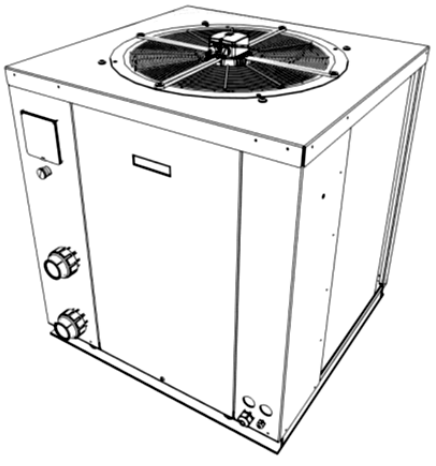
# Z950



**Instructions for installation and use** - English
Heat pump
Translation of the original instructions in french

EN

More documents on:
www.zodiac.com

05470135_REV02

## ⚠ WARNINGS

| | |
|---|---|
|  | **Carefully read the instructions in this manual before using the unit.** |

### GENERAL WARNINGS

- Failure to respect the warnings may cause serious damage to the pool equipment or cause serious injury, even death.
- Only a person qualified in the technical fields concerned (electricity, hydraulics or refrigeration) is authorised to carry out maintenance or repair work on the appliance. The qualified technician working on the  appliance must use/wear personal protective equipment (such as safety goggles and protective gloves, etc.) in order to reduce the risk of injury occurring when working on the appliance.
- Before handling the appliance, check that it is switched off and isolated.
- The appliance is intended to be used for pools and spas for a specific purpose; it must not be used for any purpose other than that for which it was designed.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Cleaning and user maintenance shall not be made by children without supervision.
- The appliance must be installed according to the manufacturer's instructions and in compliance with local and national standards.
- The installer is responsible for installing the appliance and for compliance with national installation regulations. Under no circumstances may the manufacturer be held liable in the event of failure to comply with applicable local installation standards.
- For any work other than the simple user maintenance described in this manual, the product should be referred to a qualified professional.
- If the appliance suffers a malfunction, do not try to repair it yourself; instead contact a qualified technician.
- Deactivating, eliminating or by-passing any of the safety mechanisms integrated into the appliance shall automatically void the warranty, in addition to the use of spare parts manufactured by unauthorised third-party manufacturers.
- Do not spray insecticide or any other chemical (inflammable or non-inflammable) in the direction of the appliance, as this may damage the body and cause a fire.
- Do not touch the fan or moving parts and do not place objects or your fingers in the vicinity of the moving parts when the appliance is in operation. Moving parts can cause serious injury or even death.

## WARNINGS ASSOCIATED WITH ELECTRICAL APPLIANCES

- The power supply to the appliance must be protected by a dedicated 30 mA Residual Current Device (RCD), complying with the standards and regulations in force in the country in which it is installed.
- Do not use any extension lead when connecting the appliance; connect the appliance directly to a suitable power supply.
- Before carrying out any operations, check that:
  - The voltage indicated on the appliance information plate corresponds to the mains voltage.
  - The power grid must be adapted to the power requirements of the appliance, and is grounded.
- In the event of abnormal operation or the release of odours from the appliance, turn it off immediately, unplug it from its power supply and contact a professional.
- Before servicing or performing maintenance on the appliance, check that it is powered off and completely disconnected from the power supply. Moreover, check that the heating priority (where applicable) is deactivated and that any other device or accessory connected to the appliance is also disconnected from the power supply.
- Do not disconnect and reconnect the appliance to the power supply when in operation.
- Do not pull on the power cord to disconnect it from the power supply.
- If the power cord is damaged, it must be replaced by the manufacturer, its technician or a qualified person to guarantee safety.
- Do not perform maintenance or servicing operations on the appliance with wet hands or if the appliance is wet.
- Before connecting the appliance to the power supply, check that the connection unit or socket to which the appliance will be connected is in good condition and shows no signs of damage or rust.
- For any component or sub-assembly containing a battery: do not recharge or dismantle the battery, or throw it into a fire. Do not expose it to high temperatures or direct sunlight.
- In stormy weather, disconnect the appliance from the power supply to prevent it from suffering lightning damage.
- Do not immerse the appliance in water or mud.

## WARNINGS CONCERNING APPLIANCES CONTAINING REFRIGERANT

- Do not discharge R410A fluid into the atmosphere. This is a fluorinated greenhouse gas, covered by the Kyoto Protocol, with a Global Warming Potential (GWP) = 2088 (European regulation EU 517/2014).
- In order to comply with the applicable standards and regulations in terms of the environment and installation, in particular French decree No. 2015-1790 and/or European regulation EU 517/2014, a leak test must be performed on the cooling circuit when starting up the appliance and at least once a year. This operation must be carried out by a specialist certified to test cooling appliances.

## INSTALLATION AND MAINTENANCE

- The appliance may not be installed close to combustible materials, or the air duct inlet of an adjacent building.
- With some appliances, it is essential to fit a "protection grid"-type accessory if the unit is installed in an area with uncontrolled access.
- During installation, troubleshooting and maintenance, pipes may not be used as steps: the pipe could break under the weight, spilling coolant and possibly causing serious burns.
- Before beginning work on the cooling circuit, stop the appliance and wait for a few minutes before fitting the temperature and pressure sensors. Some elements such as the compressor and piping may reach temperatures in excess of 100°C and high pressures with the consequent risk of severe burns.

## TROUBLESHOOTING



All brazing must be carried out by qualified brazers.

- Replacement pipes must always be made of copper in compliance with standard NF EN 12735-1.
- Leak detection; pressure test:
  - never use oxygen or dry air, risk of fire or explosion,
  - use dry nitrogen or the mixture of nitrogen and refrigerant indicated on the information plate,
- the test pressure for both the high and low pressure circuits must not exceed 42 bar in cases where the appliance is equipped with the optional pressure gauge.
- The high pressure circuit pipes are made of copper and have a diameter equal to or greater than 1’’5/8. A 2.1 test certificate in compliance with standard NF EN 10204 must be requested from the supplier and filed in the installation's technical file.
- Technical data relative to the safety requirements of the various applicable directives must be indicated on the information plate. This data must be recorded in the installation instructions for the appliance which are included in the installation technical file: model, code, serial number, maximum and minimum OT, OP, year of manufacture, EC label, manufacturer’s address, refrigerant and weight, electrical parameters, thermo-dynamic and acoustic performances.

## LABELLING

- The equipment must be labelled so as to specify that it is out of order and that the refrigerant has been drained.
- The label must be dated and signed.

## RECOVERY

- When draining the refrigerant for maintenance or decommissioning, best practices should be followed in order to safely drain all of the refrigerant.
- When transferring refrigerant to a cylinder, make sure that you use a recovery cylinder that is compatible with the refrigerant. Make sure that the correct number of cylinders are provided for recovering all of the refrigerant. All cylinders used must be intended for the recovery of refrigerant and must be labelled for this specific refrigerant. The cylinders must be equipped with a vacuum valve and a stop gate in good working order. Empty collection cylinders are drained and, where possible, cooled before recovery.
- The recovery equipment must be in good working order, the instructions for using the equipment must be within reach and the equipment must be compatible for use with the refrigerant concerned, including, where appropriate, a flammable refrigerant. Moreover, a set of calibrated scales must be available and in good working order. The pipework must be complete, have no leaks or disconnected connectors, and must be in good condition. Before using the recovery unit, check that it is in good working order, that it has been well maintained and that the associated electric components are sealed so as to prevent any risk of fire in the event of refrigerant being released. If you have any doubts, contact the manufacturer.
- The recovered refrigerant must be sent to the refrigerant supplier in its recovery cylinder with a waste transfer note. Do not mix different refrigerants in the recovery units, and in particular in the cylinders.
- If the compressor has been removed or if oil from the compressor has been drained, check that the refrigerant has been completely removed to prevent it from mixing with the lubricant. The draining process must be carried out before returning the compressor to the supplier. Only the electric heater of the compressor body can be used to accelerate this process. This operation can be carried out safely once all liquids within the system have been drained.

**Recycling**

This symbol is required by European Community Directive 2012/19/UE on WEEE (Waste Electrical and Electronic Equipment) and means that your appliance must not be thrown into a normal bin. It will be selectively collected for the purpose of reuse, recycling or transformation. Any substances it may contain which are potentially dangerous to the environment shall be eliminated or neutralised. Request information on recycling procedures from your retailer.

- **Before handling the appliance, it is vital that you read this installation and user manual, as well as the "Warranties" booklet delivered with the appliance. Failure to do so may result in material damage or serious or fatal injury and will void the warranty.**
- **Keep and pass on these documents for later viewing throughout the appliance's service life.**
- **The distribution or modification of this document in any way is prohibited, without prior authorisation from Zodiac®.**
- **Zodiac® is constantly developing its products to improve their quality. The information contained herein may therefore be modified without notice.**

# CONTENTS



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**Tip: to make it easier to contact your retailer**

- Write down your retailer's contact details to help you find them more easily and fill in the "product" information on the back of the manual; your retailer will ask you for this information.

# 1 Specifications

## 1.1 I Description


| | Z950 | TD35 | TD45 | TD60 | TD90 | TD120 |
|---|---|---|---|---|---|---|
| A | Single cooling circuit | ✔ | ✔ | ✔ | | |
| | Double cooling circuit | | | | ✔ | ✔ |
| B | Ø63 connector (x2) | ✔ | ✔ | | | |
| | Ø75 connector (x2) | | | ✔ | ✔ | ✔ |
| C | Winterising caps (x2) | ✔ | ✔ | ✔ | ✔ | ✔ |
| E | PAC NET (cleaning product) | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ |

✔ : supplied

⊕ : available as accessories

## 1.2 I Technical specifications

| Z950 | | TD35 | TD45 | TD60 | TD90 | TD120 |
|---|---|---|---|---|---|---|
| Operating temperatures | air | -12 to 38 °C | | | | |
| | water | 10 to 40 °C | | | | |
| Defrosting by cycle inversion | | Air T°C < 10 °C | | | | |
| Voltage | | 400V/3/50 Hz | | | | |
| Admissible variation in voltage | | ± 10 % (during operation) | | | | |
| Pollution class | | I | | | | |
| Pollution degree | | 2 | | | | |
| Overvoltage category | | II | | | | |
| Protection fuse (F, quick) | | 10 A / 250 V | | | | |
| Protection rating | | IP44 | | | | |
| Refrigerant gas R410-A | kg | 6 | 7.5 | 9 | 2 x 9 | 2 x 11 |
| Minimum cable section* | mm² | 4 | 6 | 10 | 16 | 25 |
| Proof pressure | bar | 3 | | | | |
| Service pressure | bar | 1.5 | | | | |
| Maximum inlet pressure | bar | 3.5 | | | | |
| Head loss | KPa | 15 | 50 | 41.6 | 52 | 74 |
| Recommended water flow rate | m³/h | 13 | 20 | 30 | 42 | 60 |
| Acoustic power | db(A)** | 83 | 83 | 90 | 90 | 90 |
| Acoustic pressure at 10 m | db(A)** | 52 | 52 | 58 | 58 | 58 |
| Net weight | kg | 185 | 210 | 287 | 447 | 500 |
| Gross weight | kg | 195 | 220 | 310 | 475 | 545 |
| **PERFORMANCE: 15 °C air / 26 °C water / Humidity : 70%** | | | | | | |
| Power consumed | kW | 6.20 | 8.10 | 11.50 | 16.80 | 23.90 |
| Power output | kW | 30.53 | 39.70 | 56.80 | 80.20 | 110.50 |
| Average COP | | 4.92 | 4.90 | 4.94 | 4.77 | 4.62 |
| **PERFORMANCE: 28 °C air / 28 °C water / Humidity : 80%** | | | | | | |
| Power consumed | kW | 6.93 | 8.53 | 12.25 | 17.6 | 24.97 |
| Power output | kW | 39.48 | 47.94 | 68.1 | 98.1 | 133.1 |
| Average COP | | 5.69 | 5.62 | 5.54 | 5.56 | 5.32 |

* Values provided for information purposes for a maximum length of 20 metres (calculation base: NFC15-100), must be checked and adapted to the installation conditions and standards of the installation country.

** In accordance with the standards UNE-EN 12102 / ISO 3744:2010

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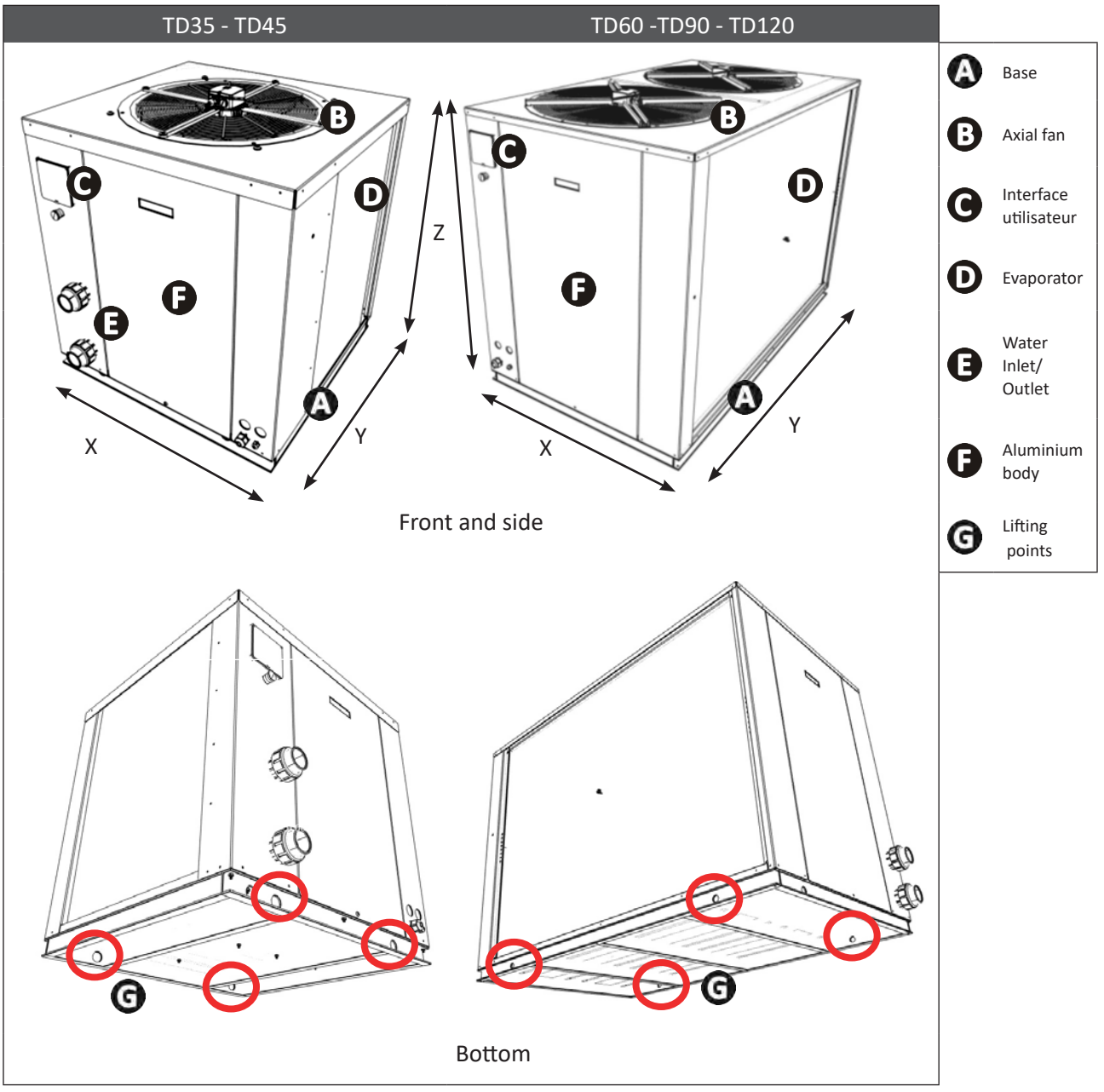
## 1.3 I Dimensions and marking




| Z950 | | TD35 | TD45 | TD60 | TD90 | TD120 |
|---|---|---|---|---|---|---|
| **X** | (mm) | 1,050 | 1,050 | 1,300 | 1,300 | 1,300 |
| **Y** | (mm) | 1,000 | 1,000 | 1,700 | 2,100 | 2,400 |
| **Z** | (mm) | 1,200 | 1,200 | 1,560 | 1,560 | 1,760 |

# 2 Installation

## 2.1 I Selecting the location

- **Installation is only permitted outdoors.**
- **Do not lift the appliance by the body; use the dedicated points on its base (see § "1.3 I Dimensions and marking").**
- **When the appliance is installed and protected by a residual current device (RCD) with a maximum current of 30 mA, it should be installed at a distance of at least 2 metres from the edge of the pool.**
- **If no RCD is installed with the appliance, it should be installed at a distance of at least 3.5 metres from the edge of the pool.**
- **The appliance must be installed at a minimum distance from the pool's surrounding edge. This distance is determined by the electrical standards which apply in the installation country.**
- **Provide for a clear space around the appliance and ensure that the air inlet and outlet are not obstructed for its correct operation and maintenance.**

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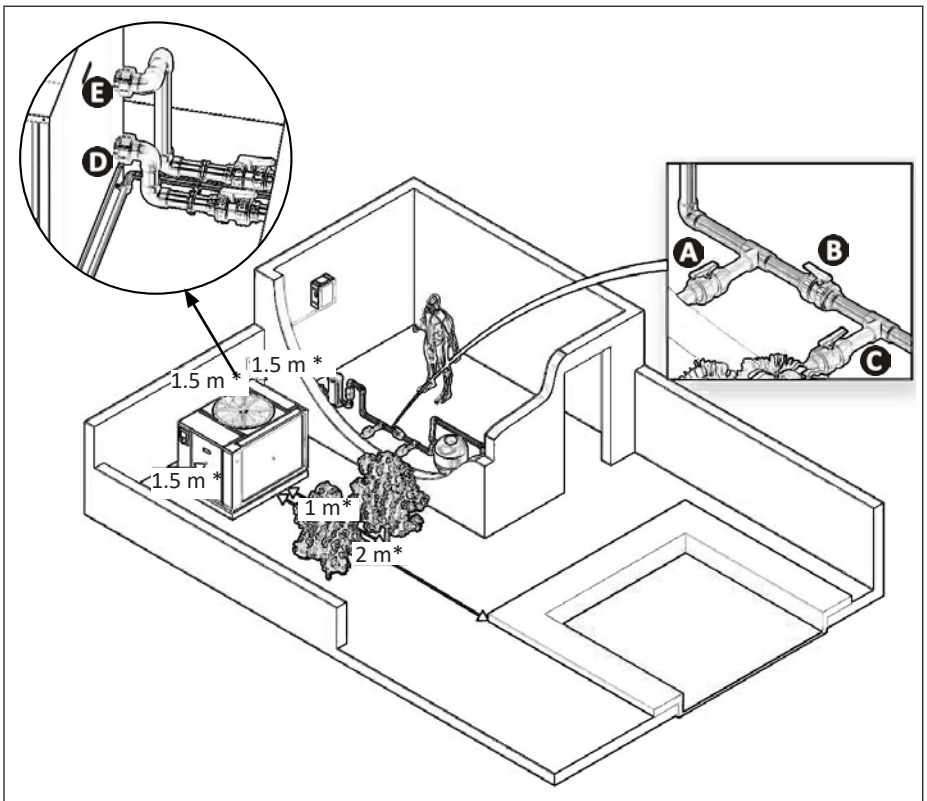
- **The device must be installed vertically on a stable, level, and solid surface.**
- **This surface must be able to bear the weight (see § "1.2 I Technical specifications") of the appliance (in particular in the case of installation on a roof, a balcony or any other support). We recommend that the appliance is installed on a slab which allows condensates to be piped.**

The appliance must not be installed:
- With the blowing towards a permanent or temporary obstacle (awning, brushwood, etc.) less than 5 metres away,
- Within range of water or mud jets, sprays or run-off (take the effect of the wind into account),
- Near a heat source or flammable gas,
- Near high-frequency equipment,
- In a location where it would be subject to snow build-up,
- In a location where it might be flooded by the condensates produced by the appliance when operating.

**Tip: to reduce noise produced by your heat pump**
- Do not install it under or facing a window.
- Do not tilt it towards your neighbours.
- Install it in an open space (sound waves are reflected on surfaces).
- Install an acoustic screen around the heat pump, respecting the distances (see diagram §"2.2 I Hydraulic connections").
- Install 50 cm of flexible PVC pipe at the heat pump water inlet and outlet to absorb vibrations.

## 2.2 I Hydraulic connections

- A by-pass must be installed to make it easier to work on the appliance.
- The device will be connected to the pool's filtration circuit with a Ø63 or Ø75 PVC pipe (depending on the model) using the supplied connectors, after the filter and before the water treatment. We strongly recommend the installation of a siphon if the water treatment system inlet is located less than 25 cm below the heat pump water outlet.
- Respect the direction of hydraulic connection.
- As a preventive measure, we recommend that a non-return valve is added to prevent chemicals from reaching the pump if the hydraulic circuit stops.




**Connection to a standard filtration circuit**

**A**: water inlet valve

**B**: by-pass valve

**C**: water outlet valve

**D**: water inlet connector (PVC-U union)

**E**: water outlet connector (PVC-U union)

(* minimum distance

**Information: condensate drainage**

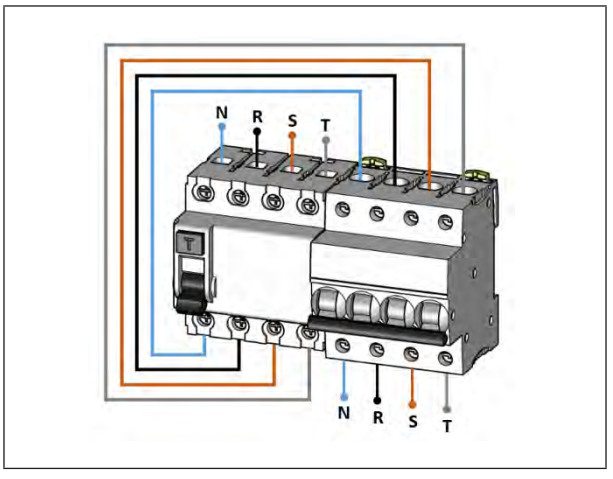
Caution, several litres of water can be drained from your appliance each day, which is related to the condensation of moisture contained in the air. We strongly recommend connecting the drain to a suitable water drainage system. The installation of a siphon is recommended inside the appliance to avoid stagnant water.

## 2.3 I Electrical connections

### 2.3.1 Electrical power supply connection

- **Before any work inside the appliance, you must cut the appliance's electricity supply as there is a risk of electric shock which may cause material damage, serious injury or even death.**
- **Incorrectly tightened terminals may cause the terminal box to heat up, which can invalidate the warranty.**
- **Only a qualified and experienced technician is authorised to carry out cabling work within the appliance or to replace the power cord.**
- **The installer must consult the electricity provider if necessary and ensure that the equipment is connected correctly to an electricity network with impedance under 0.095 ohm.**

- The heat pump's electrical supply must be provided through a protection and circuit breaking device (not supplied) complying with the standards and regulations in force in the country where it is installed.
- The appliance is provided for connection to a general power supply with a TT or TN-S neutral regime.
- Electrical protection: three-pole residual current circuit breaker (minimum 30 mA).
- Additional protection may be required during installation to guarantee the overvoltage category II.
- The power supply must correspond to the voltage indicated on the appliance's information plate.
- If there are fluctuations in the input voltage, the installation of a voltage stabiliser is recommended to prevent damage to the appliance.
- The power cord must be insulated against any cutting or hot elements that may damage or crush it.
- The appliance must be connected to an earth socket.
- The electrical connection lines must be fixed.
- Use the gland to pass the power cord into the appliance.
- Use the power cord (RO2V type) adapted for outdoor or buried use (or run the cable into a protection duct).
- We recommend burying the cable at a depth of 50 cm (85 cm under a road or path) in an electrical duct.
- If this buried cable meets another cable or pipe (gas, water, etc.), there must be more than 20 cm between them.
- The electrical connection must be compliant with the wiring diagram (see §"5.5 I Wiring diagrams")
- Connect the power cord to the connection terminal board.
- Connect the earth wire to the planned location.
- The connections are shown in diagram form in the following image.




**R - S - T**: Phases
**N** : Neutral

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### 2.3.2 "Heating priority" option

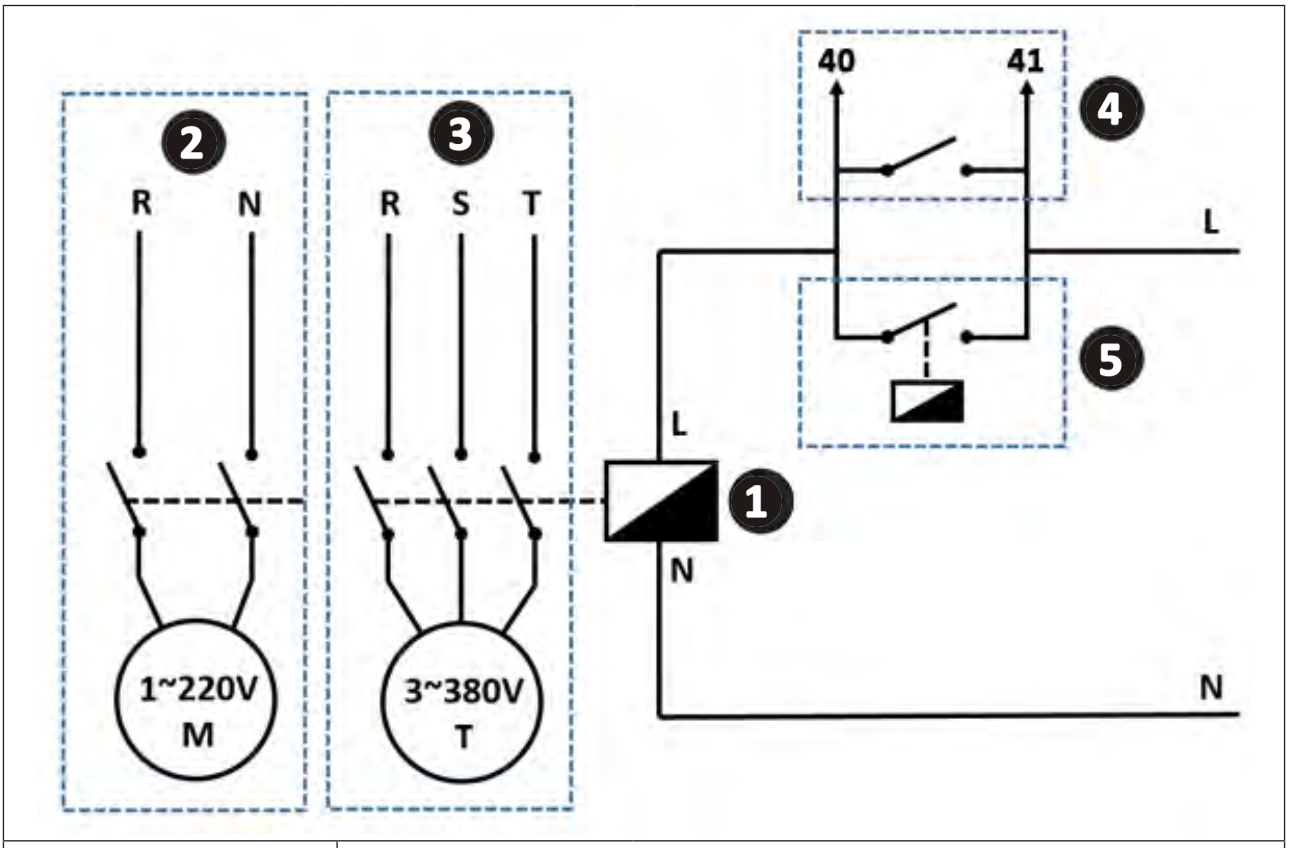
- **Before any work inside the appliance, you must cut the appliance's electricity supply as there is a risk of electric shock which may cause material damage, serious injury or even death.**
- **Use cables with a section of at least 2x0.75 mm², RO2V type and with a diameter between 8 and 13 mm.**

This function allows the appliance to start or maintain filtration in order to detect the water temperature and thus activate the filtration + heating unit to maintain a constant water temperature. The filter pump is thus said to be slaved to the heating system. Filtration is kept in operation or activated if the pool temperature falls below the desired temperature (see § "5.3 I Advanced setting parameters (accessible by a qualified technician)").

The start-up of the pool's filtration pump also starts up the compressor. When the compressor stops, this also stops the filtration pump.

The time between the compressor start-up and the pump start-up is configurable, just like the time between the compressor stopping and the pump stopping.

- Connect as shown below.




| | | |
|---|---|---|
| 1 | Power for the filter pump | |
| 2 | Two possible connections for the filter pump : | Two-pole |
| 3 | | Three-pole |
| 4 | Heat pump | |
| 5 | Filtration timer | |

# 3 Use

## 3.1 I Operating principle

### 3.1.1 General operation

Your heat pump uses the calories (heat) in the air to heat up your pool's water. The process to heat your pool's water to the temperature you want may take a few days as it depends on the weather conditions, the heat pump's power and the difference between the water temperature and the temperature you want.
The hotter and more humid the air, the better your heat pump will perform. The outdoor parameters for optimal operation are an air temperature of 28°C, a water temperature of 28°C and 80% relative humidity.

**Tip: to improve the heating and maintaining of your pool's temperature**

- Anticipate the commissioning of your pool far enough in advance before you use it.
- When heating, set the water circulation to continuous operation (24/7).
- To maintain the temperature throughout the season, run "automatic" circulation for at least 12 hours/day (the longer this time the longer the heat pump will have enough operating range to heat up).
- Cover the pool with a sheet (bubble canopy, canvas, etc.) to prevent heat loss.
- The heat pump will be even more efficient if it operates during the warmest hours of the day.
- Keep the evaporator clean.
- Set the temperature you want and let the heat pump run (adjusting the setpoint to maximum will not heat the water more quickly).

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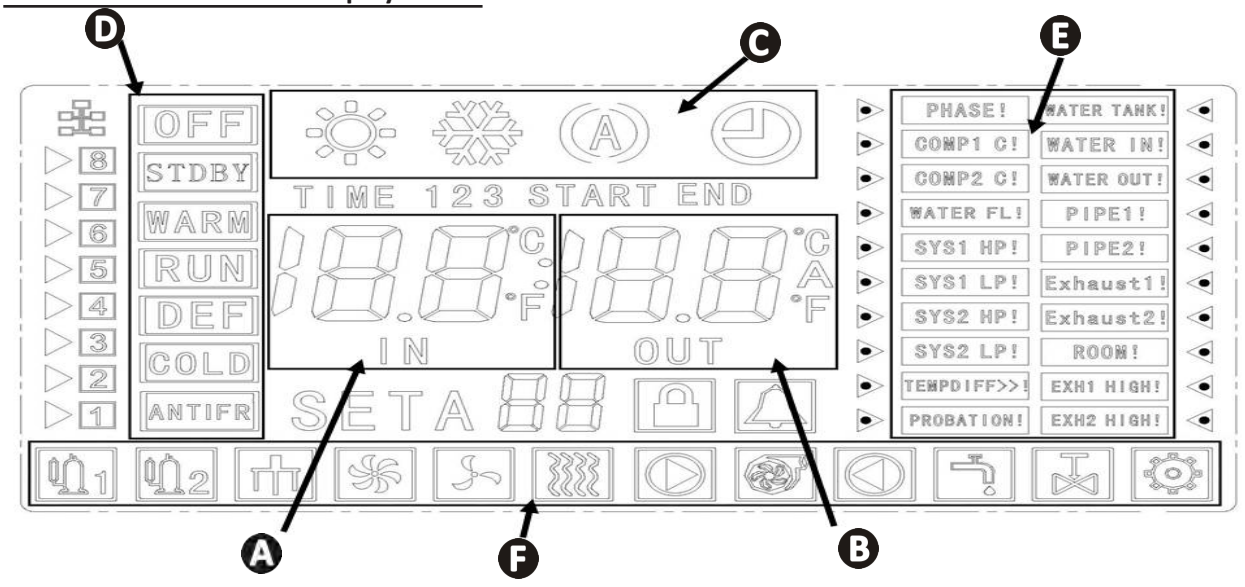
The appliance must operate in pool water with the following properties:

| | |
|---|---|
| **pH** | 7.2 - 7.8 |
| **Residual chlorine** | 1 - 2 ppm |
| **Alkalinity** | 80 - 125 ppm |
| **Total dissolved solids** | ≤ 3000 mg/L |
| **Hardness** | 200-300 ppm |

## 3.2 I User interface presentation

### 3.2.1 Presentation of the display screen




| Symbol | Description |
|---|---|
| A | Water temperature at intake |

| | |
|---|---|
| Ⓑ | Water temperature at outlet |
| Ⓒ | Operating mode |
| Ⓓ | Appliance status |
| Ⓔ | Error codes |
| Ⓕ | Operating condition of components |

### 3.2.2 Description of the display screen

| Symbol | Description |
|---|---|
| Operating modes | |
|  | Heating mode activated |
|  | Cooling mode activated |
|  | Heating/Cooling mode activated |
| Appliance status | |
|  | Turned off |
|  | In standby |
|  | Time programming activated |
|  | Operating |
|  | Defrosting |
|  | Appliance stopped (frost protection) |
| Equipment status | |
|  | Compressor 1 activated |
|  | Compressor 2 activated |
|  | 4-way valve activated |
|  | Fan speed normal |
|  | Electrical resistor |
|  | Priority heating activated |

| | |
|---|---|
|  | Communication problem (RS485) |
| Additional information | |
|  | Time setting |
|  | Set point |
|  | Alarm in progress |
|  | Keypad locked |

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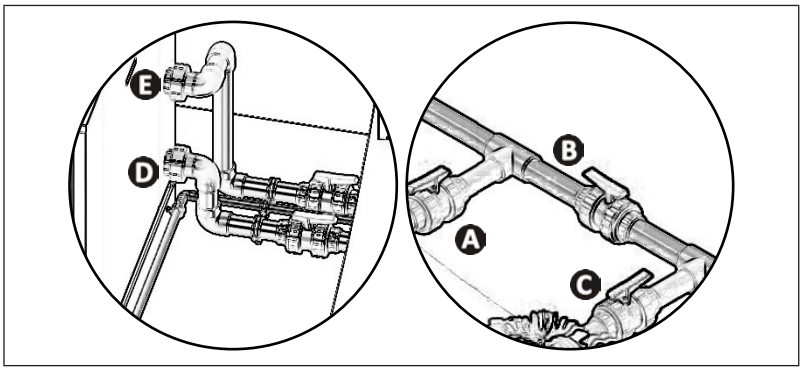
### 3.2.3 Presentation of the function keys

| | |
|---|---|
|  | "On/off" button |
|  | Time setting button |
|  | Temperature and consumption values display |
|  | Operating mode setting button<br>Go back in the menus |
|  | Setpoint temperature adjustment button |
|  | Electrical resistor activation button |
|  | Value setting buttons |

## 3.3 I Operation

### 3.3.1 Starting up the appliance

- Check that there are no tools or other foreign objects in the appliance,
- Refit the panel providing access to the technical part (see § "1.3 I Dimensions and marking"),
- Set the valves as follows: valve B wide open, valves A, C, D and E closed.




A: water inlet valve

B: by-pass valve

C: water outlet valve

D: water inlet adjustment valve (optional)

E: water outlet adjustment valve (optional)

- **An incorrect by-pass setting may cause the heat pump to malfunction.**

- Check that the hydraulic connections are correctly tightened and that there are no leaks.
- Check that the appliance is stable.
- Turn on the water flow (by activating filtration).
- Close valve B gradually so that the filter pressure is increased by 150g (0.150 bars).
- Open valves A, C and D fully then valve E by half (the air which has built up in the heat pump condenser and the filtration circuit will bleed out). If valves D and E are not present, open valve A wide and close valve C by half.
- Connect the power supply to the heat pump.
- Power up the device by connecting the external general switch to the appliance. Once the appliance is connected, check the phase currents.

- **The appliance is fitted with a crankcase heater: it must be powered for at least one hour before it is switched on so that the compressor oil reaches optimal operating condition and can lubricate the components that it contains.**

- Press ⏻ to switch the appliance on.

- **Check the currents of the electric motors, ensuring that they do not exceed the specified values.**
- **Check the gas load (high and low pressure gauges must be installed in the cooling circuit).**

### 3.3.2 Configuring the setpoint

- Press S to enter the temperature setting mode.
- Press ∧ or ∨ to change the temperature * (press and hold for rapid scrolling).
- Press S to confirm the setting.
- Press M to exit the temperature setting mode.
- The setpoint temperature is displayed on the screen: SETA 88

After the start-up steps for your heat pump:

- Shut down the water circulation temporarily (by stopping the filtration or closing valve B or C) to check that your appliance stops after a few seconds (via the activation of the flow switch).
- Reduce the temperature setpoint to below the water temperature to check that the heat pump stops operating.
- Switch off the heat pump by pressing ⏻ and check that it stops.

*Maximum setpoint temperature = 40°C / Minimum setpoint temperature = 10°C.

## 3.4 I User functions

### 3.4.1 Locking/unlocking the keyboard

To lock or unlock the keyboard, press ∧ and ∨ simultaneously for 5 seconds: the lock icon  appears on the home screen when the keypad is locked and disappears when it is unlocked.

### 3.4.2 Time setting

- Press  .
- Press ∧ or ∨ to set the hours.
- Press  and ∧ or ∨ to set the minutes.
- Press  to confirm and return to the main menu.

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### 3.4.3 Activation/deactivation of "Time programming"

- If "Time programming" is activated but no period has been programmed, the appliance will not start.

- Press M for at least 2 seconds.
- Press  for at least 5 seconds. The start and end times of the first period are displayed.
- Press ∧ or ∨ to set the start time for the first period.
- Press  and ∧ or ∨ to set the minutes.
- Press  and ∧ or ∨ to set the end time for the first period.
- Press  and ∧ or ∨ to set the minutes.
- Repeat the process to program the times for periods 2 and 3 if necessary.
- Press  to confirm and return to the main menu.

### 3.4.4 Activating/deactivating modes

**"Heating" mode**

- Press M.
- "Heating" mode is activated and the  icon is displayed on the home screen.

**"Cooling" mode**

Activating the "Cooling" mode allows the appliance's cycle to be reversed to cool the pool water when it exceeds the setpoint temperature by more than 1°C (configurable).

- Press M. "Heating" mode is activated.
- Press M a second time. "Cooling" mode is activated and the  icon is displayed on the home screen.

**" Heating/Cooling" mode**

Activating the "Heating/Cooling" mode allows the appliance to automatically heat or cool the pool water depending on the pool water temperature or the setpoint temperature.

- Press M. "Heating" mode is activated.
- Press M a second time. "Cooling" mode is activated.
- Press M a third time. "Heating/Cooling" mode is activated and the  icon is displayed on the home screen.

### 3.4.5 Sensor temperature reading

- Press  to display the temperature sensor values and the compressor consumption (the three values correspond to each of the compressor phases).
- Press ^ or v to display the different values (which are detailed in the table below) .

| | |
|---|---|
| **T1** | Water inlet temperature |
| **T2** | Evaporator 1 sensor (defrost sensor) |
| **T3** | Discharge sensor 1 |
| **T4** | Suction sensor 1 |
| **T5** | Evaporator 2 sensor (defrost sensor) |
| **T6** | Discharge sensor 2 |
| **T7** | Suction sensor 2 |
| **T8** | Ambient temperature: |
| **T9** | Water outlet temperature |
| **T10** | Circuit 1 valve position |
| **T11** | Circuit 2 valve position |
| **T12** | NA |
| **T13** | NA |
| **T14** | NA |
| **T15** | NA |
| **T16** | Phase 1 current Compressor 1 |
| **T17** | Phase 2 current Compressor 1 |
| **T18** | Phase 3 current Compressor 1 |
| **T19** | Phase 1 current Compressor 2 |
| **T20** | Phase 2 current Compressor 2 |
| **T21** | Phase 3 current Compressor 2 |

- The values related to compressor consumption can fluctuate depending on the water and outside air temperatures. The consumption values of the compressor phases do not necessarily have to match.

### 3.4.6 Setting parameters (user accessible)

The user can access the following parameters.

| Code | Setting | Values | Factory settings |
|---|---|---|---|
| **F11** | Setpoint (in °C) | 10 to 40 | 28 |
| **F50** | Heating Priority | 0: activated<br>1: deactivated | 1 |
| **F58** | Duration of audible alarm (in seconds) | 0: alarm silent<br>0.1 - 10.0 (s)<br>606: until a key is pressed | 0 |
| **F61** | Calibration of the water inlet temperature sensor (in °C) | -20 to 20 | 0 |
| **F62** | Calibration of the water outlet temperature sensor (in °C) | -20 to 20 | 0 |
| **F85** | Display of the total operating time (in days) | - | 0 |

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- The qualified technician can access and modify the advanced settings with a password (see § “5.3 I Advanced setting parameters (accessible by a qualified technician)”).

- Press S for about 3 seconds until a beep sound.
- Press ^ or v to select the setting to modify.
- Press S to select the setting and to adjust it.
- Press ^ or v to change the value.
- Press S to save the value.
- Press M to exit the settings menu.

# 4 Maintenance

## 4.1 I Winterising

- **Winterising is recommended if the appliance is not used for a long period.**
- **In the case of winterising for the heat pump only, the appliance can be kept frost-free thanks to the condenser and compressor resistors. In this case, it can continue to be powered and the condensers will not require draining.**
- **If there is persistent frost, all filtering and heating system' components must be completely emptied. Condensers are equipped with a side plug for this purpose.**

- Turn off the regulator and disconnect the power supply,
- Open valve B,
- Close valves A and C (see § “2.2 I Hydraulic connections”),
- Make sure that there is no water circulating in the heat pump,
- Drain the water from the condenser (risk of freezing) by unscrewing the two water inlet and outlet connectors on the back of the heat pump (see D and E § “2.2 I Hydraulic connections”),
- In the case of full winterising for the pool (complete shutdown of the filtration system, bleed the filtration circuit or even pool drainage): tighten the two connectors by one turn to prevent any foreign bodies from getting into the condenser,
- In the case of winterising for the heat pump only (shutdown of the heating only, the filtration keeps running): do not tighten the connectors but add 2 caps (supplied) on the condenser's water inlets and outlets.

## 4.2 I Maintenance

- **Before any maintenance work on the appliance, you must cut the electricity supply as there is a risk of electric shock which may cause material damage, serious injury or even death.**
- **It is recommended that the appliance undergo general servicing at least on a yearly basis to ensure its proper operation, maintain performance levels and prevent any possible failures. These operations are carried out at the user's expense, by a qualified technician.**

### 4.2.1 User maintenance

- Make sure that the ventilation grid is not blocked by any foreign bodies.
- Clean any dirt off the fan blades and the protective grid,
- Unplug the power cable and clean the evaporator (on the rear of the appliance) using a soft bristle brush and a low-pressure jet of fresh water, being careful not to bend the metal fins.
- Clean the condensate drainage line to remove any impurities that may be blocking it.
- Do not use a high pressure jet. Do not spray with rain water, salt water or water which is full of minerals.
- Clean the outside of the appliance using a solvent-free product; a specific "PAC NET" cleaning kit is available as an accessory in the Zodiac® catalogue for this purpose (see § “1.1 I Description”).

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### 4.2.2 Maintenance to be carried out by a qualified technician

- Carry out an appliance’s annual sealing test.
- Check that the high and low pressure switches are securely fastened to the cooling circuit and that they cut off the electrical circuit when tripped.
- Ensure there are no traces of corrosion or oil around the cooling components.
- Check the composition and state of the heat transfer fluid as well as the absence of any traces of coolant.
- Check that the control system is operating correctly.
- Check that the condensates flow correctly when the appliance is in operation.

**Compressor**
- Check the oil level using the indicator on the compressor.
- Check that the crankcase heater is operating correctly.
- Check the gas load (compressor properly cooled with circulating gas).
- Check that consumption has not increased.
- Check that the compressor discharge pressures are not too high and that the suction pressures are not too low.
- Check that the compressor mountings are not damaged.
- Check that there is no frost in the compressor.

**Fan**
- Check the fan flows on an annual basis.

**Electrical board**
- Check the electrical protection systems.
- Check the connection of the metal masses to the earth.
- Check that the electrical cables are correctly tightened and connected and that the switch box is clean.
- Check that no overheating can be found in the electrical terminals.
- Check that the thermostat or main control are operating correctly by comparing its reading with those of a mercury thermometer (sensor calibration).

# 5 Troubleshooting

- **Before you contact your retailer, please carry out these few simple checks using the following tables if a problem occurs.**
- **If the problem persists, contact your retailer.**
- **: Actions to be performed by a qualified technician only**

## 5.1 I Appliance behaviour

| | |
|---|---|
| **The appliance does not start heating straight away** | • When the setpoint temperature is reached, the heat pump stops heating: the water temperature is higher than or equal to the setpoint temperature.<br>• When the water flow rate is zero or is not enough, the heat pump stops: check that the water is circulating correctly in the heat pump (see § "2.2 I Hydraulic connections") and that the hydraulic connections are correct.<br>• The heat pump stops when the outdoor temperature falls below -12 °C.<br>• It may be that the heat pump has detected an operating fault (see § "5.2 I Error code display").<br>• If you have checked these points and the problem persists: contact your retailer. |
| **The appliance is discharging water** | • Often called condensates, this water is the moisture contained in the air which condenses on contact with certain cold mechanisms in the heat pump, especially on the evaporator. The damper the air, the more condensates your heat pump will produce (your appliance may drain several litres of water per day). This water is recovered at the base of the heat pump and drained by the condensate drainage elbow (see § "2.2 I Hydraulic connections").<br>• To check that the water is not coming from a leak in the pool circuit on the heat pump, shut down the heat pump and run the filter pump to circulate water in the heat pump. If the water continues to flow through the condensate drainage lines, there is a water leak in the heat pump: contact your retailer. |
| **The evaporator is iced over** | • Your heat pump will soon switch to its defrost cycle to melt the ice.<br>• If your heat pump cannot manage to defrost its evaporator, it will stop itself; this means that the outdoor temperature is too low (below -12 °C). |
| **The appliance is "smoking"** | • The appliance has come to the end of the defrost cycle; water has changed to gaseous state and passes through the grid.<br>• If your heat pump is not in its defrost cycle, this is not normal. Switch off and disconnect the heat pump immediately and contact your retailer. |
| **The appliance is not working** | • When the setpoint temperature is reached, the heat pump stops heating: the water temperature is higher than or equal to the setpoint temperature.<br>• When the water flow rate is zero or is not enough, the heat pump stops: check that the water is circulating correctly in the heat pump (see § "3.2 I User interface presentation").<br>• The heat pump stops when the outdoor temperature falls below -12°C or rises above +40°C.<br>• It may be that the heat pump has detected an operating fault (see § "5.2 I Error code display"). |
| **The appliance is working but the water temperature does not increase** | • Check that the automatic filling valve is not stuck in open position; this will keep supplying cold water into the pool and will prevent the temperature from rising.<br>• There is too much heat loss: install a heat insulated cover on your pool.<br>• The heat pump is unable to capture enough calories as its evaporator is clogged with dirt: clean it to restore its efficiency (see § "4.2 I Maintenance").<br>• Check that the external environment is not hindering the heat pump (see § "2 Installation").<br>• Check that the heat pump is the right size for this pool and its environment. |
| **The fan is running but the compressor stops from time to time with no error message** | • If the outdoor temperature is low, the heat pump performs defrost cycles under normal operation.<br>• The heat pump is unable to capture enough calories as its evaporator is clogged with dirt. Clean it to restore its performances (see § "4.2 I Maintenance"). |
| **The appliance trips the circuit breaker** | • Check that the circuit breaker is correctly dimensioned and that the cable section used is appropriate (see § "1.2 I Technical specifications").<br>• The supply voltage is too low: contact your electricity supplier. |

## 5.2 I Error code display

| Display | Fault | Possible causes | Solutions |
|---|---|---|---|
| SYS1 LP! | **A11** Low-pressure fault - circuit 1 | No signal from the low-pressure switch | Defective pressure switch, replace if necessary |
| | | Leak in the cooling circuit | Call a qualified technician. |
| | | Blocked evaporator, air flow too low | Remove any dirt or obstacles from the evaporator blocking the air flow |
| | | Frost on the evaporator | Check that the 4-way valve is operating correctly |
| SYS2 LP! | **A13** Low-pressure fault - circuit 2 | Fan operation problem | Check that the fan is operating correctly, replace it if necessary |
| | | Regulator valve closed | Defective regulator (or its controller), replace if necessary. |
| SYS1 HP! | **A12** High-pressure fault - circuit 1 | No signal from the high pressure switch | Defective pressure switch, replace if necessary |
| SYS2 HP! | **A14** High-pressure fault - circuit 1 | Insufficient water flow | Increase flow using the by-pass, check that the pool filter is not clogged |
| | | Cooling circuit fault | Check the cooling circuit |
| WATER FL! | **A15** Water flow controller | Water flow problem | • Check that the flow rate is sufficient<br>• Check that the pump is working<br>• Check the flow switch |
| WATER IN! | **A21** Water inlet temperature sensor fault | Sensor is faulty or offline | Reconnect or change the sensor |
| PIPE1! | **A22** Evaporation sensor 1 fault | Sensor is faulty or offline | Reconnect or change the sensor |
| PIPE2! | **A23** Evaporation sensor 2 fault | Sensor is faulty or offline | Reconnect or change the sensor |
| Exhaust1! | **A24** Compressor 1 discharge sensor fault | Sensor is faulty or offline<br>Discharge temperature too high | Reconnect or change the sensor |
| Exhaust2! | **A25** Compressor 2 discharge sensor fault | Sensor is faulty or offline<br>Discharge temperature too high | Reconnect or change the sensor |
| **A26** | **A26** Circuit 1 suction sensor fault | Sensor is faulty or offline | Reconnect or change the sensor |
| **A27** | **A27** Circuit 2 suction sensor fault | Sensor is faulty or offline | Reconnect or change the sensor |
| ROOM! | **A28** Outside air temperature sensor fault | Sensor is faulty or offline | Reconnect or change the sensor |
| WATER OUT! | **A29** Water outlet temperature sensor fault | Sensor is faulty or offline | Reconnect or change the sensor |

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| | | | |
|---|---|---|---|
| EXH1 HIGH! | **A42**<br>Discharge temperature 1 fault | Excessive compressor discharge temperature or system blockage or lack of gas | Check the sensor reading and the cooling circuit<br>Reconnect or change the sensor |
| EXH2 HIGH! | **A43**<br>Discharge temperature 2 fault | Excessive compressor discharge temperature or system blockage or lack of gas | Check the sensor reading and the cooling circuit<br>Reconnect or change the sensor |
| TEMPDIFF>>! | **A44**<br>Deviation between water inlet sensor and water outlet sensor | Deviation between water inlet temperature and water outlet is too large | Check that the flow rate is sufficient |
| **A46** | **A46**<br>Low outdoor air temperature | The outdoor air temperature is below the defined limit. | Check the sensor reading and the minimum outdoor air temperature. |
| **A47** | **A47**<br>Fan thermal protection | Excessive consumption of the fan | Check the fan |
| **A51** | **A51**<br>Compressor protection deactivated | Contactor activated or deactivated on ON | Check the contactor or replace it |
| PHASE! | **A52**<br>Phase imbalance | Power cut | Check the electrical connections |
| | **A91**<br>Phase checking | Incorrect phase connection, or lack of voltage | Check the electrical connections.<br>Check the order of the phases. |
| | **A92**<br>Lack of phase | One of the phases is powered off | Check the electrical connections |
| COMP1 C! | **A93**<br>Compressor 1 excessive consumption | Excessive consumption in compressor 1 | Check the power supply and voltage. |
| COMP2 C! | **A94**<br>Compressor 2 excessive consumption | Excess consumption in the compressor 2 | Check the power supply and voltage. |
| PROBATION! | **A99**<br>Operating time limit fault | Operating time exceeded | Check the operating time. |
| --- | - -<br>Screen failure | Communication failure between the electronic board and the display panel | Check the connections and terminals between the display panel and the main circuit.<br>Check the display panel.<br>Check the electronic board. |

## 5.3 I Advanced setting parameters (accessible by a qualified technician)

Qualified technicians have a password allowing them access to all the settings listed in the following table. The settings which are accessible without a password are listed in § “5.3 I Advanced setting parameters (accessible by a qualified technician)”.

### 5.3.1 Modifying an advanced settings value

- Press and hold S for 10 seconds until **two** warning beeps sound.
- Release S : "PAS" is displayed on the screen.
- Press ^ to enter the programmed password or v to change each digit, and S to go to the next digit.
- Press S to select the setting and to adjust it.
- Press ^ or v to change the value.
- Press S to save the value.
- Press M to exit the settings menu.

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### 5.3.2 List of advanced settings

| | Code | Setting | Accepted values | Factory settings |
|---|---|---|---|---|
| TEMPERATURE | F12 | Temperature differential (in °C) | 1 - 10 | 1 |
| | F13 | Maximum temperature setpoint (in °C) | 30 - 100 | 40 |
| | F14 | Minimum temperature setpoint (in °C) | 1 - 29 | 20 |
| | F15 | Temperature differential in Heating/ Cooling mode (in °C) | 0 - 20 | 1 |
| | F19 | Password (installer) | 0 - 999 | - |
| | F20 | Password (manufacturer) | 0 - 999 | - |
| COMPRESSOR | F21 | **Compressor delay time (min)** | 1 - 10 | 5 |
| | F22 | **Compressor phase protection** | 0: unprotected phase<br>1: protected phase | 1 |
| | F24 | **Number of compressors** | 1: 1 compressor<br>2: 2 compressors | Depending on model |
| | F25 | **Water flow switch delay time (min)** | 0 -100 | 1 |
| | F26 | **Lower operating temperature limit** | -12 - 10 | -12 |
| | F27 | **Lower temperature limit of fan at low speed** (in °C) | -10 - 30 | -10 |
| | F28 | **Upper temperature limit of fan at low speed** (in °C) | 35 - 100 | 44 |
| | F29 | **Operating mode activated** | 0: Heating/Cooling mode<br>1: Heating mode<br>2: Cooling mode<br>3: Choice of mode | 3 |

| | | | | |
|---|---|---|---|---|
| DEFROSTING | F31 | **Start defrosting temperature** (in °C) | -10 - 0 | -7 |
| | F32 | **Stop defrosting temperature** (en °C) | 5 - 35 | 15 |
| | F33 | **Start defrosting duration (min)** | 1 -120 | 25 |
| | F34 | **Maximum defrosting duration (min)** | 3 - 20 | 10 |
| | F35 | **Default temperature start defrosting (in °C)** | -10 - 20 | 7 |
| | F36 | **Alarm delay time after defrosting** | 0 - 120 | 3 |
| | F37 | **4-way valve mode** | 0: OFF<br>1: ON | 0 |
| CONTROL | F38 | **Remote Cooling mode** | 0: setpoint not considered<br>1: setpoint considered | 1 |
| | F39 | **Remote Heating mode** | 0: setpoint not considered<br>1: setpoint considered | 1 |
| ELECTRICAL CONNECTIONS | F40 | **Thermal protection (A)** | 0 - 40<br>0: not active | Depending on model<br>TD35: 20<br>TD45: 26<br>TD60: 34<br>TD90: 26<br>TD120: 34 |
| | F42 | **Current(s) delay time** | 0 - 30 | 3 |
| | F44 | **% of phase(s) current imbalance** | 5 - 50 | 20 |
| | F45 | **Delay time of the absence of phase(s) alarm** | 0 - 60 | 3 |
| | F46 | **Delay time of the phase(s) imbalance alarm** | 0 - 30 | 2 |
| | F47 | **Delay time of the phase(s) fault alarm** | 0 - 30 | 2 |
| | F49 | **Autostart function (appliance automatically resets following a power cut)** | 0: deactivated<br>1: activated | 1 |
| | F50 | **Heating Priority** | 0: pump deactivated<br>1: pump activated<br>(voltage 220 V) | 1 |
| FILTER PUMP | F51 | **Filtration pump start-up delay before compressor start-up (min)** | 1 - 10 | 3 |
| | F52 | **Filtration pump stop-delay after compressor stop (min)** | 0 - 10 | 3 |
| | F53 | **Water temperature check interval (min)** | 0 - 99 | 60 |
| | F54 | **Filtration pump operating time (min)** | 0 -99 | 5 |
| | F55 | **Compressor discharge temperature protection** | 90 - 135 | 115 |
| | F56 | **Water flow detector** | 0: deactivated<br>1: activated | 1 |
| | F57 | **Fan thermal relay** | 0: deactivated<br>1: activated | 1 |

| | | | | |
|---|---|---|---|---|
| ALARMS AND CALIBRATION | F59 | Minimum ambient temperature for switching on the electrical resistance (in °C) | -10 - 20 | 5 |
| | F60 | Maximum temperature difference between water inlet and outlet temperature (in °C) | 0 - 20 | 4 |
| | F63 | Calibration of the defrosting temperature sensor 1 (in °C) | -20 - 20 | 0 |
| | F64 | Calibration of the defrosting temperature sensor 2 (in °C) | -20 - 20 | 0 |
| | F65 | Calibration of the ambient temperature sensor (in °C) | -20 - 20 | 0 |
| | F66 | Calibration of the compressor 1 discharge temperature sensor (in °C) | -20 - 20 | 0 |
| | F67 | Calibration of the compressor 2 discharge temperature sensor (in °C) | -20 - 20 | 0 |
| | F68 | Calibration of the compressor 1 suction sensor (in °C) | -20 - 20 | 0 |
| | F69 | Calibration of the compressor 2 suction sensor (in °C) | -20 - 20 | 0 |
| ELECTRONIC EXPANSION VALVE | F70 | Electronic expansion valve | 0: deactivated<br>1: activated | 0 |
| | F71 | Refrigerant gas | 0: R-410-A<br>1: R-407-C | 0 |
| | F72 | Maximum output voltage (V) | 0.5 - 5.0 | 4.5 |
| | F73 | Maximum sensor pressure (MPa) | 0 - 5 | 4.6 |
| | F74 | Initial position of the valve in Cooling mode (step) | 100 - 480 | 240 |
| | F75 | Initial position of the valve in Heating mode (step) | 100 - 480 | 240 |
| | F76 | Overheating adjustment time | 0 - 120 | 30 |
| | F77 | Step setting (fine) | 0 - 10 | 1 |
| | F78 | Step setting (average) | 0 - 10 | 3 |
| | F79 | Step setting (rough) | 0 - 10 | 6 |
| | F80 | Overheating in Heating mode (°C) | 3 - 20 | 6 |
| | F81 | Overheating in Cooling mode (°C) | 3 - 25 | 10 |
| | F82 | Maximum authorised evaporation temperature (°C) | 10 -100 | 20 |
| | F83 | High evaporation temperature (°C) | 1 - 5 | 2 |
| | F84 | High evaporation temperature delay (min) | 1 - 3 | 2 |
| SYSTEM SETTINGS | F86 | Test time | 0 - 999<br>OFF: no test time | OFF |
| | F87 | Reset total operating time | YES<br>NO | NO |
| | F88 | Reset factory settings | YES<br>NO | NO |
| APPLIANCE INFORMATION | F90 | Show the board model | | |
| | F91 | Show the board's software version | | |
| | F92 | Show the screen model | | |
| | F93 | Show the screen software version | | |
| | F96 | Set the time | | |
| | F00 | Exit | | |

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- If F24 = 1 (only one compressor), the system 2 inputs and outputs are not used and no value is displayed.

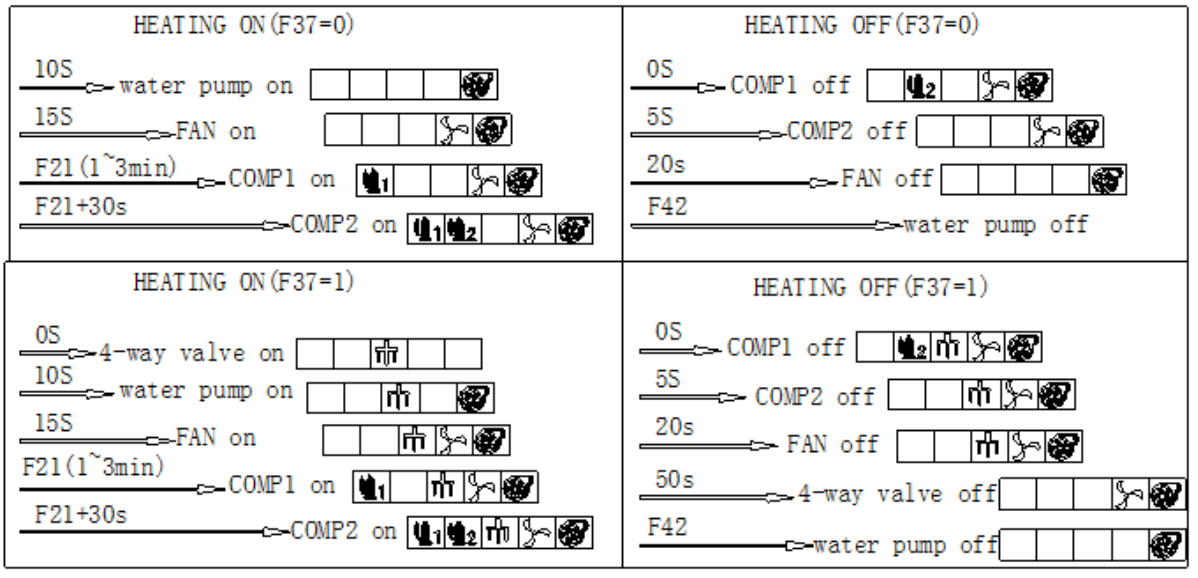
## 5.4 I Advanced operating principles

### 5.4.1 Operating principles of modes

The appliance has 4 operating modes: Heating, Cooling, Heating/Cooling. The user interface can be used to switch between these modes (see § ""3.2 I User interface presentation") or by modifying the value of the advanced F29 parameter (see § "5.3 I Advanced setting parameters (accessible by a qualified technician)").

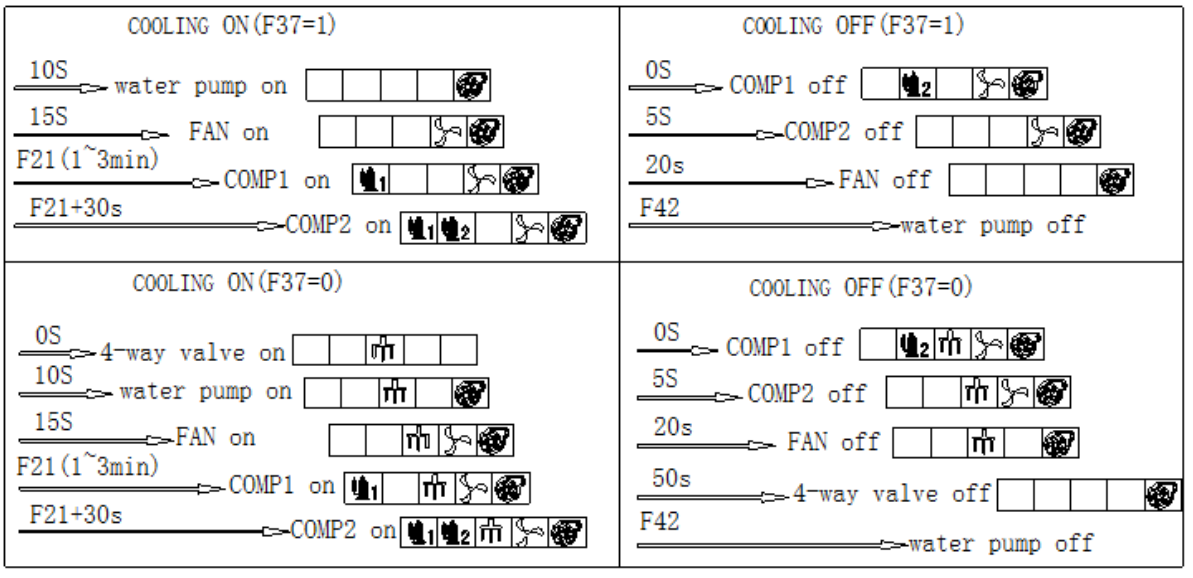
#### 5.4.1.1 Heating mode

In Heating mode, the appliance heats the water when the sensor temperature is lower than the setpoint temperature reduced by the temperature differential. The appliance stops heating the water when the temperature is higher than the setpoint temperature increased by the temperature differential (see following sequences.)




#### 5.4.1.2 Cooling mode

In Cooling mode, the appliance cools the water when the sensor temperature is higher than the setpoint temperature increased by the temperature differential (parameter F15). The appliance stops cooling the water when the temperature is lower than the setpoint temperature reduced by the temperature differential (see following sequences.)



### 5.4.1.3 Heating/Cooling mode

In Heating/Cooling mode, the appliance cools the water when the sensor temperature is higher than the setpoint temperature increased by the temperature differential of the Heating/Cooling mode (parameter F15). The appliance stops cooling the water when the temperature is below the setpoint temperature.
The appliance heats the water when the sensor temperature is lower than the setpoint temperature reduced by the temperature differential of the Heating/Cooling mode (parameter F15). The appliance stops cooling the water when the temperature is above the setpoint temperature.

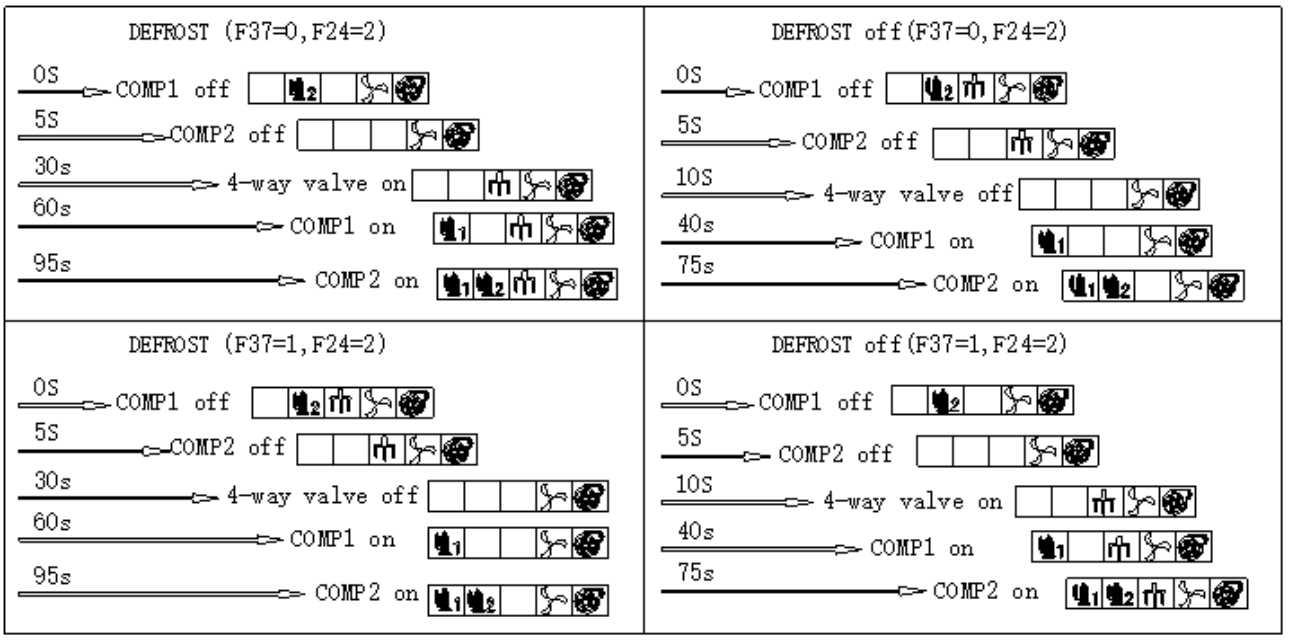
### 5.4.2 I Operating principles of the defrosting process

- The defrosting process is activated when the outside air temperature drops below 3°C. If the water temperature is below 4°C, the appliance stops or switches to standby and activates the filtration pump so that water does not freeze in the pipes.

In Heating mode, the regulator controls the evaporator temperature and starts the defrosting process based on the appliance's operating time at low temperatures (taking into account the advanced parameters "Start defrosting temperature" and "Start defrosting duration", see § “5.3 I Advanced setting parameters (accessible by a qualified technician)”, settings F31 and F33). If the evaporator temperature rises above the "Start defrosting temperature" during the controller's timing phase, the controller resets to zero. The controller restarts timing when the evaporator temperature drops below the "Start defrosting temperature".
The defrosting controller thus measures the appliance's operating time at low temperature.
For pumps equipped with 2 compressors, defrosting will only start if both circuits fulfil defrosting conditions.

If the outside air temperature is higher than the "Stop defrosting temperature" (F32), the controller stops the defrosting process. If the defrosting time is greater than the "Maximum defrosting duration", the controller will stop the defrosting process.
When circuit 1 fulfils the conditions for stopping the defrosting cycle, compressor 1 waits until compressor 2 fulfils the same conditions. As soon as compressor 2 stops, the Heating mode is restarted in both circuits (after a delay time which has been set between the two compressors).

The operating sequence is shown below.




If both evaporator temperature sensors are faulty, the system checks the outside air temperature. If this temperature is lower than F35 and the appliance's operating time is longer than the Start defrosting time, the pump starts defrosting and subsequently stops this process when the defrosting time overtakes the maximum defrosting time.

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### 5.4.3 I Operating principles of electrical protection

#### 5.4.3.1 Protection system

The compressor's time delay is configurable (see § “5.3 I Advanced setting parameters (accessible by a qualified technician)”, setting F21). This delay is used by the regulator to avoid continuous ON/OFF cycles. When the compressor stops following an operating phase, the regulator checks that this time has elapsed before it restarts the compressor. If not, the compressor can only restart after 5 minutes. This 5 minute period must also elapse before the compressor can start up when the equipment has just been started.

#### 5.4.3.2 Remote switch

When the remote switch is closed, the switched-off appliance remains switched-off and the running appliance continues to operate normally. When the remote switch is open, the switched-off appliance remains switched-off and the running device stops. "OFF" is then displayed on the screen.

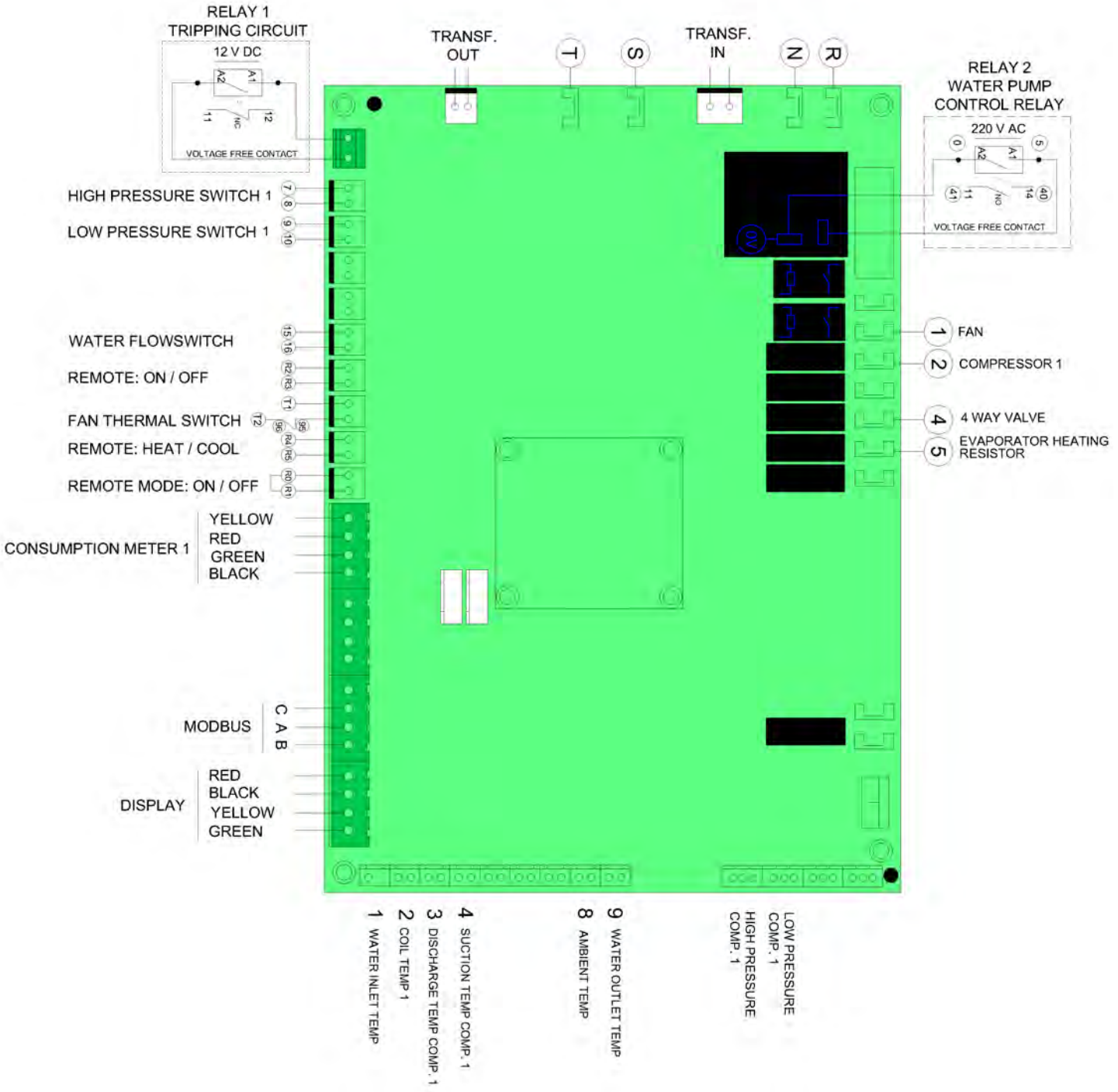
## 5.5 I Wiring diagrams

Wiring diagrams are available at the end of the document see § 5.5 Schémas électriques / Wiring diagrams / Schaltplan / Elektrischschema / Esquema eléctrico / Esquema eléctrico / Schema elettrico.

## 5.5 Schémas électriques / Wiring diagrams / Schaltplan / Elektrischschema / Esquema eléctrico / Esquema eléctrico / Schema elettrico

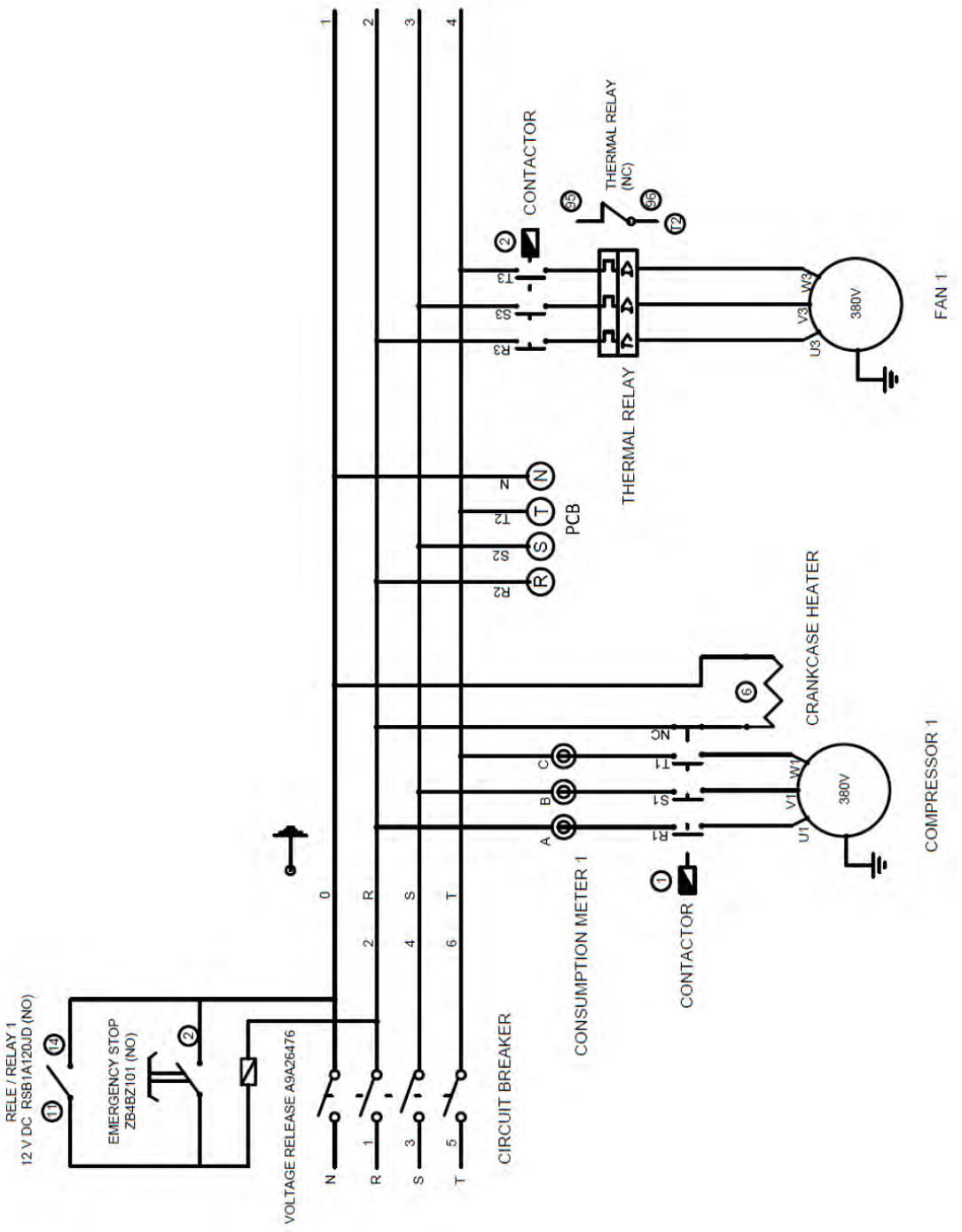
### 35 kW - 45 kW - 60 kW

**Schéma de commande / Control diagram / Steuerwirkbild / Bedieningsschema / Esquema de mando / Esquema de comando / Schema di comando**



| | Français | English | Deutsch | Nederland | Español | Português | Italiano |
|---|---|---|---|---|---|---|---|
| **TRIPPING CIRCUIT** | Circuit de déclenchement | - | Auslösekreis | Uitschakel-circuit | Circuito de activación | Circuito de lançamento | Circuito di innesco |
| **FILTRATION PUMP** | Pompe de filtration | - | Filterpumpe | Filterpomp | Bomba de filtración | Bomba de filtração | Pompa di filtrazione |
| **HIGH PRESSURE SWITCH** | Pressostat haute pression | - | Druckregler Hochdruck | Hogedruk-pressostaat | Presostato de alta presión | Pressostato alta pressão | Pressostato alta pressione |
| **LOW PRESSURE SWITCH** | Pressostat basse pression | - | Druckregler Niederdruck | Lagedruk-pressostaat | Presostato de baja presión | Pressostato baixa pressão | Pressostato bassa pressione |
| **WATER FLOW SWITCH** | Interrupteur de débit d'eau | - | Paddelschalter | Waterdebiet-schakelaar | Interruptor del caudal de agua | Interruptor de caudal de água | Interruttore di portata d'acqua |
| **REMOTE SWITCH (ON/ OFF)** | Interrupteur déporté (ON/ OFF) | - | Fernschalter (ON/ OFF) | Afstands-schakelaar (ON/ OFF) | Interruptor remoto (ON/ OFF) | Interruptor deportado (ON/ OFF) | Interruttore a distanza (ON/ OFF) |
| **FAN THERMAL SWITCH** | Interrupteur relai thermique du ventilateur | - | Thermischer Relaisschalter des Lüfters | Schakelaar thermisch relais van de ventilator | Interruptor relé térmico del ventilador | Interruptor relé térmico do ventilador | Interruttore relè termico del ventilatore |
| **HEAT / COLD** | Chauffage / fraîchissement | Heating/ Cooling | Heizung / Kühlung | Verwarming / koeling | Calefacción / Enfriamiento | Aquecimento / arrefecimento | Riscaldamento/ raffreddamento |
| **REMOTE MODE (ON/OFF)** | Commande à distance (ON/ OFF) | - | Fernsteuerung (ON/ OFF) | Afstands-bediening (ON/ OFF) | Control remoto (ON/ OFF) | Comando à distância (ON/ OFF) | Comando a distanza (ON/ OFF) |
| **4 WAY VALVE** | Vanne 4 voies | - | Vierwegeventil | 4-wegklep | Válvula 4 vías | Válvula 4 vias | Valvola 4 vie |
| **CRANKCASE HEATER** | Résistance de carter | - | Kurbelgehäuse- Heizwiderstand | Carter-weerstand | Resistencia de cárter | Resistência de cárter | Resistenza di carter |
| **DISPLAY** | Affichage | - | Anzeige | Display | Pantalla | Visualização | Visualizzazione |
| **CONSUMPTION METER** | Indicateur de consommation | - | Verbrauchsanzeige | Verbruiks-indicator | Indicador de consumo | Indicador de consumo | Indicatore di consumo |
| **YELLOW** | Jaune | - | Gelb | Geel | Amarillo | Amarelo | Giallo |
| **RED** | Rouge | - | Rot | Rood | Rojo | Vermelho | Rosso |
| **GREEN** | Vert | - | Grün | Groen | Verde | Verde | Verde |
| **BLACK** | Noir | - | Schwarz | Zwart | Negro | Preto | Nero |
| **FAN** | Ventilateur | - | Lüfter | Ventilator | Ventilador | Ventilador | Ventilatore |
| **COMPRESSOR** | Compresseur | - | Kompressor | Compressor | Compresor | Compressor | Compressore |
| **WATER OUTLET TEMP** | Sonde de température Sortie d'eau | Water outlet temperature sensor | Wasserausgangstemperaturfühler | Wateruitlaat-temperatuur-sensor | Sonda de temperatura Salida de agua | Sonda de temperatura Saída de água | Sonda di temperatura Uscita dell'acqua |
| **AMBIENT TEMP** | Sonde de température ambiante | Ambient temperature sensor | Raumtemperaturfühler | Omgevings-temperatuur-sensor | Sonda de temperatura ambiente | Sonda de temperatura ambiente | Sonda di temperatura ambiente |
| **SUCTION TEMP COMP 1** | Température d'aspiration Compresseur 1 | Suction temperature Compressor 1 | Temperatur an der Saugseite des Kompressors 1 | Zuig-temperatuur Compressor 1 | Temperatura de aspiración Compresor 1 | Temperatura de aspiração Compressor 1 | Temperatura di aspirazione Compressore 1 |
| **DISCHARGE TEMP COMP 1** | Température de refoulement Compresseur 1 | Discharge temperature Compressor 1 | Temperatur an der Druckseite des Kompressors 1 | Pers-temperatuur Compressor 1 | Temperatura de descarga Compresor 1 | Temperatura de descarga Compressor 1 | Temperatura di mandata Compressore 1 |
| **COIL 1 TEMP** | Sonde de température Evaporateur 1 | Evaporator 1 temperature sensor | Temperaturfühler Verdampfer 1 | Temperatuur-sensor Verdamper 1 | Sonda de temperatura Evaporador 1 | Sonda de temperatura Evaporador 1 | Sonda di temperatura Evaporatore 1 |
| **WATER INLET TEMP** | Sonde de température Entrée d'eau | Water inlet temperature sensor | Wassereingangstemperaturfühler | Waterinlaat-temperatuur-sensor | Sonda de temperatura Entrada de agua | Sonda de temperatura Entrada de água | Sonda di temperatura Entrata dell'acqua |
| **EVAPORATOR HEATING RESISTOR** | Résistance électrique Evaporateur | Evaporator electrical resistance | Elektrischen Heizwiderstands Verdampfer | Elektrische weerstand Verdamper | Resistencia eléctrica Evaporador | Resistência elétrica Evaporador | Resistenza elettrica Evaporatore |

**Schéma de puissance / Power supply diagram / Leistungswirkbild / Spanningschema / Esquema de potencia / Esquema de potência / Schema di potenza**

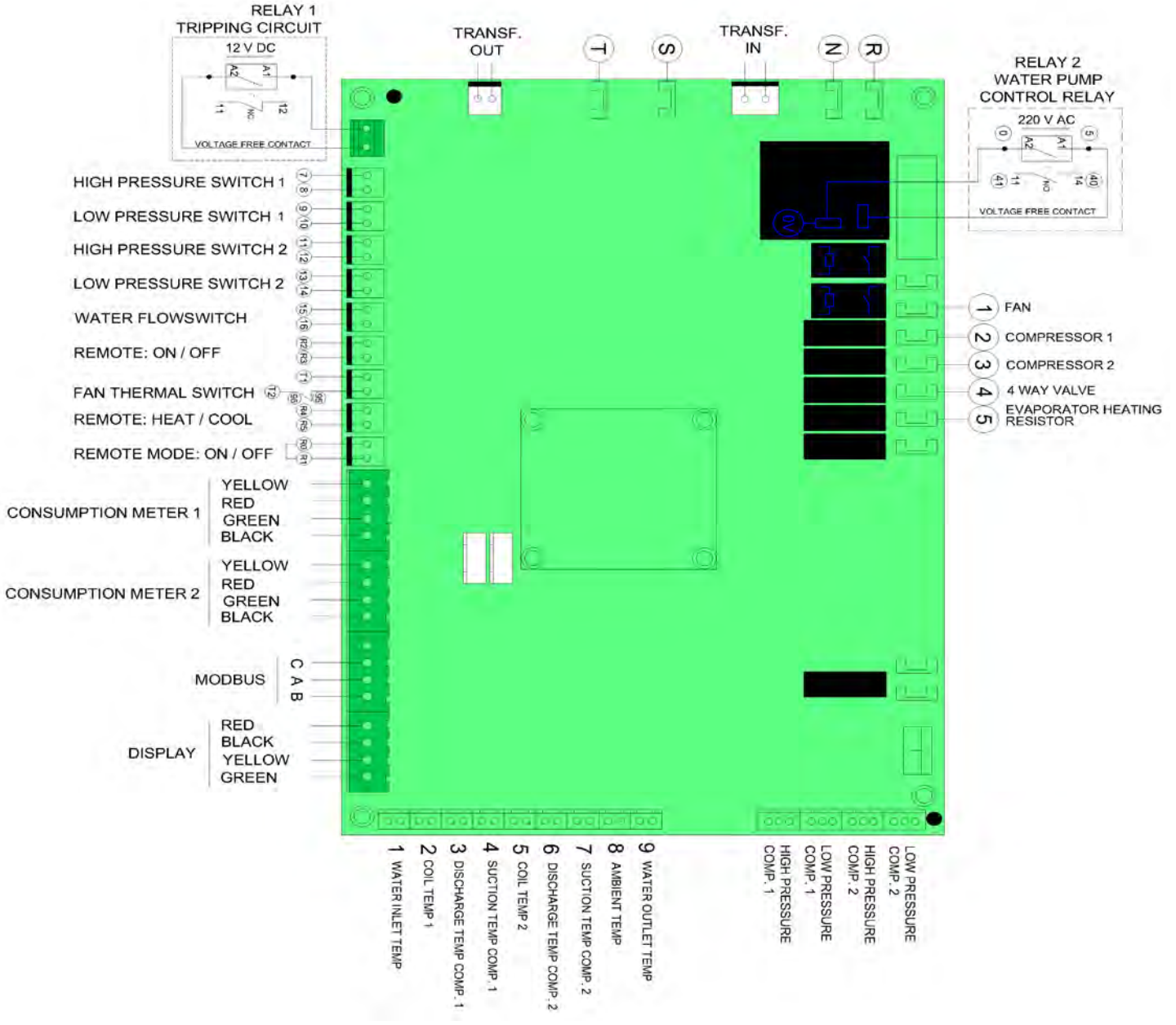



| | Français | Deutsch | Nederland | Español | Português | Italiano |
|---|---|---|---|---|---|---|
| **EMERGENCY STOP** | Arrêt d'urgence | Notstopp | Noodstop | Parada de emergencia | Paragem de emergência | Arresto d'emergenza |
| **VOLTAGE RELEASE** | Bobine de déclenchement | Auslösespule | Uitschakel-spoel | Bobina de activación | Bobina de lançamento | Bobina di avviamento |
| **CIRCUIT BREAKER** | Disjoncteur | Schutzschalter | Elektrische zekering | Disyuntor | Disjuntor | Interruttore differenziale |
| **CONSUMPTION METER** | Indicateur de consommation | Verbrauchsanzeige | Verbruiks-indicator | Indicador de consumo | Indicador de consumo | Indicatore di consumo |
| **CONTACTOR** | Contacteur | Schütz | Contactor | Contactor | Contator | Contattore |
| **COMPRESSOR** | Compresseur | Kompressor | Compressor | Compresor | Compressor | Compressore |

| CRANKCASE HEATER | Résistance de carter | Kurbelgehäuse-Heizwiderstand | Carter-weerstand | Resistencia de cárter | Resistência de cárter | Resistenza di carter |
|---|---|---|---|---|---|---|
| **PCB** | Carte électronique | Elektronikkarte | Elektronische kaart | Tarjeta electrónica | Placa eletrónica | Scheda elettronica |
| **THERMAL RELAY** | Relai thermique | Thermorelais | Thermisch relais | Relé térmico | Relé térmico | Relè termico |
| **FAN** | Ventilateur | Lüfter | Ventilator | Ventilador | Ventilador | Ventilatore |

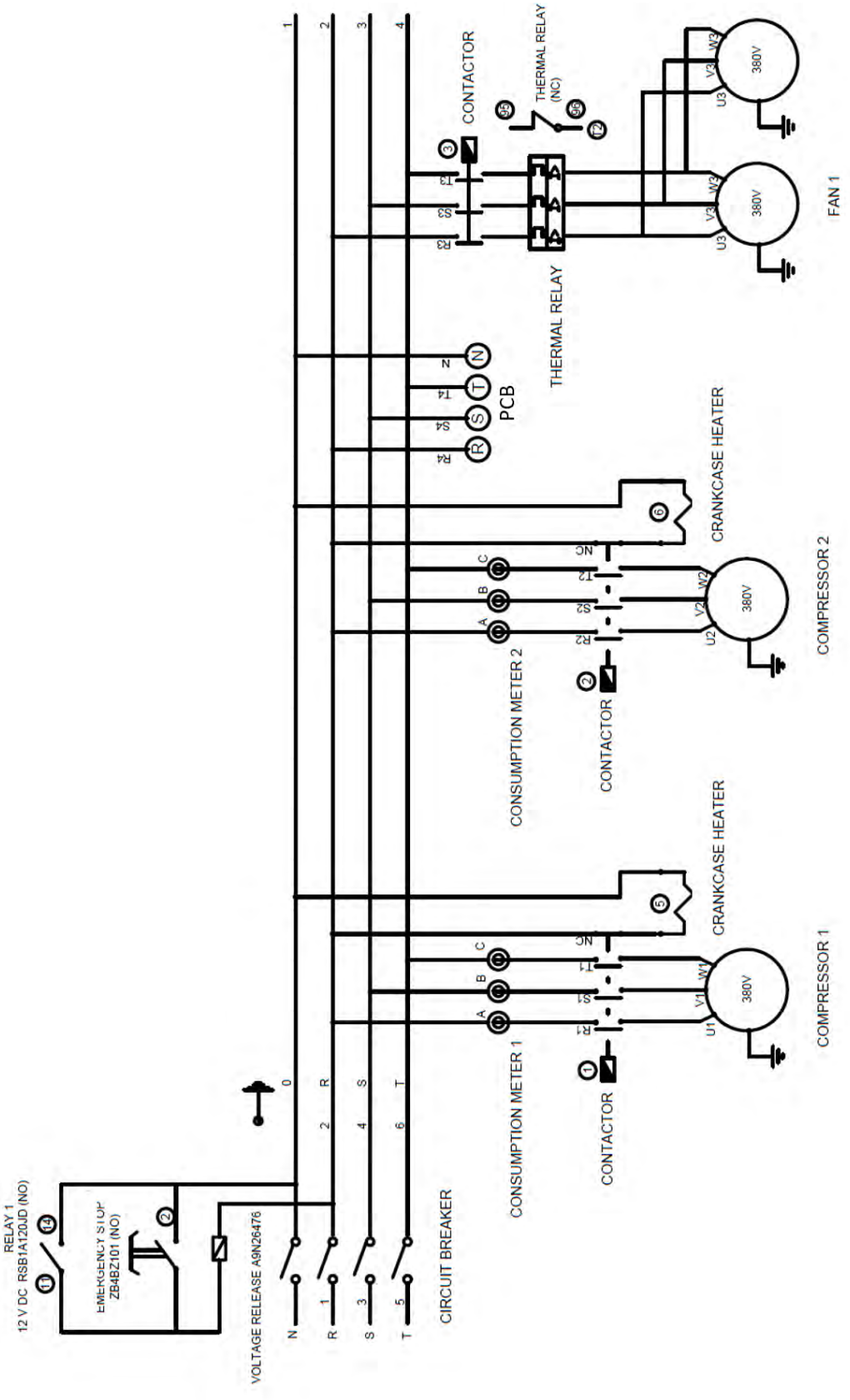
## 5.7.2 90 kW - 120 kW

**Schéma de commande / Control diagram / Steuerwirkbild / Bedieningsschema / Esquema de mando / Esquema de comando / Schema di comando**



| | Français | English | Deutsch | Nederland | Español | Português | Italiano |
|---|---|---|---|---|---|---|---|
| **TRIPPING CIRCUIT** | Circuit de déclenchement | - | Auslösekreis | Uitschakel- circuit | Circuito de activación | Circuito de lançamento | Circuito di innesco |
| **FILTRATION PUMP** | Pompe de filtration | - | Filterpumpe | Filterpomp | Bomba de filtración | Bomba de filtração | Pompa di filtrazione |
| **HIGH PRESSURE SWITCH** | Pressostat haute pression | - | Druckregler Hochdruck | Hogedruk-pressostaat | Presostato de alta presión | Pressostato alta pressão | Pressostato alta pressione |
| **LOW PRESSURE SWITCH** | Pressostat basse pression | - | Druckregler Niederdruck | Lagedruk-pressostaat | Presostato de baja presión | Pressostato baixa pressão | Pressostato bassa pressione |
| **WATER FLOW SWITCH** | Interrupteur de débit d'eau | - | Paddelschalter | Waterdebiet-schakelaar | Interruptor del caudal de agua | Interruptor de caudal de água | Interruttore di portata d'acqua |
| **REMOTE SWITCH (ON/ OFF)** | Interrupteur déporté (ON/ OFF) | - | Fernschalter (ON/ OFF) | Afstands-schakelaar (ON/ OFF) | Interruptor remoto (ON/ OFF) | Interruptor deportado (ON/ OFF) | Interruttore a distanza (ON/ OFF) |
| **FAN THERMAL SWITCH** | Interrupteur relai thermique du ventilateur | - | Thermischer Relaisschalter des Lüfters | Schakelaar thermisch relais van de ventilator | Interruptor relé térmico del ventilador | Interruptor relé térmico do ventilador | Interruttore relè termico del ventilatore |
| **HEAT / COLD** | Chauffage / afraîchissement | Heating/ Cooling | Heizung / Kühlung | Verwarming / koeling | Calefacción / Enfriamiento | Aquecimento / arrefecimento | Riscaldamento / raffreddamento |
| **REMOTE MODE (ON/OFF)** | Commande à distance (ON/ OFF) | - | Fernsteuerung (ON/ OFF) | Afstands-bediening (ON/ OFF) | Control remoto (ON/ OFF) | Comando à distância (ON/ OFF) | Comando a distanza (ON/ OFF) |
| **4 WAY VALVE** | Vanne 4 voies | - | Vierwegeventil | 4-wegklep | Válvula 4 vías | Válvula 4 vias | Valvola 4 vie |
| **CRANKCASE HEATER** | Résistance de carter | - | Kurbelgehäuse-Heizwiderstand | Carter- weerstand | Resistencia de cárter | Resistência de cárter | Resistenza di carter |
| **DISPLAY** | Affichage | - | Anzeige | Display | Pantalla | Visualização | Visualizzazione |
| **CONSUMPTION METER** | Indicateur de consommation | - | Verbrauchsanzeige | Verbruiks-indicator | Indicador de consumo | Indicador de consumo | Indicatore di consumo |
| **YELLOW** | Jaune | - | Gelb | Geel | Amarillo | Amarelo | Giallo |
| **RED** | Rouge | - | Rot | Rood | Rojo | Vermelho | Rosso |
| **GREEN** | Vert | - | Grün | Groen | Verde | Verde | Verde |
| **BLACK** | Noir | - | Schwarz | Zwart | Negro | Preto | Nero |
| **FAN** | Ventilateur | - | Lüfter | Ventilator | Ventilador | Ventilador | Ventilatore |
| **COMPRESSOR** | Compresseur | - | Kompressor | Compressor | Compresor | Compressor | Compressore |
| **WATER OUTLET TEMP** | Température Sortie d'eau | Water outlet temperature | Wasserausgangstemperatur | Wateruitlaat-temperatuur | Temperatura de salida de agua | Temperatura Saída da água | Temperatura Uscita dell'acqua |
| **AMBIENT TEMP** | Température ambiante | Ambient temperature | Raumtemperatur | Omgevings-temperatuur | Temperatura ambiente | Temperatura ambiente | Temperatura ambiente |
| **SUCTION TEMP COMP** | Température d'aspiration Compresseur (1 ou 2) | Compressor suction temperature (1 or 2) | Temperatur an der Saugseite des Kompressors (1 oder 2) | Zuig- temperatuur Compressor (1 of 2) | Temperatura de aspiración Compresor (1 o 2) | Temperatura de aspiração Compressor (1 ou 2) | Temperatura di aspirazione Compressore (1 o 2) |
| **DISCHARGE TEMP COMP** | Température de refoulement Compresseur (1 ou 2) | Compressor discharge temperature (1 or 2) | Temperatur an der Druckseite des Kompressors (1 oder 2) | Pers- temperatuur Compressor (1 of 2) | Temperatura de descarga Compresor (1 o 2) | Temperatura de descarga Compressor (1 ou 2) | Temperatura di mandata Compressore (1 o 2) |
| **COIL 1 TEMP** | Température Evaporateur 1 | Evaporator 1 temperature | Temperatur Verdampfer 1 | Temperatuur Verdamper 1 | Temperatura Evaporador 1 | Temperatura Evaporador 1 | Temperatura Evaporatore 1 |
| **WATER INLET TEMP** | Température Entrée d'eau | Water inlet temperature | Wassereingangstemperatur | Waterinlaat-temperatuur | Temperatura Entrada de agua | Temperatura Entrada da água | Temperatura Entrata dell'acqua |
| **EVAPORATOR HEATING RESISTOR** | Résistance électrique Evaporateur | Evaporator electrical resistance | Elektrischen Heizwiderstands Verdampfer | Elektrische weerstand Verdamper | Resistencia eléctrica Evaporador | Resistência elétrica Evaporador | Resistenza elettrica Evaporatore |

**Schéma de puissance / Power supply diagram / /Leistungswirkbild / Spanningschema / Esquema de potencia / Esquema de potência / Schema di potenza**



| | Français | Deutsch | Nederland | Español | Português | Italiano |
|---|---|---|---|---|---|---|
| **EMERGENCY STOP** | Arrêt d'urgence | Notstopp | Noodstop | Parada de emergencia | Paragem de emergência | Arresto d'emergenza |
| **VOLTAGE RELEASE** | Bobine de déclenchement | Auslösespule | Uitschakelspoel | Bobina de activación | Bobina de lançamento | Bobina di avviamento |
| **CIRCUIT BREAKER** | Disjoncteur | Schutzschalter | Elektrische zekering | Disyuntor | Disjuntor | Interruttore differenziale |
| **CONSUMPTION METER** | Indicateur de consommation | Verbrauchsanzeige | Verbruiks-indicator | Indicador de consumo | Indicador de consumo | Indicatore di consumo |
| **CONTACTOR** | Contacteur | Schütz | Contactor | Contactor | Contator | Contattore |
| **COMPRESSOR** | Compresseur | Kompressor | Compressor | Compresor | Compressor | Compressore |
| **CRANKCASE HEATER** | Résistance de carter | Kurbelgehäuse-Heizwiderstand | Carter-weerstand | Resistencia de cárter | Resistência de cárter | Resistenza di carter |
| **PCB** | Carte électronique | Elektronikkarte | Elektronische kaart | Tarjeta electrónica | Placa eletrónica | Scheda elettronica |
| **THERMAL RELAY** | Relai thermique | Thermorelais | Thermisch relais | Relé térmico | Relé térmico | Relè termico |
| **FAN** | Ventilateur | Lüfter | Ventilator | Ventilador | Ventilador | Ventilatore |

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