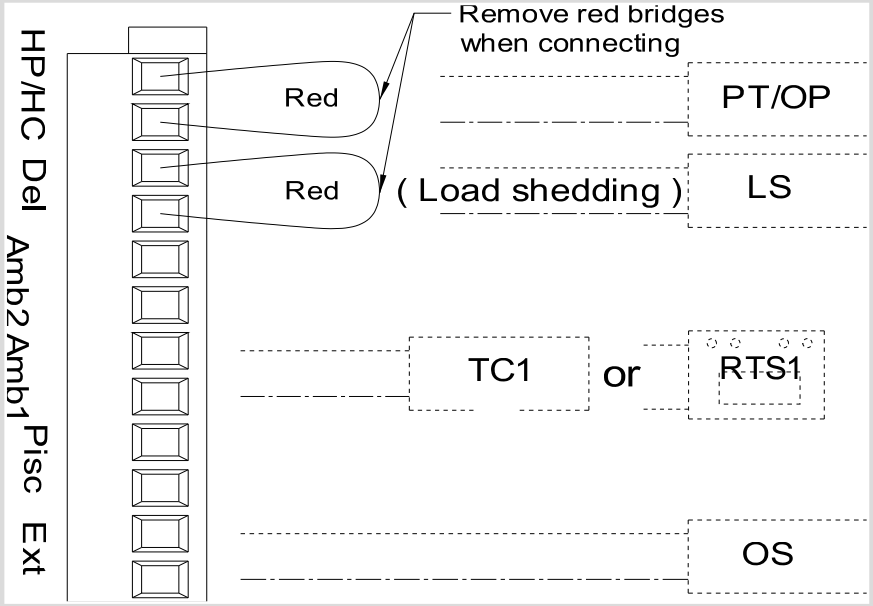
HPCP	=	circulator pump for Heat Pump circuit
C1CP	=	circulator pump for heating circuit 1
FRM	=	Heat Pump circuit flow rate monitor
SV	=	3-bar safety valve
A	=	Air valve
PTS	=	HRC[70] Pilot temperature sensor (or outgoing water sensor OW)
AQS	=	110°C safety aquastat with manual reset
WP	=	water pressure sensor
SRV	=	sludge removal valve
FV	=	filter valve for Heat Pump circuit
V	=	stop valves
EV	=	expansion vessel
BPD	=	backflow prevention device
F	=	flexible hose for Heat Pump connection
MAV	=	manual air valve
HPSV	=	Heat Pump safety valve set to 2.5 bar
HPIWS	=	Heat Pump incoming water sensor
HPOWS	=	Heat Pump outgoing water sensor
EBCP	=	existing boiler circulator pump
EVE	=	expansion vessel for existing installation
BSV	=	existing boiler safety valve
OS	=	Heat Pump HRC[70] Pilot outdoor temperature sensor
TC1	=	heating circuit 1 room thermostat
or RTS1	=	room temperature sensor with display for heating circuit 1 (available to order)
FRM SP	=	flow rate monitor for swimming pool circuit
S pool	=	swimming pool sensor (optional extra included in swimming pool kit)
C pool	=	swimming pool circuit circulator pump
3WV	=	3-way valve for radiator circuit (winter) or swimming pool circuit (summer)
BCV	=	boiler check valve

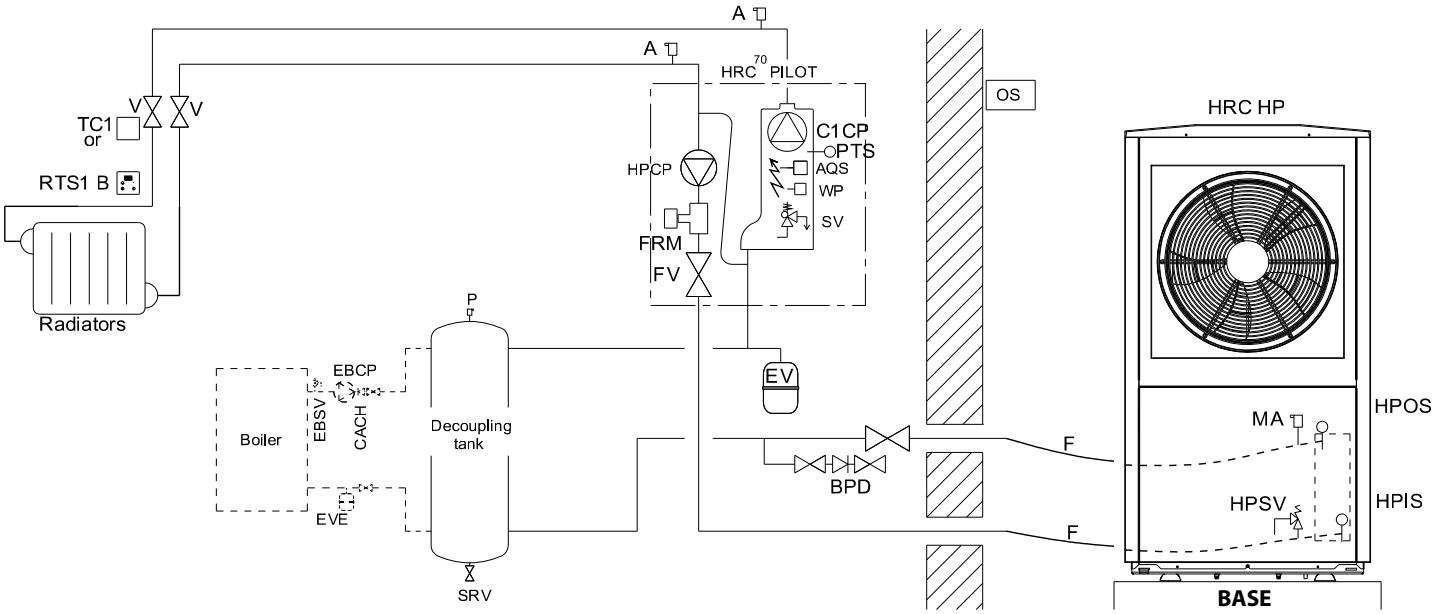




Hydraulic schematic diagram -1 RADIATOR CIRCUIT- -pool possible- + boiler

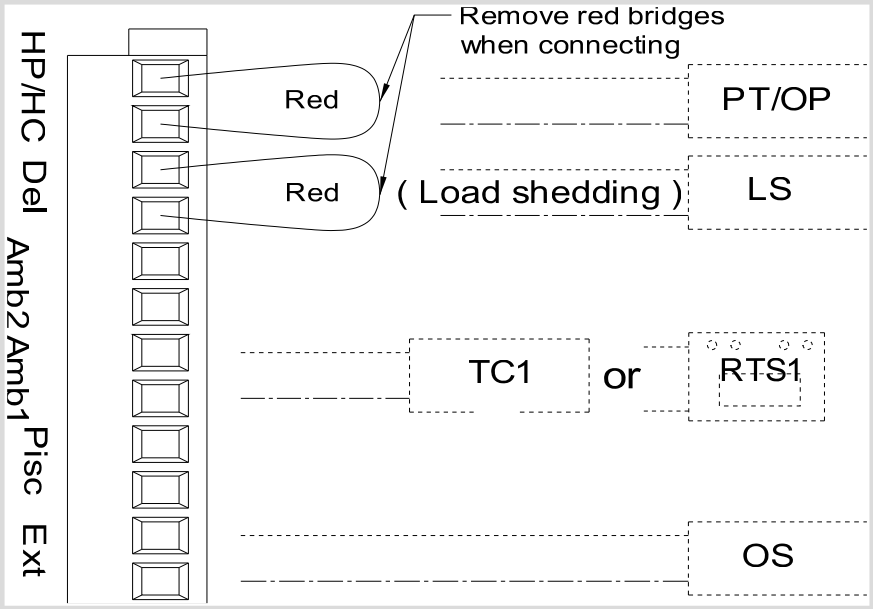
HPCP	=	circulator pump for Heat Pump circuit
C1CP	=	circulator pump for heating circuit 1
FRM	=	Heat Pump circuit flow rate monitor
SV	=	3-bar safety valve
A	=	Air valve
PTS	=	HRC[70] Pilot temperature sensor (or outgoing water sensor OW)
AQS	=	110°C safety aquastat with manual reset
WP	=	water pressure sensor
SRV	=	sludge removal valve
FV	=	filter valve for Heat Pump circuit
V	=	stop valves
EV	=	expansion vessel
BPD	=	backflow prevention device
F	=	flexible hose for Heat Pump connection
MAV	=	manual air valve
HPSV	=	Heat Pump safety valve set to 2.5 bar
HPIWS	=	Heat Pump incoming water sensor
HPOWS	=	Heat Pump outgoing water sensor
EBCP	=	existing boiler circulator pump
EVE	=	expansion vessel for existing installation
BSV	=	existing boiler safety valve
OS	=	Heat Pump HRC[70] Pilot outdoor temperature sensor
TC1	=	heating circuit 1 room thermostat
or RTS1	=	room temperature sensor with display for heating circuit 1 (available to order)
FRM SP	=	flow rate monitor for swimming pool circuit
S pool	=	swimming pool sensor (optional extra included in swimming pool kit)
C pool	=	swimming pool circuit circulator pump
3WV	=	3-way valve for radiator circuit (winter) or swimming pool circuit (summer)
BCV	=	boiler check valve

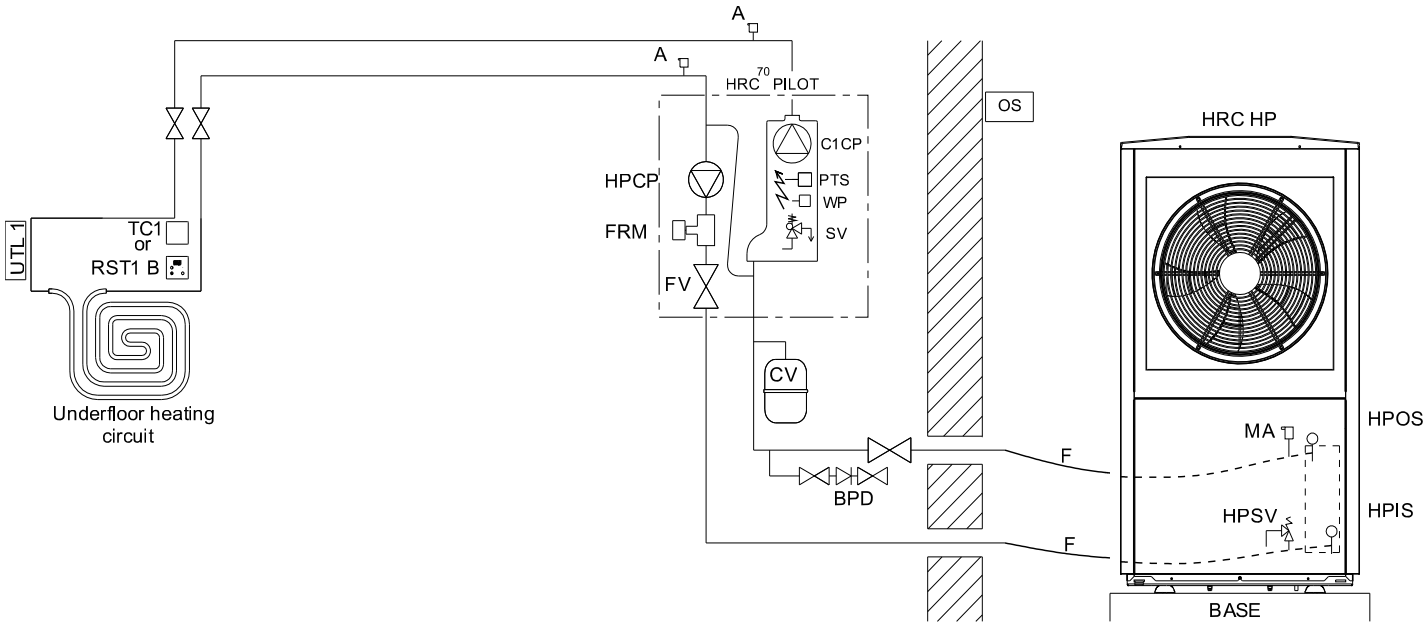




Hydraulic schematic diagram -1 UNDERFLOOR HEATING CIRCUIT- -pool possible-

HPCP = circulator pump for Heat Pump circuit
C1CP = circulator pump for heating circuit 1
FRM = Heat Pump circuit flow rate monitor
SV = 3-bar safety valve
A = Air valve
PTS = HRC[70] Pilot temperature sensor (or outgoing water sensor OW)
AQS = 110°C safety aquastat with manual reset
WP = water pressure sensor
SRV = sludge removal valve
FV = filter valve for Heat Pump circuit
V = stop valves
EV = expansion vessel
BPD = backflow prevention device
F = flexible hose for Heat Pump connection
MAV = manual air valve
HPSV = Heat Pump safety valve set to 2.5 bar
HPIWS = Heat Pump incoming water sensor
HPOWS = Heat Pump outgoing water sensor
EBCP = existing boiler circulator pump
EVE = expansion vessel for existing installation
BSV = existing boiler safety valve
OS = Heat Pump HRC[70] Pilot outdoor temperature sensor
TC1 = heating circuit 1 room thermostat (optional extra)
or RTS1 = room temperature sensor with display for heating circuit 1 (available to order)
UTL1 = circuit 1 underfloor temperature limiter
UTL2 = temperature limiting safety device for the heat pump circulator pump
FRM SP = flow rate monitor for swimming pool circuit
S pool = swimming pool sensor (optional extra included in swimming pool kit)
C pool = swimming pool circuit circulator pump
3WV = 3-way valve for radiator circuit (winter) or swimming pool circuit (summer)
BCV = boiler check valve



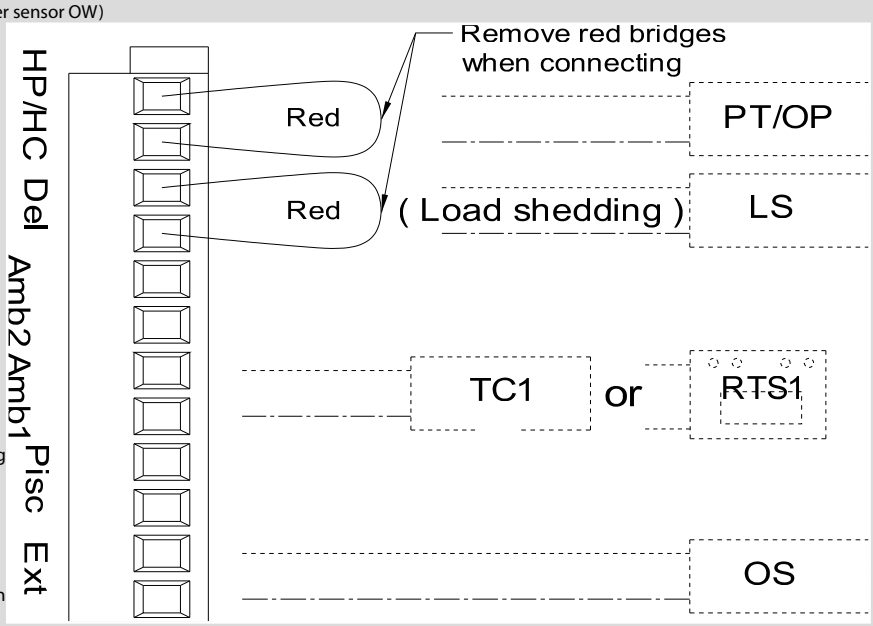


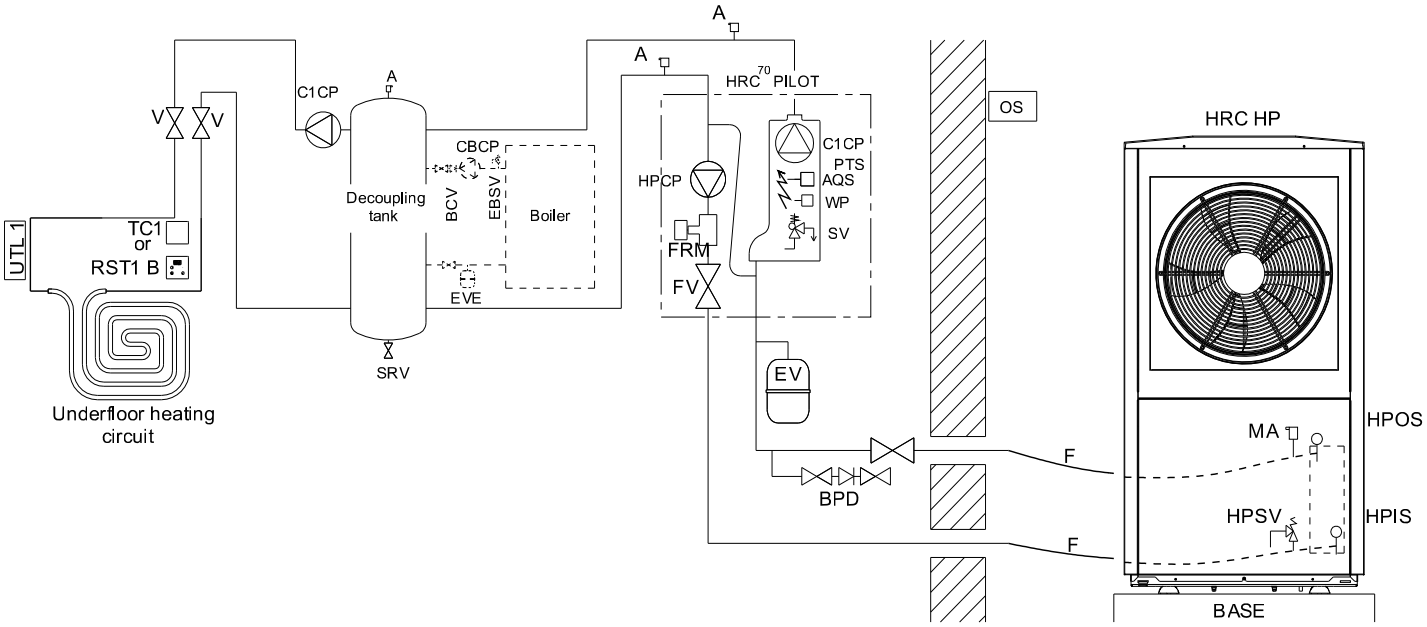
With a pool, add a 50-litre buffer tank to the Heat Pump return flow.

The two underfloor temperature limiters (UTL1 & UTL2) MUST be connected to terminals 1-2 and 4-5 (see § «Underfloor heating circuit application»)

Hydraulic schematic diagram -1 UNDERFLOOR HEATING CIRCUIT- -pool possible- + boiler

HPCP	=	circulator pump for Heat Pump circuit
C1CP	=	circulator pump for heating circuit 1
FRM	=	Heat Pump circuit flow rate monitor
SV	=	3-bar safety valve
A	=	Air valve
PTS	=	HRC[70] Pilot temperature sensor (or outgoing water sensor OW)
AQS	=	110°C safety aquastat with manual reset
WP	=	water pressure sensor
SRV	=	sludge removal valve
FV	=	filter valve for Heat Pump circuit
V	=	stop valves
EV	=	expansion vessel
BPD	=	backflow prevention device
F	=	flexible hose for Heat Pump connection
MAV	=	manual air valve
HPSV	=	Heat Pump safety valve set to 2.5 bar
HPIWS	=	Heat Pump incoming water sensor
HPOWS	=	Heat Pump outgoing water sensor
EBCP	=	existing boiler circulator pump
EVE	=	expansion vessel for existing installation
BSV	=	existing boiler safety valve
OS	=	Heat Pump HRC[70] Pilot outdoor temperature sensor
TC1	=	heating circuit 1 room thermostat
or RTS1	=	room temperature sensor with display for heating circuit 1 (available to order)
UTL1	=	circuit 1 underfloor temperature limiter
UTL2	=	temperature limiting safety device for the heat pump circulator pump
FRM SP	=	flow rate monitor for swimming pool circuit
S pool	=	swimming pool sensor (optional extra included in swimming pool kit)
C pool	=	swimming pool circuit circulator pump
3WV	=	3-way valve for radiator circuit (winter) or swimming pool circuit (summer)
BCV	=	boiler check valve

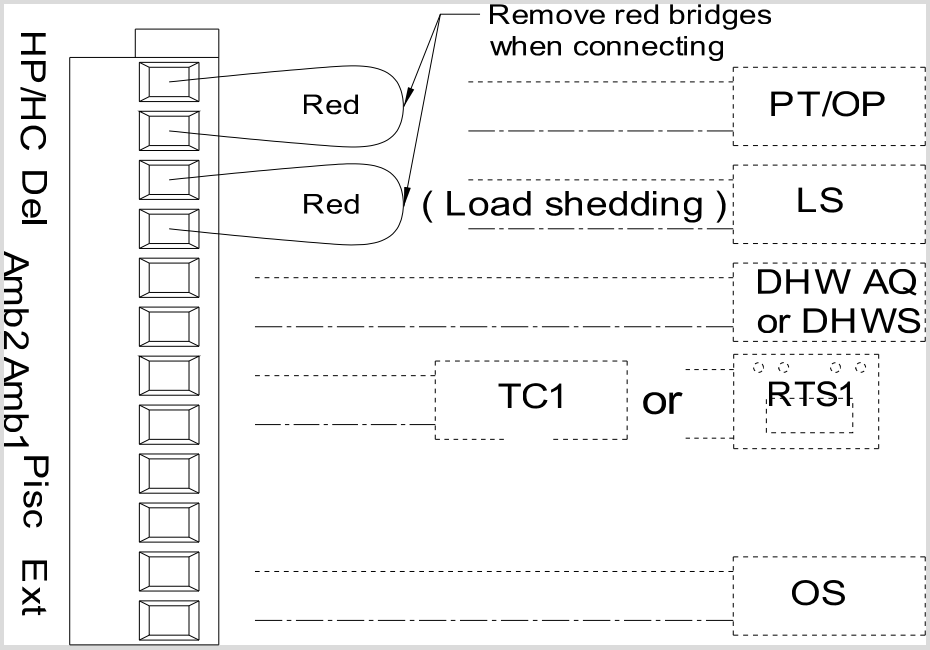


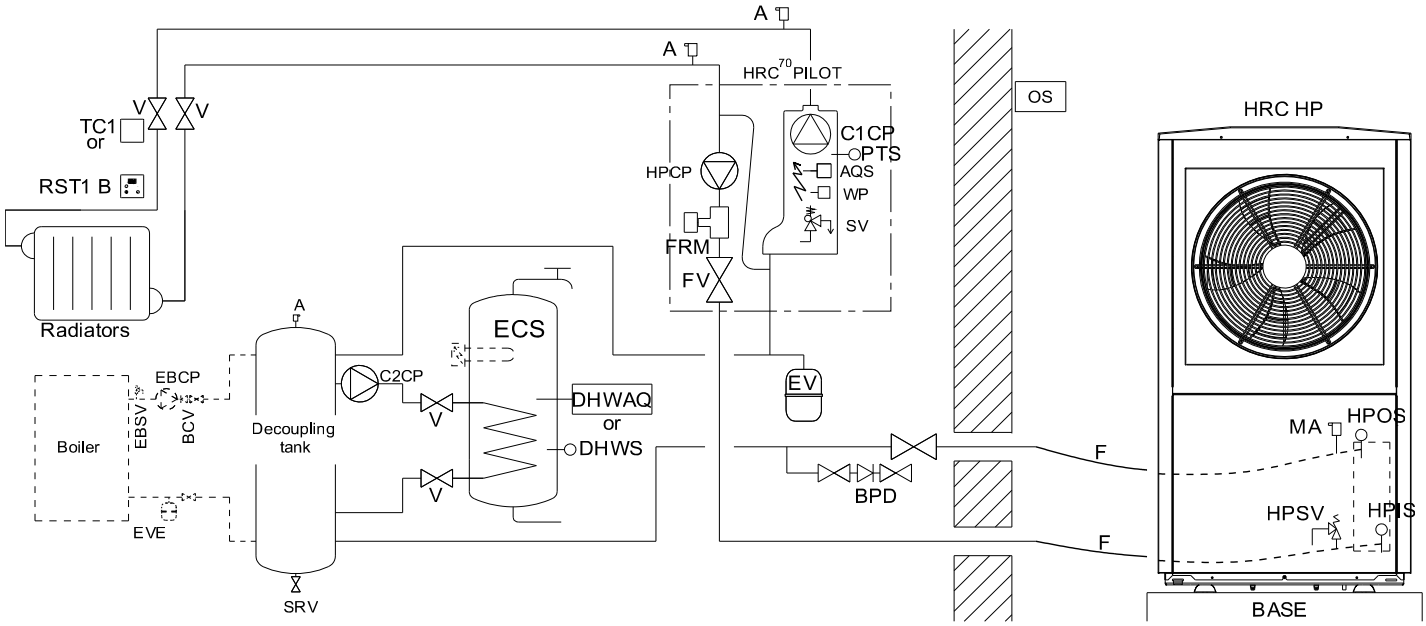


The two underfloor temperature limiters (UTL1 & UTL2) MUST be connected to terminals 1-2 and 4-5 (see § «Underfloor heating circuit application»)

Hydraulic schematic diagram -1 RADIATOR CIRCUIT + DHW- -pool possible-

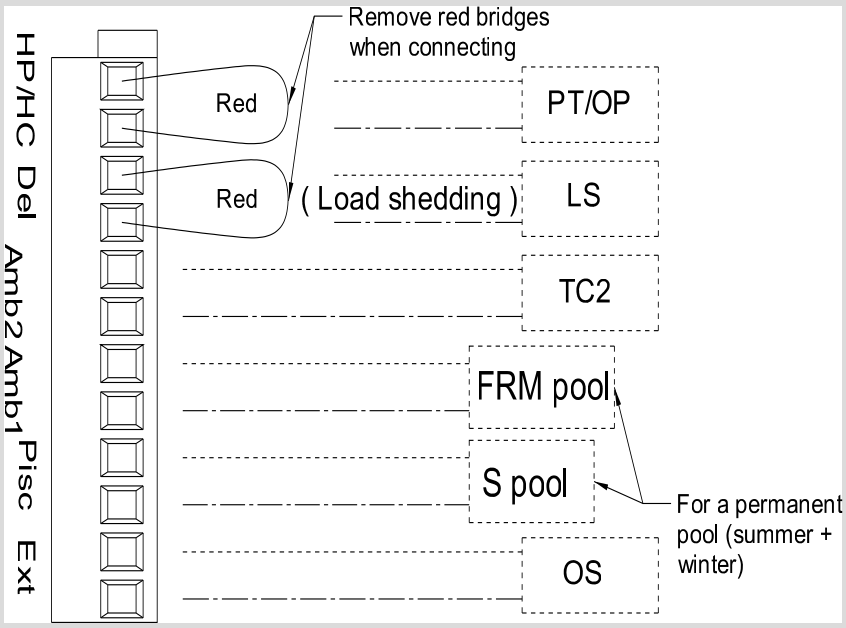
HPCP = circulator pump for Heat Pump circuit
C1CP = circulator pump for heating circuit 1
FRM = Heat Pump circuit flow rate monitor
SV = 3-bar safety valve
A = Air valve
PTS = HRC[70] Pilot temperature sensor (or outgoing water sensor OW)
AQS = 110°C safety aquastat with manual reset
WP = water pressure sensor
SRV = sludge removal valve
FV = filter valve for Heat Pump circuit
V = stop valves
EV = expansion vessel
BPD = backflow prevention device
F = flexible hose for Heat Pump connection
MAV = manual air valve
HPSV = Heat Pump safety valve set to 2.5 bar
HPIWS = Heat Pump incoming water sensor
HPOWS = Heat Pump outgoing water sensor
EBCP = existing boiler circulator pump
EVE = expansion vessel for existing installation
BSV = existing boiler safety valve
OS = Heat Pump HRC[70] Pilot outdoor temperature sensor
TC1 = heating circuit 1 room thermostat (optional extra)
or RTS1 = room temperature sensor with display for heating circuit 1 (available to order)
DHWAQ or DHWS = Heating circuit 2 domestic water aquastat or circuit 2 domestic water sensor (optional extra)
FRM SP = flow rate monitor for swimming pool circuit
S pool = swimming pool sensor (optional extra included in swimming pool kit)
C pool = swimming pool circuit circulator pump
3WV = 3-way valve for radiator circuit (winter) or swimming pool circuit (summer)
BCV = boiler check valve
DHW = domestic hot water tank with > 40kW heat exchanger

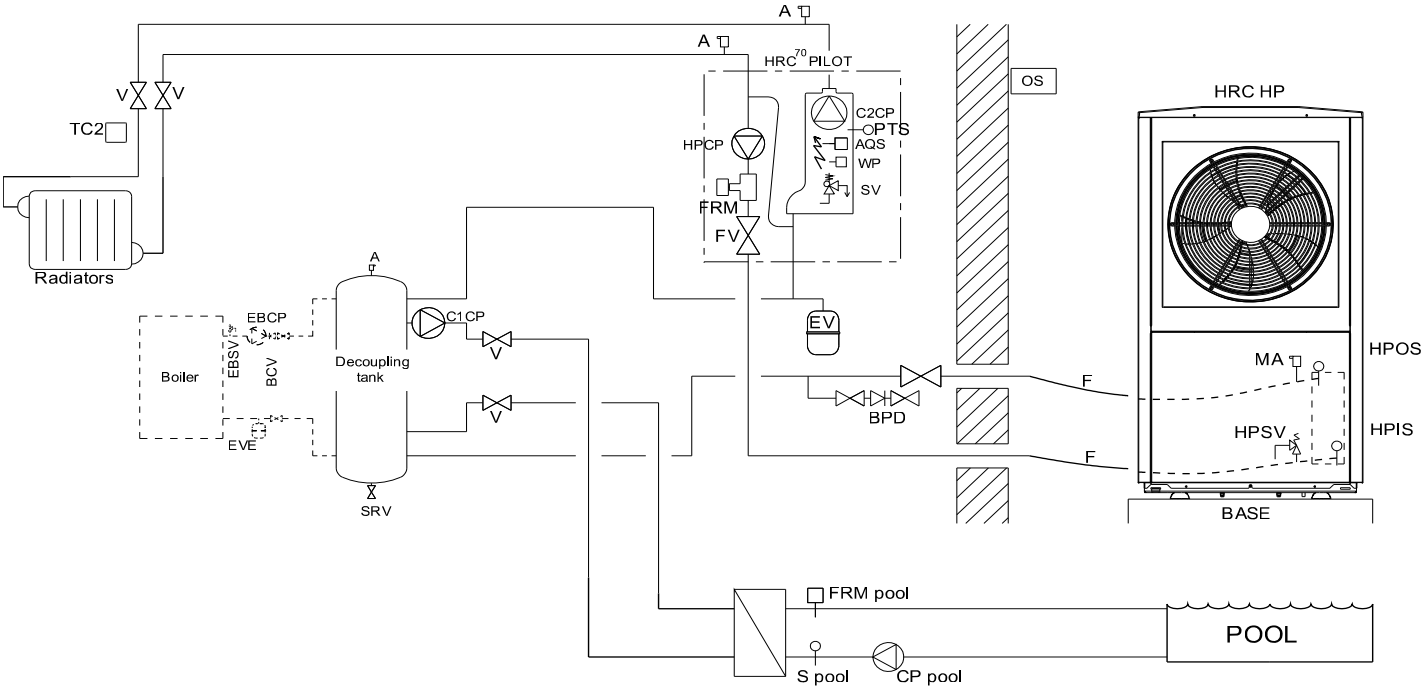




Hydraulic schematic diagram -1 RADIATOR CIRCUIT + PERMANENT POOL-

HPCP	=	circulator pump for Heat Pump circuit
C1CP	=	circulator pump for pool
C2CP	=	circulator pump for heating circuit
FRM	=	Heat Pump circuit flow rate monitor
SV	=	3-bar safety valve
A	=	Air valve
PTS	=	HRC[70] Pilot temperature sensor (or outgoing water sensor OW)
AQS	=	110°C safety aquastat with manual reset
WP	=	water pressure sensor
SRV	=	sludge removal valve
FV	=	filter valve for Heat Pump circuit
V	=	stop valves
EV	=	expansion vessel
BPD	=	backflow prevention device
F	=	flexible hose for Heat Pump connection
MAV	=	manual air valve
HPSV	=	Heat Pump safety valve set to 2.5 bar
HPIWS	=	Heat Pump incoming water sensor
HPOWS	=	Heat Pump outgoing water sensor
EBCP	=	existing boiler circulator pump
EVE	=	expansion vessel for existing installation
BSV	=	existing boiler safety valve
OS	=	Heat Pump HRC[70] Pilot outdoor temperature sensor
TC2	=	heating circuit 2 room thermostat (optional)
FRM SP	=	flow rate monitor for swimming pool circuit
S pool	=	swimming pool sensor (optional extra included in swimming pool kit)
C pool	=	swimming pool circuit circulator pump

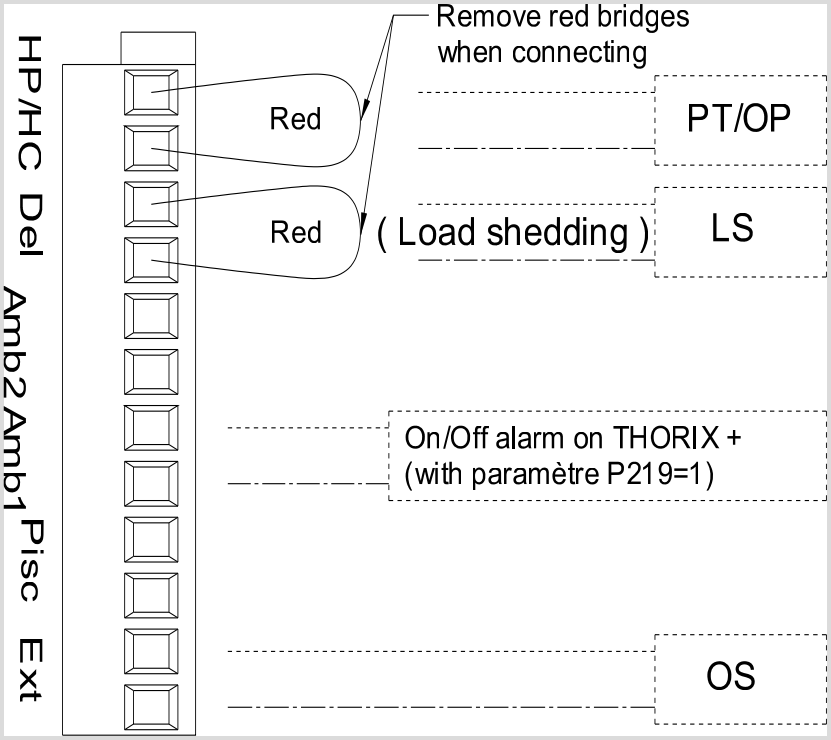




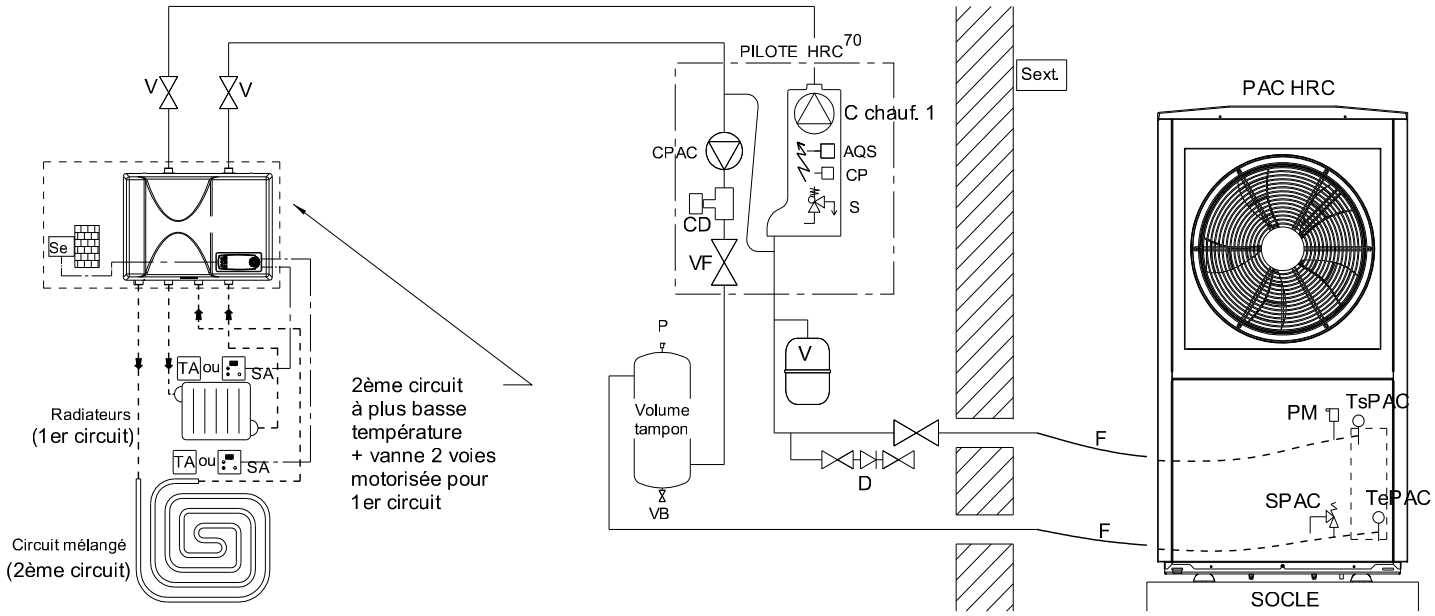
• Disconnect the HRC Pilot heating circulator pump, which is pre-connected at the factory on terminals 5 and 6.
• Reconnect to terminals 2 and 3.
• Next connect C1CP for the swimming pool to terminals 5 and 6.

Hydraulic schematic diagram -1 RADIATOR CIRCUIT and 1 MIXED CIRCUIT - with optional 2nd circuit at a lower temperature (Ref.751014) -pool possible-

HPCP	=	circulator pump for Heat Pump circuit
C1CP	=	circulator pump for heating circuit 1
FRM	=	Heat Pump circuit flow rate monitor
SV	=	3-bar safety valve
A	=	Air valve
PTS	=	HRC70 Pilot temperature sensor (or outgoing water sensor OW)
AQS	=	110°C safety aquastat with manual reset
WP	=	water pressure sensor
SRV	=	sludge removal valve
FV	=	filter valve for Heat Pump circuit
V	=	stop valves
EV	=	expansion vessel
BPD	=	backflow prevention device
F	=	flexible hose for Heat Pump connection
MAV	=	manual air valve
HPSV	=	Heat Pump safety valve set to 2.5 bar
HPIWS	=	Heat Pump incoming water sensor
HPOWS	=	Heat Pump outgoing water sensor
OS	=	Heat Pump HRC70 Pilot outdoor temperature sensor
UTL1	=	circuit 1 underfloor temperature limiter
UTL2	=	temperature limiting safety device for the heat pump circulator pump if circuit 1 is an underfloor heating circuit
FRM SP	=	flow rate monitor for swimming pool circuit
S pool	=	swimming pool sensor (optional extra included in swimming pool kit)
C pool	=	swimming pool circuit circulator pump
3WV	=	3-way valve for radiator circuit (winter) or swimming pool circuit (summer)
RT or RTS	=	room thermostat or room temperature sensor on 2nd circuit at lower temperature "Thorix Evolution"
UTL	=	Underfloor temperature limiter for 2nd circuit at lower temperature "Thorix Evolution"



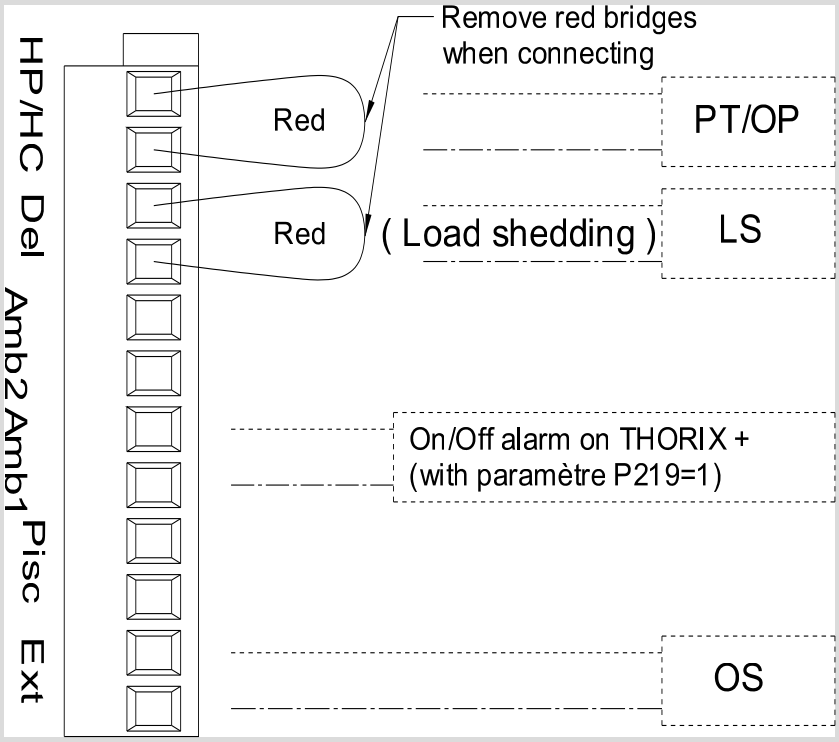
On the Pilot:
- It is mandatory to activate the first circuit (RADIATOR C-1) .
- Activate the room thermostat input (THERMOSTAT A-1) on the 1st circuit in order to monitor Heat Pump operation using the on/off alert output on the Thorix Evolution (set *P219 = 1* on the Thorix Evolution)



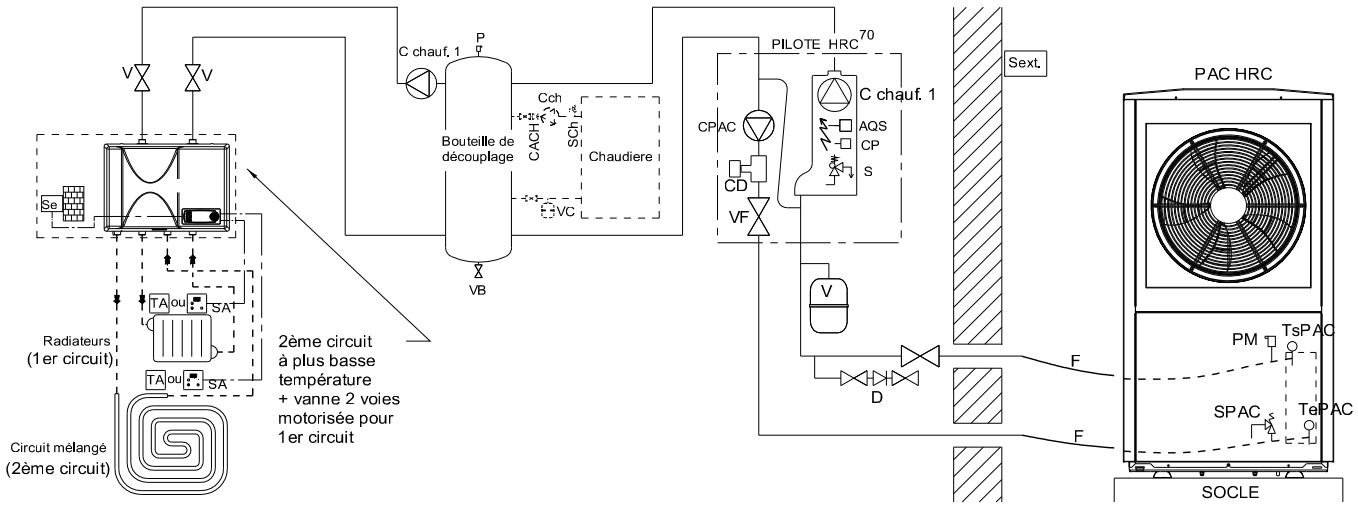
The two underfloor temperature limiters (UTL1 & UTL2) MUST be connected to terminals 1-2 and 4-5 (see § «Underfloor heating circuit application»)

Hydraulic schematic diagram -1 RADIATOR CIRCUIT and 1 MIXED CIRCUIT- with optional 2nd circuit at a lower temperature (Ref.751014) -pool possible- + boiler

HPCP	=	circulator pump for Heat Pump circuit
C1CP	=	circulator pump for heating circuit 1
FRM	=	Heat Pump circuit flow rate monitor
SV	=	3-bar safety valve
A	=	air valve
SP	=	HRC70 Pilot temperature sensor (or outgoing water sensor OW)
AQS	=	110°C safety aquastat with manual reset
WP	=	water pressure sensor
SRV	=	sludge removal valve
FV	=	filter valve for Heat Pump circuit
V	=	stop valves
EV	=	expansion vessel
BPD	=	backflow prevention device
F	=	flexible hose for Heat Pump connection
MAV	=	manual air valve
HPSV	=	Heat Pump safety valve, set to 2.5 bar
HPIWS	=	Heat Pump incoming water temperature sensor
HPOWS	=	Heat Pump outgoing water temperature sensor
EBCP	=	existing boiler circulator pump
EVE	=	expansion vessel for existing installation
BSV	=	safety valve for existing boiler
OS	=	HRC70 Pilot Heat Pump outdoor temperature sensor
UTL 1	=	Temperature-limiting safety device if circuit 1 is underfloor heating
UTL2	=	temperature limiting safety device for the heat pump circulator pump if circuit 1 is an underfloor heating circuit
FRM SP	=	swimming pool circuit flow rate monitor
S pool	=	pool sensor (optional, included in swimming pool kit)
C pool	=	circulator pump for pool circuit
3WV	=	3-way valve for radiator circuit (winter) or pool circuit (summer)
BCV	=	boiler check valve
RT or RTS	=	room thermostat or room temperature sensor on 2nd circuit at a lower temperature "Thorix Evolution".
UTL	=	Temperature limiting safety device on 2nd, lower-temperature circuit "Thorix Evolution"

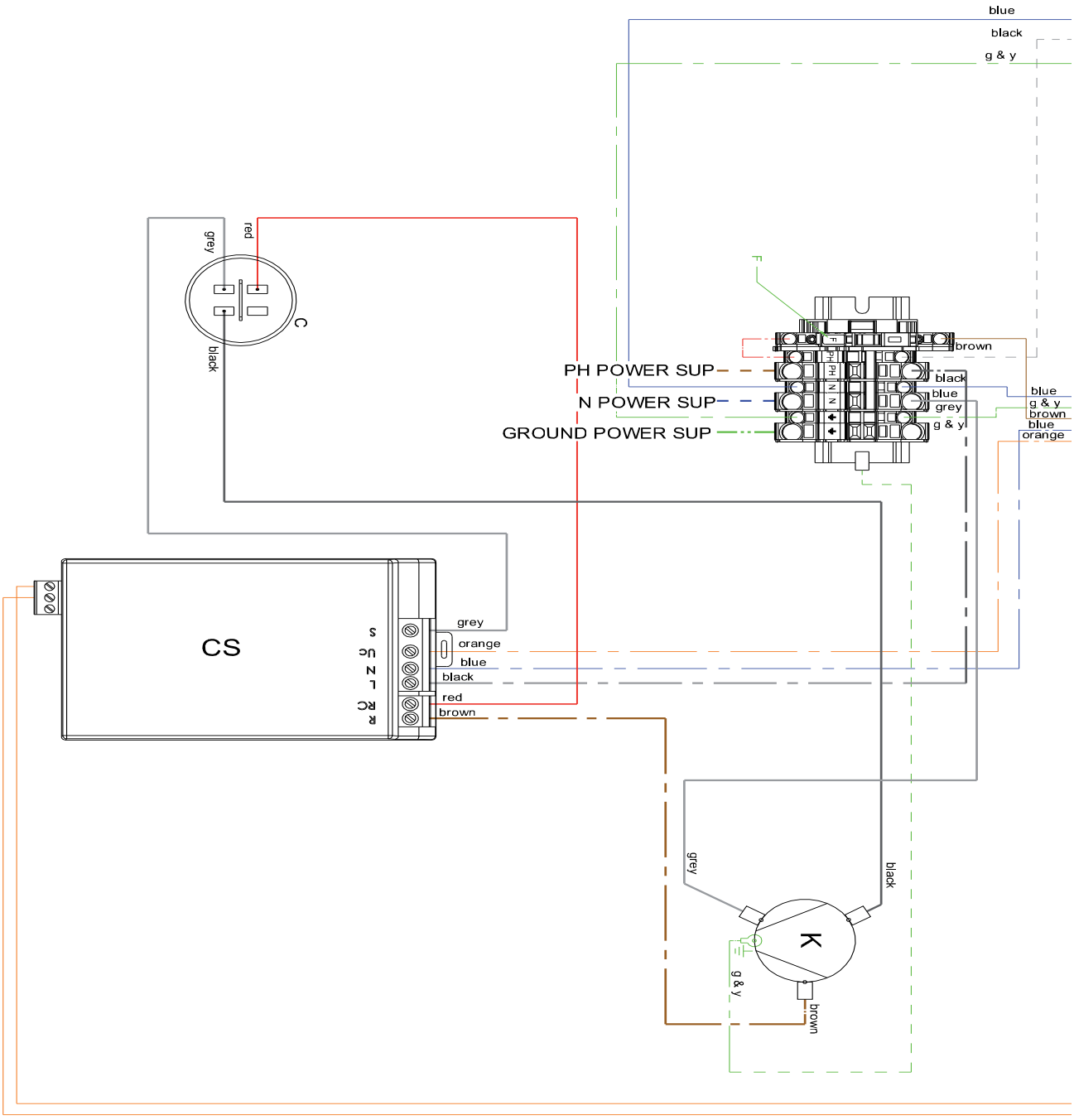


On the Pilot:
- It is mandatory to activate the first circuit (RADIATOR C-1) .
- Activate the room thermostat input (THERMOSTAT A-1) on the 1st circuit in order to monitor Heat Pump operation using the on/off alert output on the Thorix Evolution (set *P219 = 1* on the Thorix Evolution)

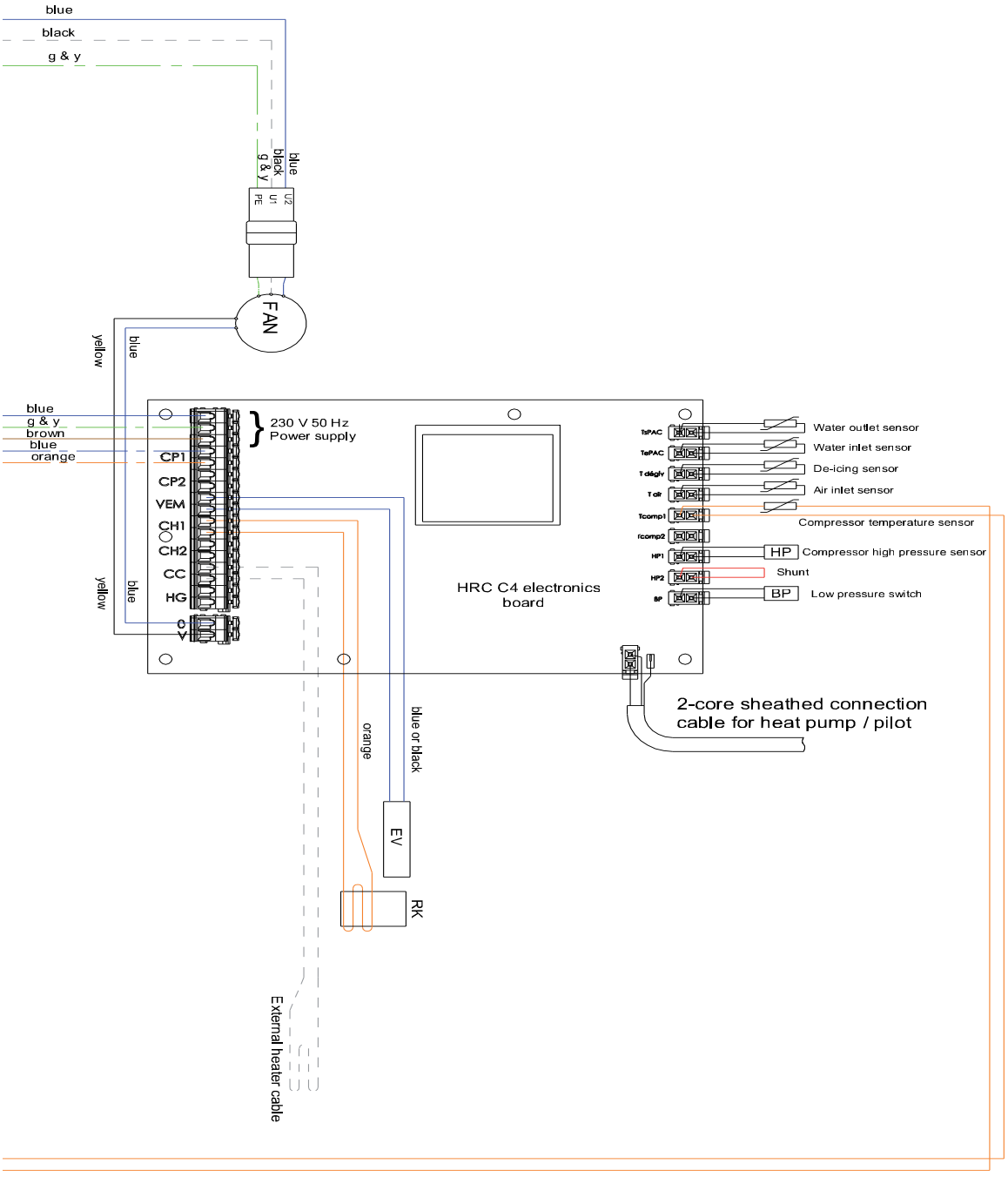


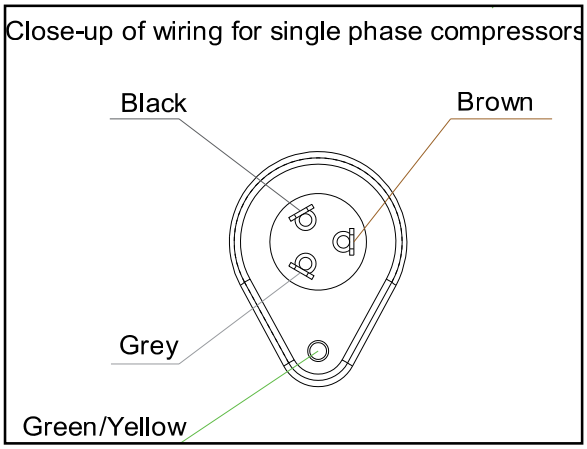
The two underfloor temperature limiters (UTL1 & UTL2) MUST be connected to terminals 1-2 and 4-5 (see § «Underfloor heating circuit application»)

HRC[70] HEAT PUMP - 7 & 11 kW single phase- internal wiring diagram

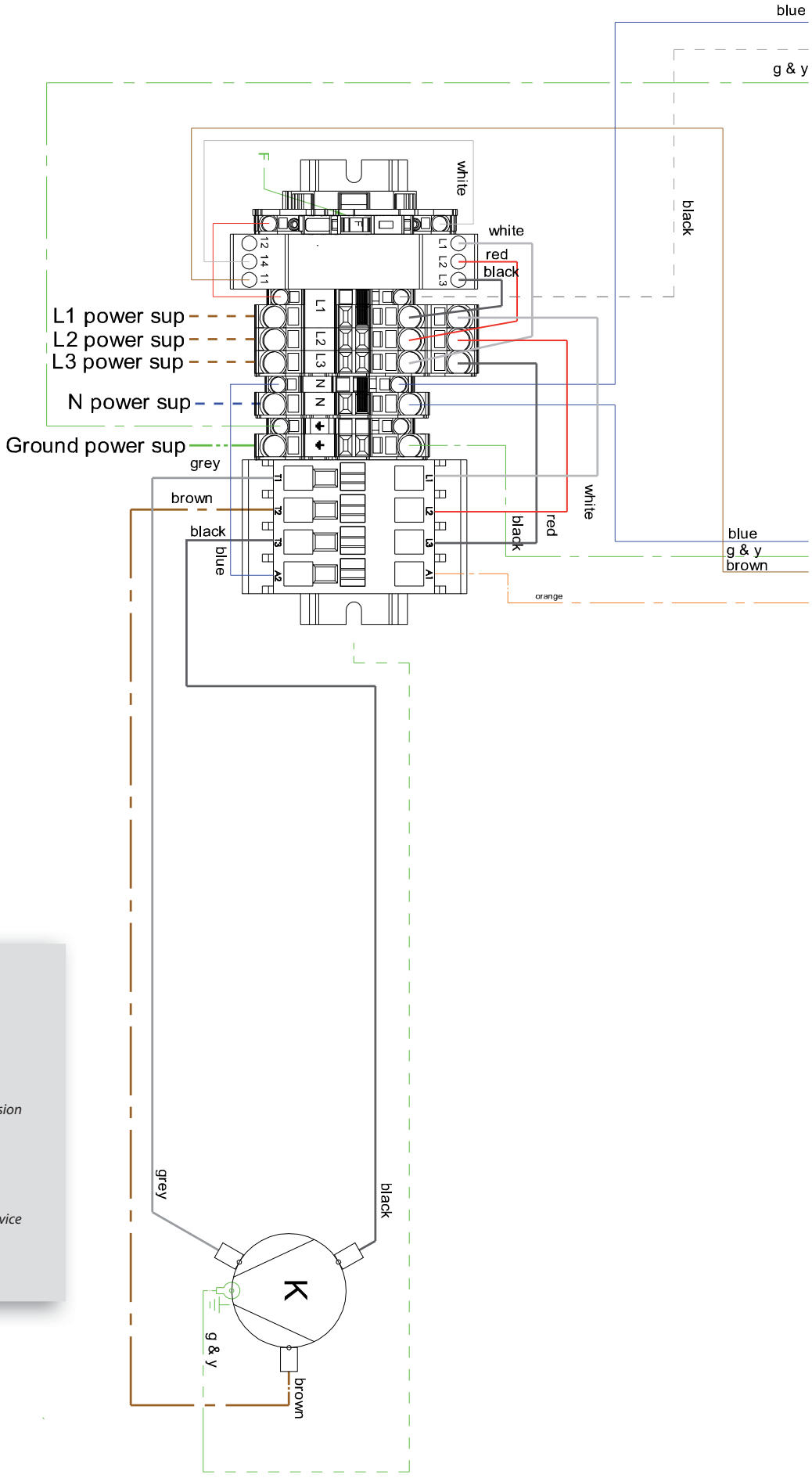


TsPAC	:	*Water outlet temperature sensor*
TePAC	:	*Water inlet temperature sensor*
Tdégiv	:	*De-icing temperature sensor*
Tair	:	*Air inlet temperature sensor*
Tcomp	:	*Compressor temperature sensor*
HP	:	*Compressor high pressure switch*
BP	:	*Low pressure switch*
CP	:	*Compressor start-up command*
VEM	:	*De-icing solenoid valve cycle inversion command*
CH	:	*Compressor RK heater cable*
CC	:	*External heater cable*
VO	:	*Fan control*
F	:	*5x20 4A fuse*
K	:	*Compressor thermal protection device*
CS	:	*Compressor start-up*
RK	:	*Compressor crank case heater*
EV	:	*De-icing solenoid valve*

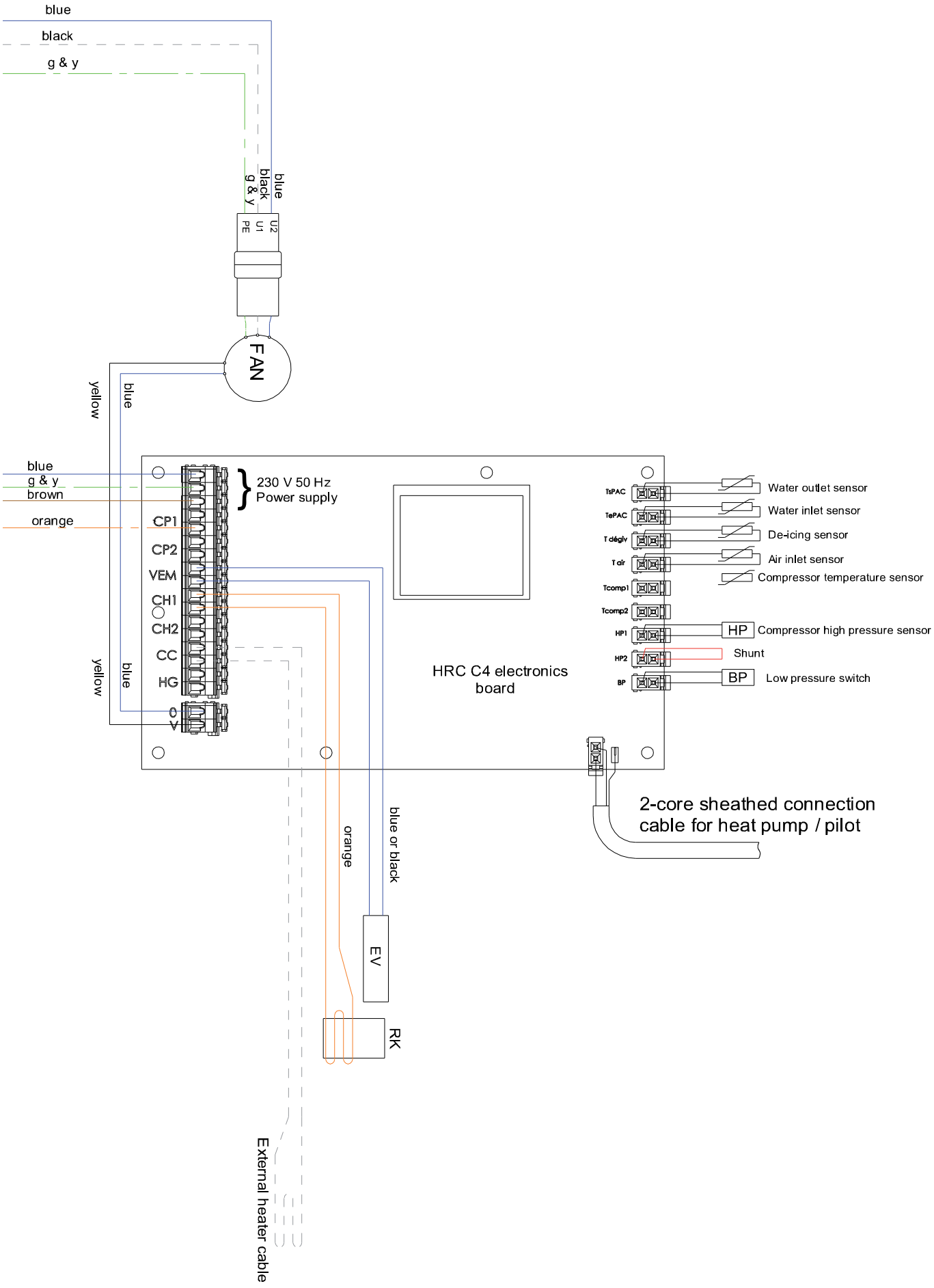

blue
black
g & y
blue
black
g & y
U2
U1
PE
FAN
yellow
blue
blue
g & y
brown
blue
orange
CP1
CP2
VEM
CH1
CH2
CC
HG
0 V
230 V 50 Hz
Power supply
HRC C4 electronics
board
TsPAC
TePAC
T dégiv
T air
Tcomp1
Tcomp2
HP1
HP2
BP
Water outlet sensor
Water inlet sensor
De-icing sensor
Air inlet sensor
Compressor temperature sensor
HP
Compressor high pressure sensor
Shunt
BP
Low pressure switch
2-core sheathed connection
cable for heat pump / pilot
yellow
blue
orange
blue or black
EV
RK
External heater cable


Close-up of wiring for single phase compressors
Black
Brown
Grey
Green/Yellow

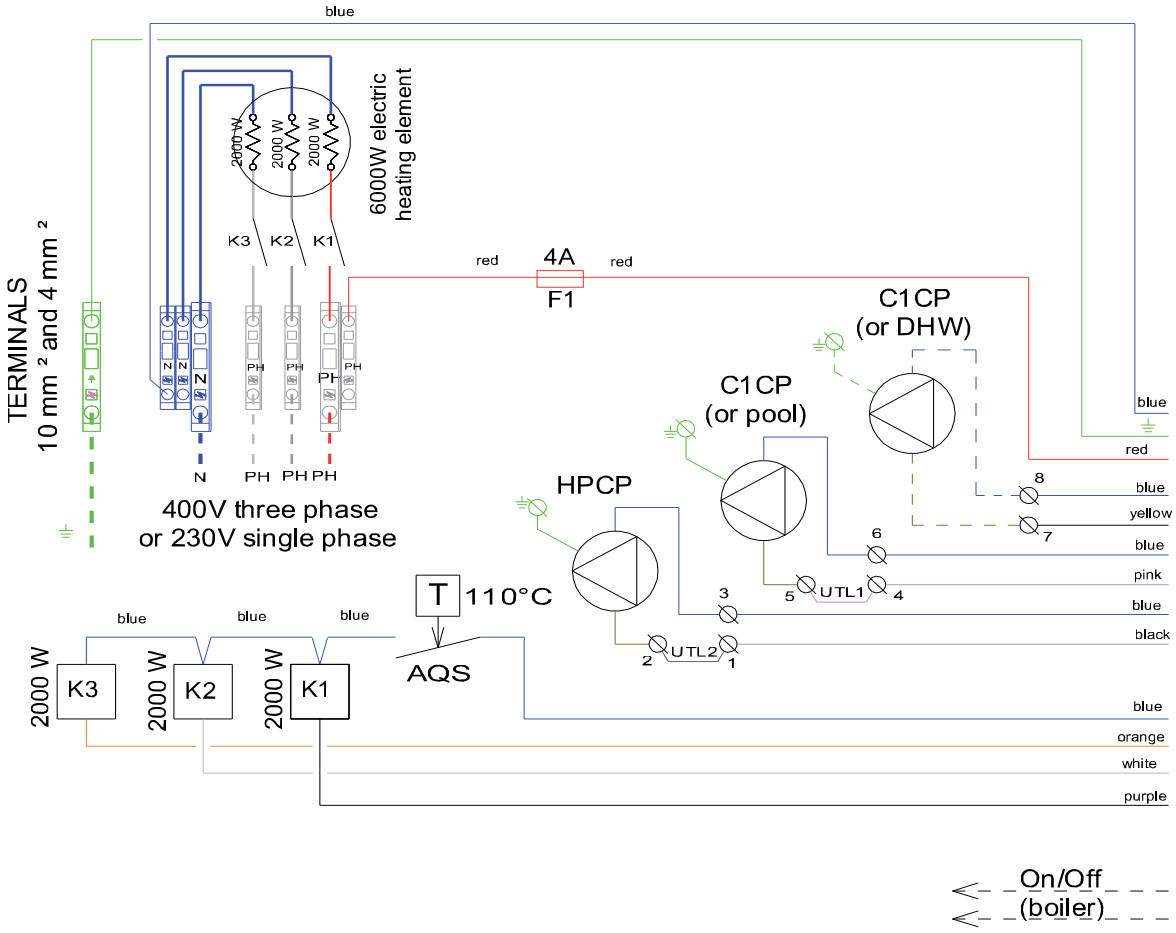
HRC[70] HEAT PUMP - 11 kW three phase- internal wiring diagram



TsPAC	:	*Water outlet temperature sensor*
TePAC	:	*Water inlet temperature sensor*
Tdégiv	:	*De-icing temperature sensor*
Tair	:	*Air inlet temperature sensor*
Tcomp	:	*Compressor temperature sensor*
HP	:	*Compressor high pressure switch*
BP	:	*Low pressure switch*
CP	:	*Compressor start-up command*
VEM	:	*De-icing solenoid valve cycle inversion command*
CH	:	*Compressor RK heater cable*
CC	:	*External heater cable*
VO	:	*Fan control*
F	:	*5x20 4A fuse*
K	:	*Compressor thermal protection device*
CS	:	*Compressor start-up*
RK	:	*Compressor crank case heater*
EV	:	*De-icing solenoid valve*

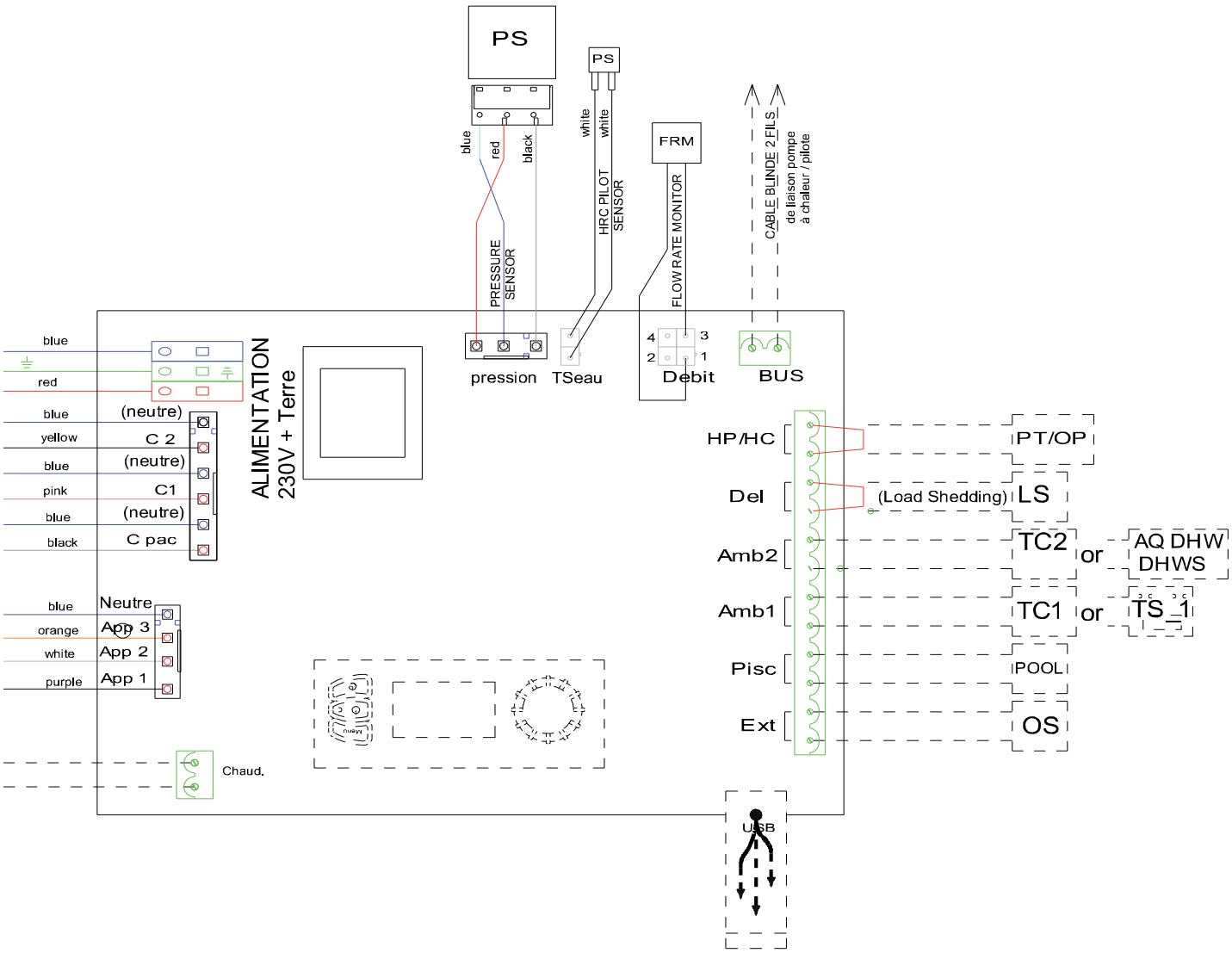

blue
black
g & y
blue
black
g & y
U2
U1
PE
FAN
yellow
blue
blue
g & y
brown
orange
CP1
CP2
VEM
CH1
CH2
CC
HG
0 V
230 V 50 Hz
Power supply
yellow
blue
HRC C4 electronics board
TsPAC
TePAC
T dégiv
T air
Tcomp1
Tcomp2
HP1
HP2
BP
Water outlet sensor
Water inlet sensor
De-icing sensor
Air inlet sensor
Compressor temperature sensor
HP
Compressor high pressure sensor
Shunt
BP
Low pressure switch
2-core sheathed connection cable for heat pump / pilot
blue or black
orange
EV
RK
External heater cable

HRC[70] PILOT electrical schematic diagram



PH + N + Ground ..... 230V single phase power supply for HRC[70] Pilot
HPCP ..... Heat Pump circuit circulator pump
C1CP ..... Heating circuit 1 circulator pump
C2CP ..... Heating circuit 2 circulator pump (optional)
HPFM ..... Contrôleur de débit circuit pompe à chaleur
SP ..... HRC[70] Pilot temperature sensor (TSeau input / PCB)
AQS ..... 110 °C safety aquastat with manual reset for HRC[70] Pilot
WPS ..... HRC[70] Pilot water pressure sensor
OS ..... HRC[70] Pilot Heat Pump outdoor temperature sensor (Ext. input /PCB)
TC1 ..... Heating circuit 1 room thermostat (Amb1 input / PCB) (optional)
or TSC1 ..... Heating circuit 1 room temperature sensor with display (Amb1 input / PCB) (optional)

AQ DHW ..... Heating circuit 2 domestic water aquastat (Amb2 input / PCB)
or DHWS ..... Heating circuit 2 domestic water temperature sensor (Amb2 input / PCB)
Del ..... Load shedding input
HP/HC ..... Peak / off-peak time input (or electricity provider contact)
App1 ..... 230 V output electrical back-up command, 1st stage
App2 ..... 230 V output electrical back-up command, 2nd stage
App3 ..... 230 V output electrical back-up command, 3rd stage
Chaud. ..... On/off command (dry contact) for existing boiler
BUS ..... Link between Heat Pump / HRC[70] Pilot with 2-core sheathed cable (10m long supplied, 20m available to order -Ref.751005)
USB ..... USB port for reading recorded data



F1 ..... 4A protection fuse for PCB

Alim ..... PCB power supply 230 V + Ground

LTP 1 / UTL 1 ..... Temperature-limiting safety device for underfloor heating as circuit 1 (optional)

LTP 2 / UTL 2 ..... Temperature-limiting safety device for Heat Pump

K1 ; K2 ; K3 ..... Power contactors stages 1 to 3

T ..... Electrical back-up from 2000 W electric immersion heater

RP1 and RP2 ..... Swimming pool relay

SFM ..... Swimming pool flow rate monitor

S pool ..... Swimming pool temperature sensor (option included in the swimming pool kit)

VP ..... 3-way valve for radiator circuit (winter) or swimming pool circuit (summer)

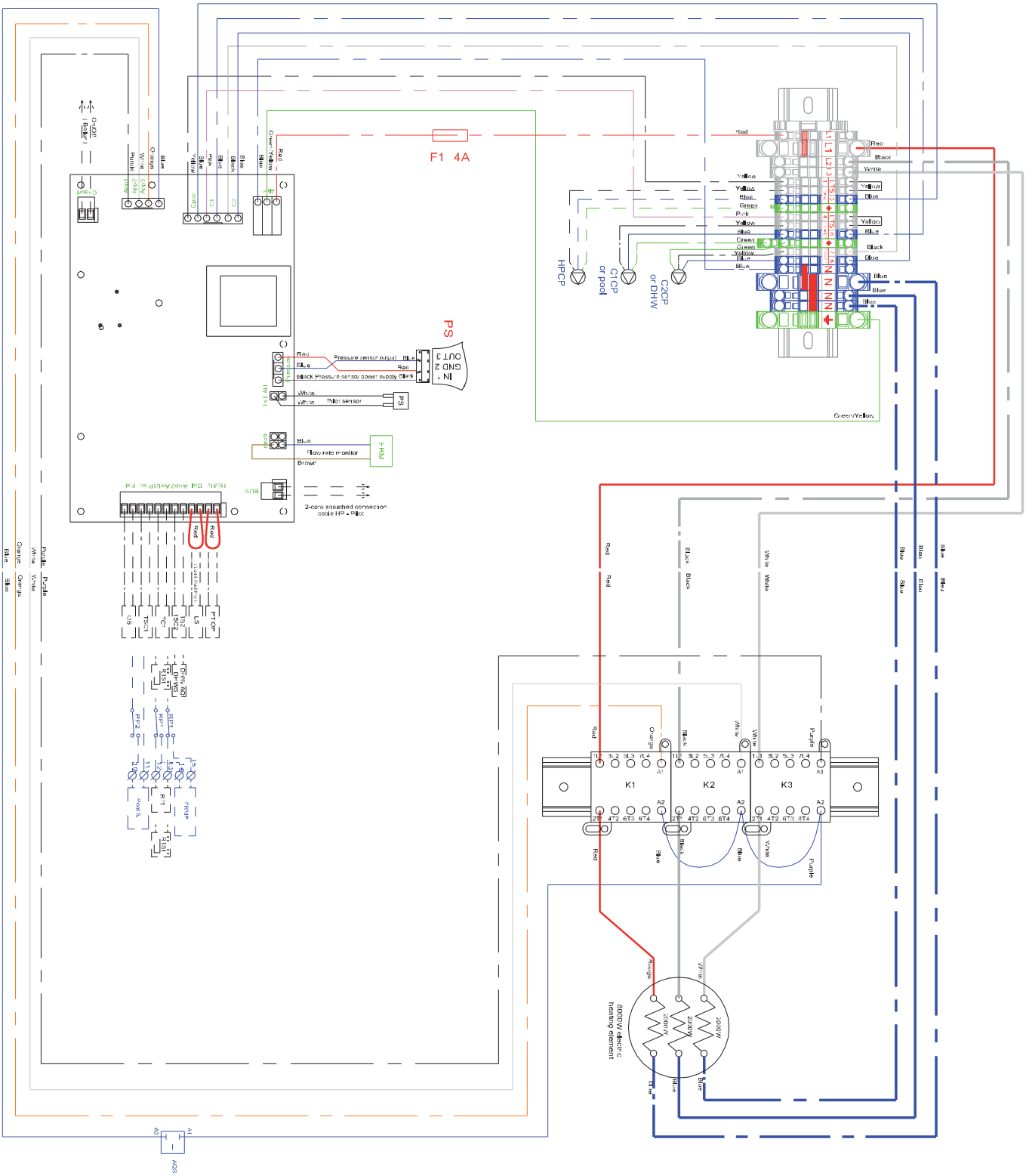
F2 ..... 4A protection fuse for swimming pool circuit

C pool ..... Swimming pool circuit circulator pump

Optional swimming pool kit:

IP ..... Switch for heating (winter) / pool (summer)

HRC^{70} PILOT internal wiring diagram



Légendes : Voir pages précédentes

A8 - Electricity provider information form

This form is to give to your electricity provider for any preliminary study undertaken for installing a HRC[70] Heat Pump, in case of insufficient power supply from the power grid.

This table recapitulates both information on electrical installation and HRC Heat Pump technical data.

You can find the technical data in the table in the § "Connecting the HRC Heat Pump to the power supply" section.

If necessary, your electricity provider can reinforce the power lines after the installation study.

Name of customer		
Address		
Customer reference number on electricity bill		
Name and address of installer		
Connections	Single phase ☐	Three phase ☐ *
Circuit breaker	Setting: _____A	
Heat Pump (HP)		
Type of pump	Single phase ☐	Three phase ☐ *
Model, make and reference number	_____	
Type of compressor (without back-up heating)	Single phase ☐	Three phase ☐ *
Nominal heating capacity of Heat Pump without elements for heating back-up (kVA)	_____(kVA) *	
Or	Or	
HP nominal current without elements for heating back-up (A)	_____(A) *	
HP start-up current (A)	_____(A) *	
HP impedance (Z_{max}) **declared by manufacturer**	_____(Ω)	
HP power regulating mode	Fixed speed ☐	Variable speed ☐
Is there a start-up support system in place for fixed-speed systems?	Yes ☐* / No ☐*	-
Elements for heating back-up	Single phase ☐	Three phase ☐ *
	_____(kVA)	
*** : mandatory fields**		

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