Loria duo 6000

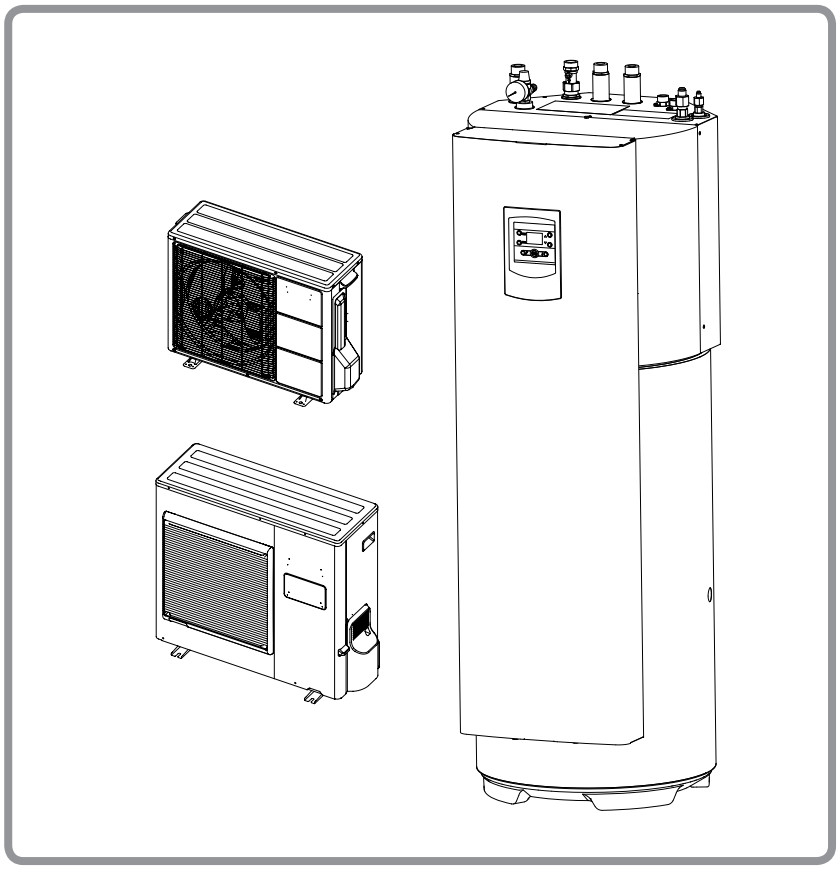
Air/water heat pump split, 2 services

Outdoor unit

- ☐ WOYA 060 LFCA
- ☐ WOYA 080 LFCA
- ☐ WOYA 100 LFTA

Hydraulic unit

- ☐ 023010
- ☐ 023011



atlantic

U0577305_1715_EN_10
11/04/2018

FR NL DE **EN** PL

Installation manual

for professionals

to be kept by the user
for future reference

atlantic-comfort.com

☞ **This device must be installed by qualified personnel with a certificate of capacity for the handling of refrigerants.**

Contents

Packing list

Heat pump		*Outdoor unit*		*Hydraulic unit*	
Model	*Code (export)*	*Model*	*Ref.*	*Model*	*Ref.*
Loria duo 6004	522963	WOYA060LFCA	700171	Loria duo 6004	023010
Loria duo 6006	522964			Loria duo 6006 - 6010	023011
Loria duo 6008	522965	WOYA080LFCA	700172		
Loria duo 6010	522966	WOYA100LFTA	700173		

Optional equipment

- ***Wired room thermostat UA55*** (ref. 076 310) for correcting the ambient temperature.
- ***HP Pack (***ref. 602 231) for reporting consumption per use (Heating / DHW).
- ***Dual circuit kit*** (ref. 076446) for connecting 2 heating circuits.
- ***Cooling kit*** (ref. 076 313).
- ***Anti-vibration pads*** (ref. 523 574).
- ***White PVC floor support*** (ref. 809 532) or ***Black rubber floor support*** (ref. 809 536).
- ***Condensate drain pan*** (ref. 074 008).
- ***Container bottom tracer*** (ref. 809 644).

Scope

This heat pump provides:

- Heating in winter,
- Control of two heating circuits*,
- Production of domestic hot water* (provided that combined with a DHW tank),
- Cooling in summer* (for floor heating/cooling system or fan-coil unit).

*: These options require the use of additional kits (see § "Optional equipment").

1 Description of the equipment

1.1 Packaging

- **1 package**: Outdoor unit
- **1 package**: Hydraulic unit and outdoor sensor.

1.2 Definitions

- Split: The heat pump is formed by two elements (an outdoor unit to be installed outdoors and a hydraulic unit to be installed indoors).
- Air/water: The outdoor air is the energy source. This energy is transmitted to the heating water by the heat pump.
- Inverter: The speeds of the fan and the compressor are modulated to suit the heat requirements. This technology saves energy and permits operation with a single phase power supply, regardless of the power rating of the heat pump, by avoiding high current demands on start-up.
- COP (coefficient of performance): this is the ratio between the energy transmitted to the heating circuit and the electrical energy consumed.

1.3 Specifications

Model name	**Loria duo...**		**6004**	**6006**	**6008**	**6010**
Nominal heating performances (outdoor temperature/ initial temperature)						
Heat output						
+7 °C/+35°C - floor heating system		kW	4.07	6.02	7.47	10.42
-7 °C/+35°C - floor heating system		kW	4.42	5.20	5.96	7.94
+7°C/+45°C - LT radiator		kW	4.09	4.98	6.40	8.51
-7 °C/+45°C - LT radiator		kW	4.24	4.62	5.74	7.38
+7 °C / +55 °C - Radiator		kW	3.68	4.27	5.53	6.98
-7 °C / +55 °C - Radiator		kW	3.72	3.88	5.03	6.47

Model name	Loria duo...		6004	6006	6008	6010
Power absorbed						
+7 °C/+35°C - floor heating system		kW	0.82	1.28	1.77	2.37
-7 °C/+35°C - floor heating system		kW	1.42	1.77	2.33	3.11
+7 °C/+45°C - LT radiators		kW	1.13	1.42	1.90	2.40
-7 °C/+45°C - LT radiator		kW	1.71	1.94	2.60	3.51
+7 °C / +55 °C - Radiator		kW	1.39	1.60	2.06	2.63
-7 °C / +55 °C - Radiator		kW	1.96	2.02	2.96	3.64
Coefficient of performance (COP)	**(+7°C/+ 35°C)**		**4.96**	**4.70**	**4.22**	**4.40**
Electrical characteristics						
Voltage (50 HZ)		V	230			
Stand-by consumption		W	10			
Nominal current / Maximum current of the appliance		A	4.5 / 11	6.3 / 12.5	8.1 / 17.5	10.9 / 18.5
Heating electrical back-up power		kW	3			
DHW electrical back-up power		kW	1.6			
Power absorbed by the circulation pump (max.)		W	70			
Actual power absorbed by the fan (outdoor unit)		W	49			
Maximum power absorbed by the outdoor unit		W	2530	2875	4025	4255
Hydraulic circuit						
Maximum pressure for heating / DHW		MPa (bar)	0.3 (3) / 1 (10)			
Available heating pressure at nominal point +7°C / + 35°C		MPa (bar)	0.064 (0.64)	0.05 (0.5)	0.036 (0.36)	0.021 (0.21)
Minimum allowed hydraulic flow rate		l/h	420		600	
Min / max hydraulic system flow rate 4°C<Δt<8°C (nominal conditions)		l/h	540 / 860	720 / 1300	810 / 1620	1010 / 2020
Minimum recommended water volume per circuit (excl. HP)... [1]						
- Floor heating-cooling system		l	15	15	28	35
- Cast iron / steel radiators		l	25	25	46	57
- Dynamic radiator [2]		l	36 (2)	36 (2)	49 (2)	62 (2)
Expansion vessel / DHW tank volume		l	8 / 190			
Miscellaneous						
Weight of hydraulic unit (empty/full of water)		Kg	138 / 332			
Weight of the outdoor unit		Kg	41	41	42	60
Noise level at 1 metre [3] (hydraulic unit)		dB (A)	36			
Sound power level as per EN 12102 [4] (hydraulic unit)		dB (A)	44			
Noise level at 5 metres [3] (outdoor unit)		dB (A)	40	40	47	47
Sound power level as per EN 12102 [4] (outdoor unit)		dB (A)	62	62	69	69
Heating system operating limits						
Min./max. outdoor temperature		°C	-20 / +35			
Max. water temperature for heating outgoing circuit		°C	55			
Min. water temperature for heating return circuit (heating mode)		°C	17			
Refrigerant circuit						
Diameters of the gas / liquid pipes		Inches	1/2 / 1/4	1/2 / 1/4	5/8 / 1/4	5/8 / 3/8
Factory charge of refrigerating fluid R410A [5]		g	1100	1100	1400	1800
Maximum operating pressure		MPa (bar)	4.15 (41.5)			
Min. / max. length of pipes [6] / max. length with additional charge [7]		m	5 / 15 / 30			
Maximum level difference		m	20			

[1] Min. circulating water volume **required for each circuit** excl. HP volume: see additional information § *4.2, page 26.*

[2] Water volume **to be complied with**, installation of a buffer **required.**

[3] Sound pressure level at (x) m from the appliance, 1.5 m from the ground, free field, directivity 2.

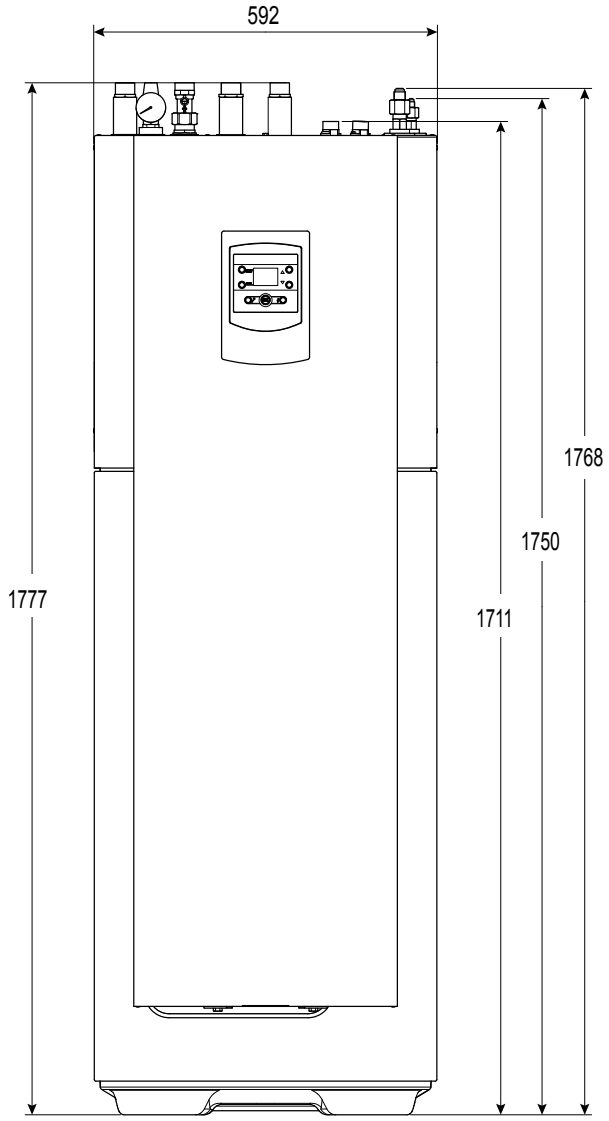
[4] The acoustic power is a measurement made in the laboratory of the power of the noise emitted but contrary to the noise level, it does not correspond to the measurement of what is felt.

[5] Refrigerant R410A in compliance with standard NF EN 378.1.

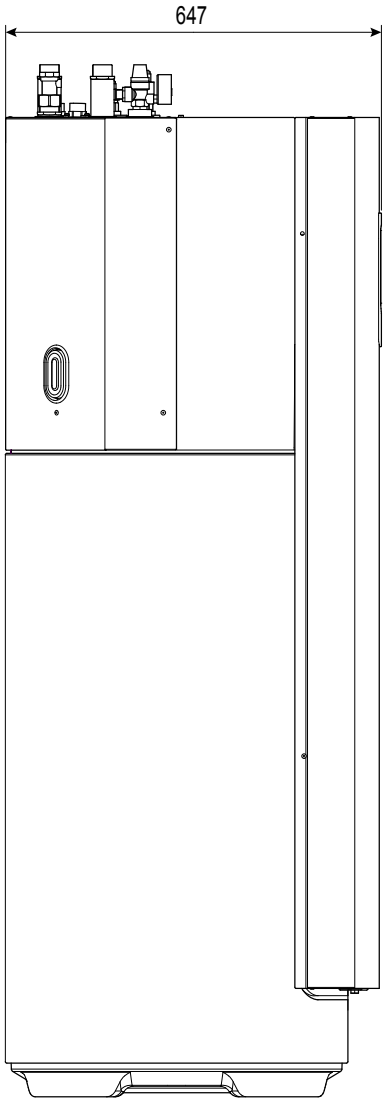
[6] Factory charge of refrigerant R410A.

[7] Taking into account the potential additional charge of refrigerant R410A (see *§ 3.5, page 25*.

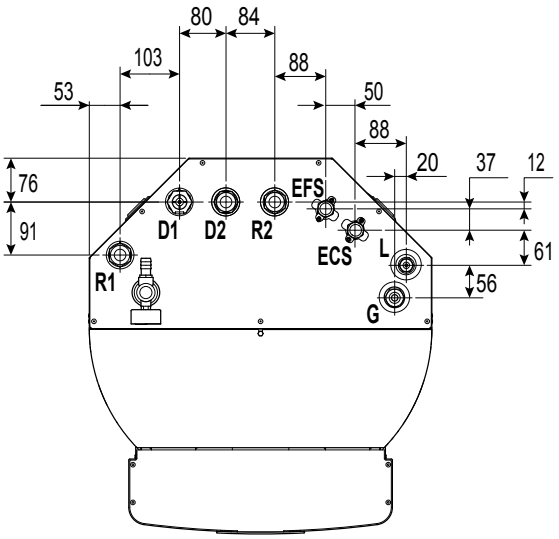
☞ Hydraulic unit



Front view



Side view



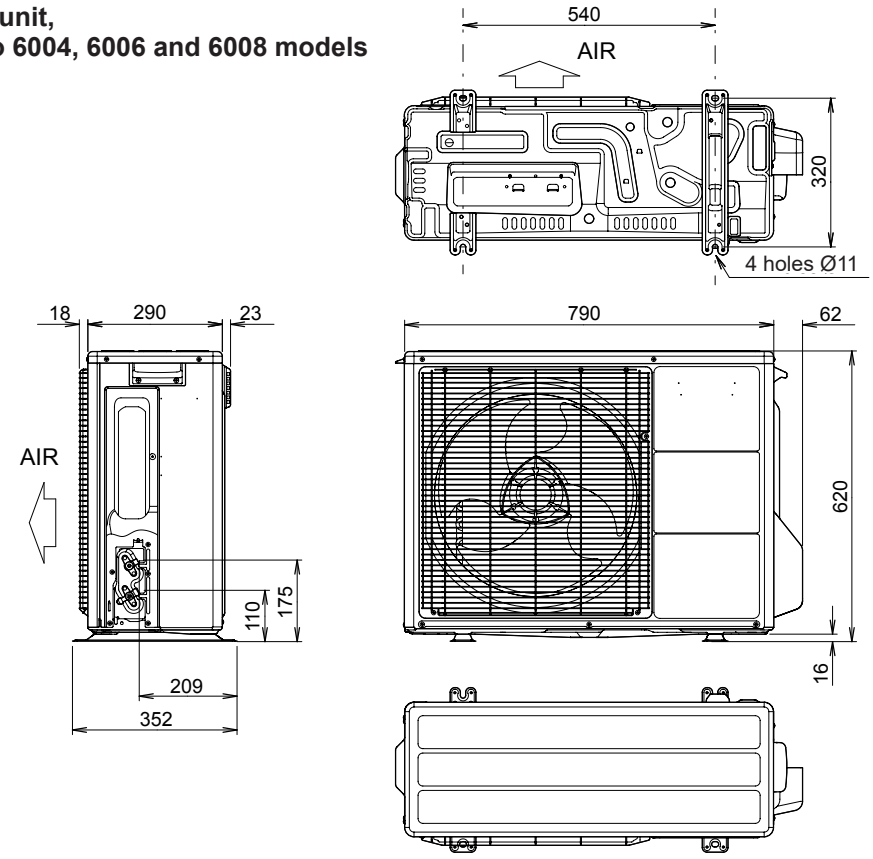
Overhead view

D1	Heating outgoing flow (area 1) ø M 26x34
R1	Heating return flow (area 1) ø M 26x34
D2	Heating outgoing flow (optional area 2) ø M 26x34
R2	Heating return flow (optional area 2) ø M 26x34
DCW	DCW inlet ø
DHW	DHW outlet ø
G	"Gas" refrigeration connection ø 5/8"
L	"Liquid" refrigeration connection ø 3/8"

Dimensions of the hydraulic unit, see § *page 18*

figure 1 - Dimensions of the hydraulic unit in mm

☞ **Outdoor unit,**
Loria duo 6004, 6006 and 6008 models



☞ **Outdoor unit,**
Loria 6010 model

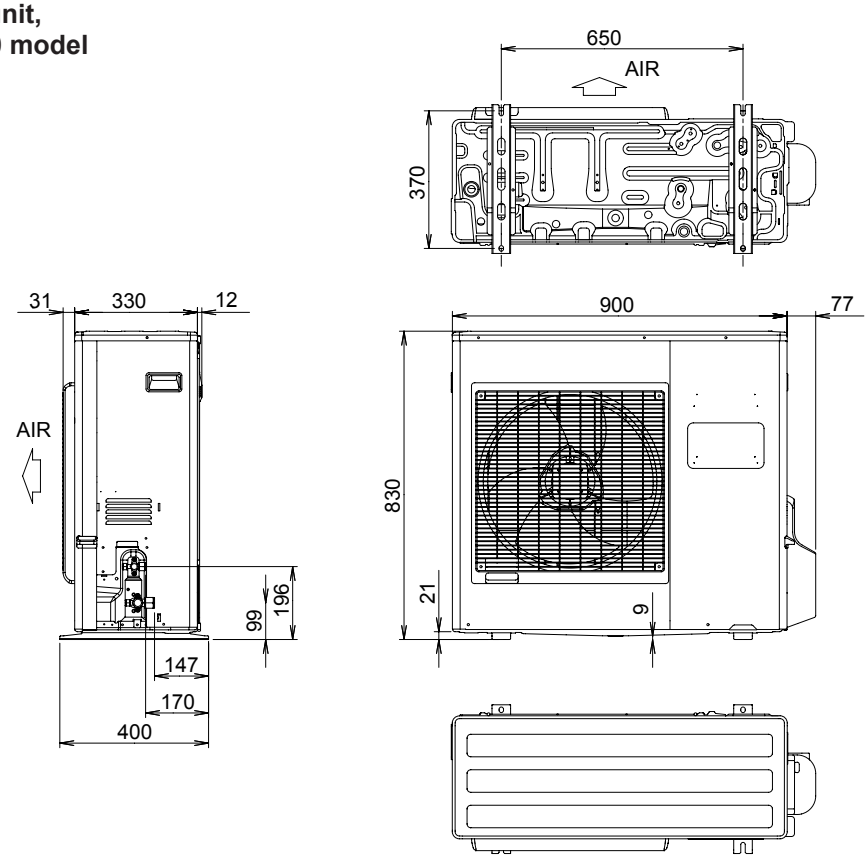


figure 2 - Dimensions of the outdoor unit in mm

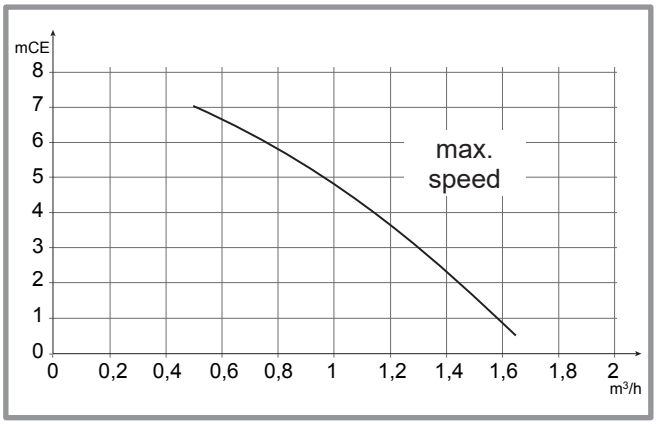
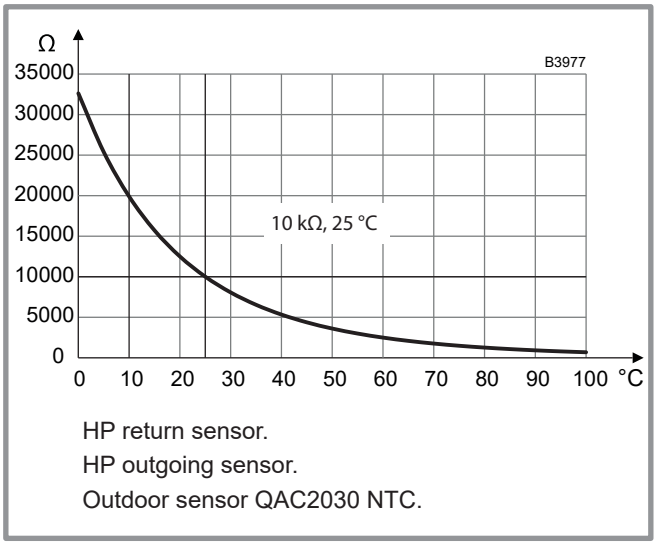


figure 4 - Hydraulic pressures and flow rates available



HP return sensor.
HP outgoing sensor.
Outdoor sensor QAC2030 NTC.

figure 5 - Ohmic value of the sensors (hydraulic unit - Outdoor sensor)

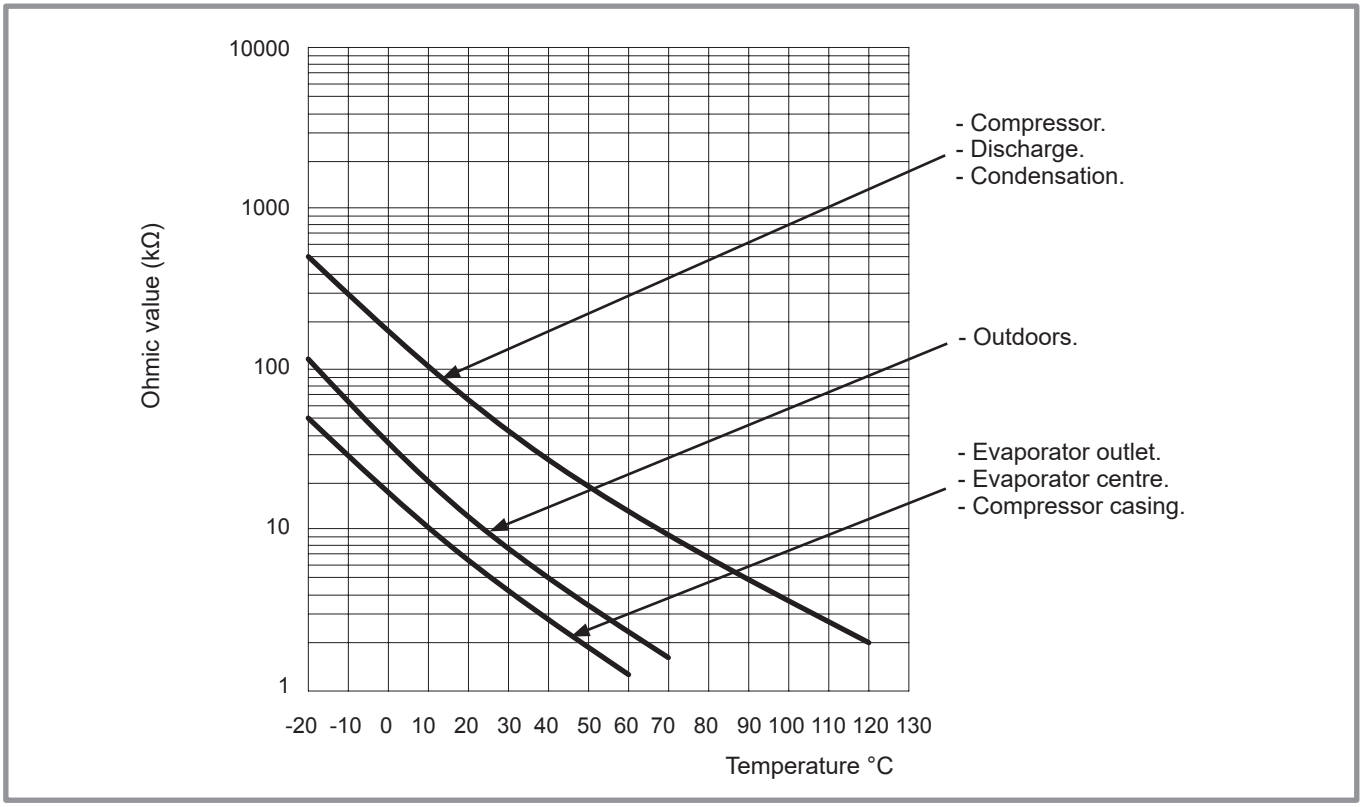
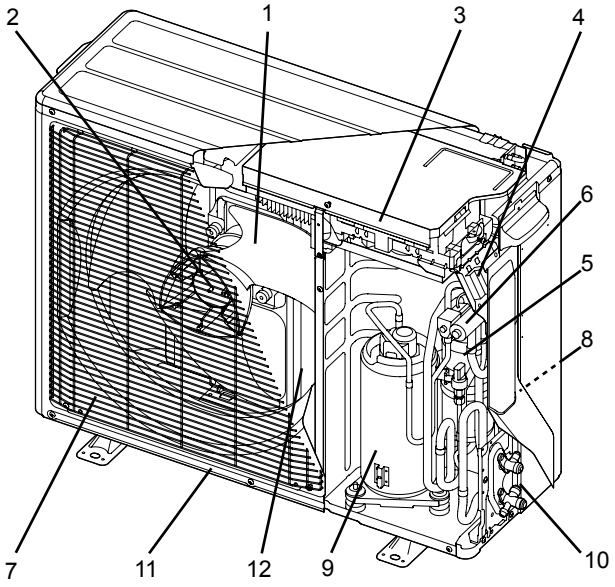


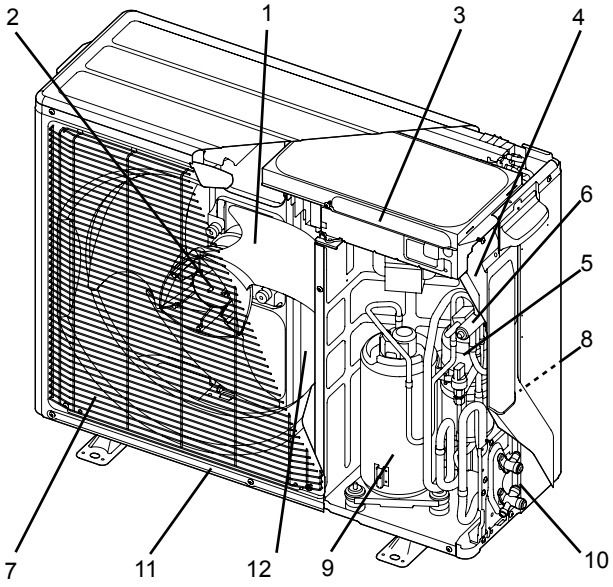
figure 3 - Ohmic value of the sensors (outdoor unit)

1.4 Description

☞ **Loria duo 6004 and 6006 models**



☞ **Loria duo 6008 model**



Key:

1. High performance propeller and low noise level.
2. Electrical motor with variable "Inverter" operation.
3. Control lights and buttons.
4. Connection terminal blocks (power and interconnection).
5. Refrigerant storage cylinder.
6. 4-way valve.
7. Panels treated against corrosion.
8. Electronic expansion valve of the main circuit.
9. "Inverter" compressor acoustically and thermally insulated.
10. Refrigeration connection valves (flared connectors) with protective caps.
11. Holding tank with condensate drain hole.
12. High-performance exchange surface evaporator; anti-corrosion treated hydrophilic aluminium blades and grooved copper tubes.

☞ **Loria duo 6010 model**

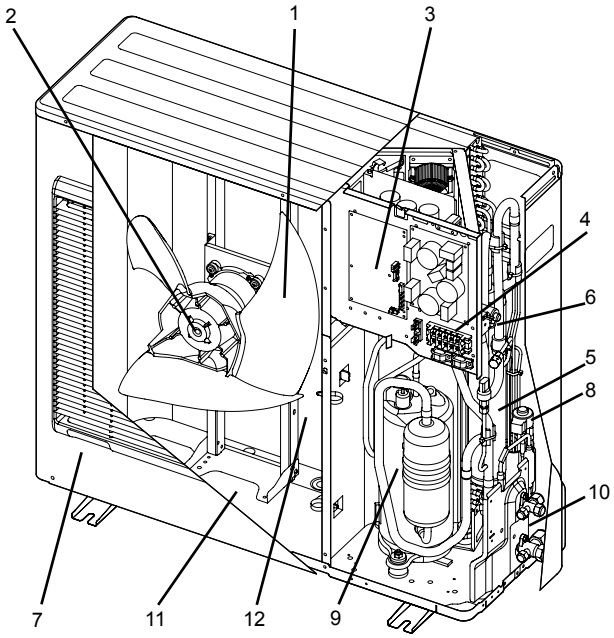
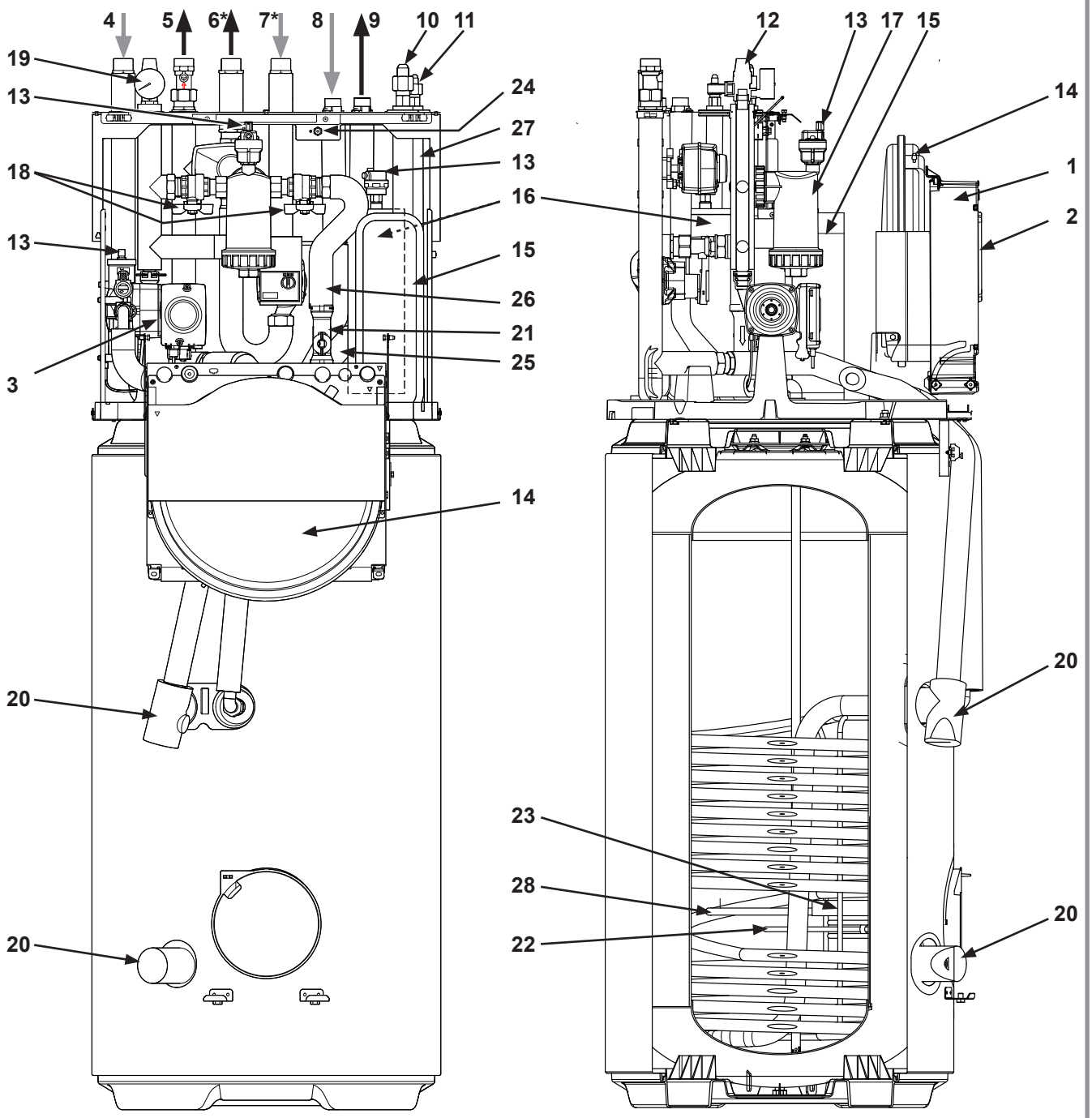


figure 6 - Components (outdoor units)



Front view

Side view

Key:

1. Electric box.
2. Controller / User interface (description, see § *7.1, page 40*).
3. Hydraulic system (circulation pump and distribution valve)
4. Return heating flow.
5. Outgoing heating flow.
6. Outgoing heating flow (combined circuit - Z 2)*.
7. Return heating flow (combined circuit - Z 2)*.
8. Domestic Cold Water inlet
9. Domestic Hot Water outlet
10. "Gas" refrigeration connection.
11. "Liquid" refrigeration connection.
12. Safety valve.
13. Automatic air bleeder.
14. Removable expansion vessel.
15. Condenser (exchanger).
16. Electrical back-up.
17. Sediment trap with filter
18. Valves
19. Pressure gauge
20. Bleed tap.
21. Flow meter.
22. DHW electrical backup
23. Anode
24. Reset button (overheating safety device).

Sensors

25. HP outgoing sensor.
26. HP return sensor.
27. Condensation sensor.
28. DHW sensor.

* Optional

figure 7 - Components (hydraulic unit)

1.5 Operating principle

The heat pump transmits the energy contained in the surrounding air into the residence to be heated.

The heat pump consists of four main elements, in which a refrigerant (R410A) circulates.

- In the evaporator (reference **12**, *figure 6, page 9*): The energy is taken from the surrounding air and is transmitted to the refrigerant. Because it has a low boiling point, it changes from liquid state to vapour state, even in cold weather (down to -15°C outdoor temperature).
- In the compressor (reference **9**, *figure 6, page 9*): The vaporised refrigerant is brought to high pressure and takes on more calories.
- In the condenser (reference **23**, *figure 6, page 9*): The energy in the refrigerant is transmitted to the heating circuit. The refrigerant returns to its liquid state.
- In the expansion valve (reference **8**, *figure 6, page 9*): The liquefied refrigerant is brought back to low pressure and returns to its initial temperature and pressure.

The heat pump has a regulator that controls the indoor temperature based on the measurement of the outdoor temperature, known as weather-dependent control. The room thermostat (optional) corrects the weather-dependent setpoint.

The hydraulic unit is equipped with an electrical back-up system, which is designed to provide additional heat during the coldest periods.

• Regulation functions

- The initial temperature of the heating circuit is controlled by the weather-dependent setpoint.
- The power of the outdoor unit is modulated according to the need via the "inverter" compressor.
- Control of the electrical back-up.
  - ➢ Additional heating when the HP alone is insufficient.
  - ➢ Assist mode.
- The daily timer programme enables you to define the periods for comfortable or reduced ambient temperature.
- Switching between summer/winter operation is automatic.
- Room thermostat*: The room thermostat corrects the weather-dependent setpoint.
- Domestic hot water.

• Protection functions

- Compressor protection via heating back-up.
- Heat exchanger protection via heating back-up.
- Legionella cycle for domestic hot water.
- Minimum flow detection.
- Sediment trap to protect the HP heating circuit
- Frost protection.
- Safety thermostats for electrical back-ups.

* When the heat pump is equipped with options and associated kits.

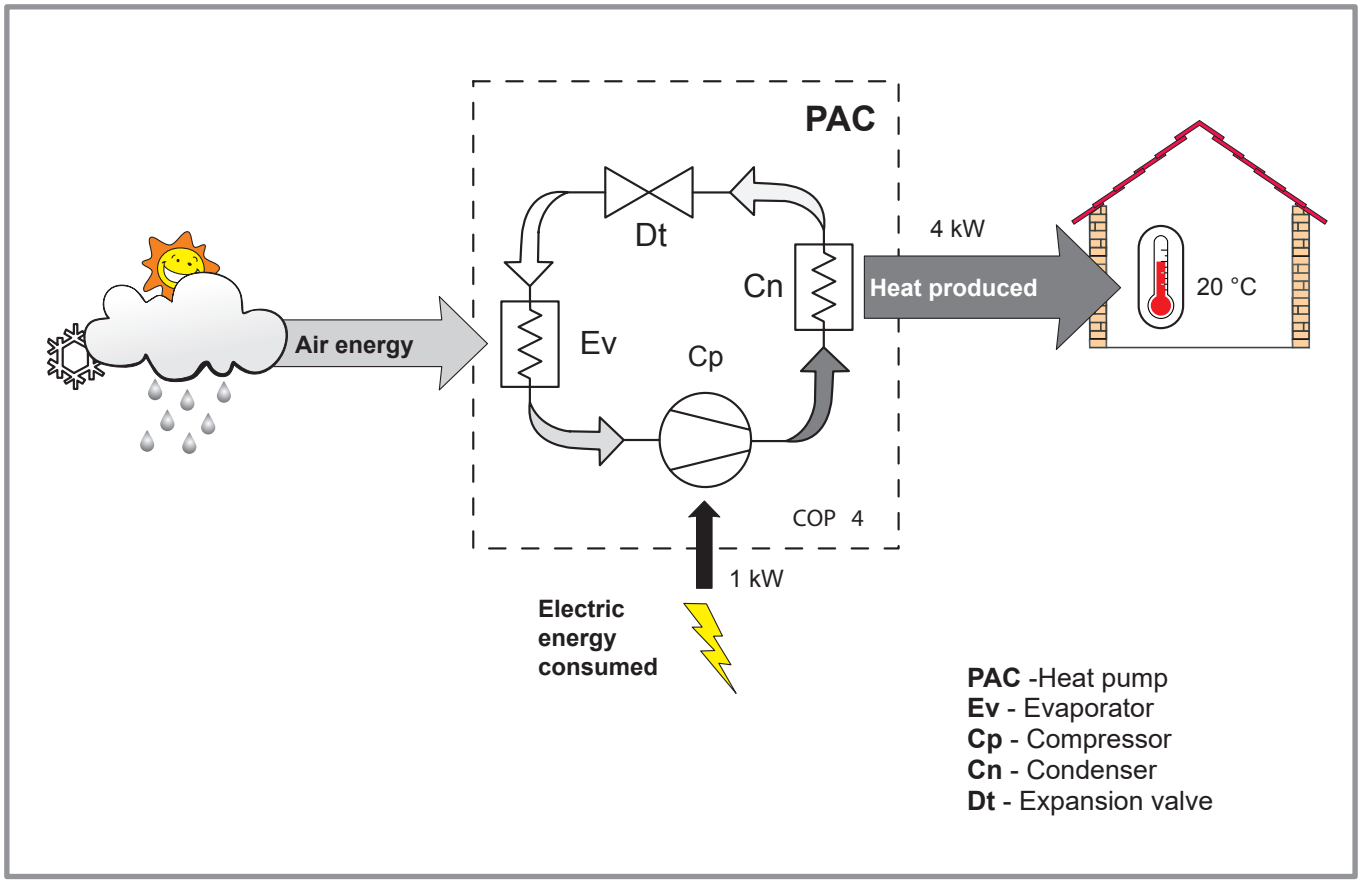


figure 8 - Operating principle of a heat pump

• Domestic hot water (DHW) operating principle.

Two domestic hot water (DHW) temperatures can be set:

- Comfort temperature ( ) and
- Reduced temperature (ECO)

(See **user interface description** *page 40* or room thermostat):

The DHW programme (PROG) is set by default to a comfort temperature ( ) according to 2 pre-set phases (see *"DHW time programme", page 45*) and a reduced temperature (ECO) for the rest of the day, which optimises electricity consumption while ensuring comfortable levels of hot water and heating.

The production of domestic hot water (DHW) is triggered when the temperature in the tank falls 7°C below the temperature setpoint.

The heat pump produces domestic hot water (DHW), which is then heated further, if required, by the electrical back-up system inside the tank.

To ensure that the DHW setpoint is reached, the electrical back-up system must be left on.

DHW production takes priority over heating; nevertheless the production of DHW is controlled by cycles that control the times assigned to the heating and the production of DHW in the event of simultaneous demand.

A DHW boost function is available (on the user interface: user level , setting *"95", page 47*) or on the room thermostat *page 41*. This DHW boost is used to heat the DHW to the comfort temperature at any time of day. The boost function is cancelled automatically when the demand for hot water has been met.

Legionella cycles may be authorised (see parameter: Legionella function No. *"73", page 46*).

• Dynamic radiators or fan-coil heaters with integrated control system

Do not use a room thermostat in the zone concerned.

2 Layout

2.1 Installation and maintenance rules

The appliance must be installed and maintained by an approved professional in accordance with the prevailing regulations and code of practice, in particular:

- General regulations for electrical installations

2.2 Unpacking and reservations

2.2.1 Acceptance

In the presence of the carrier, carefully inspect the general appearance of the appliances and check that the outdoor unit has not been placed in a horizontal position.

In the event of disagreement, write to the carrier within 48 hours mentioning all reserves and send a copy of this letter to the After Sales Department.

2.2.2 Handling

The outdoor unit must not be in a horizontal position during transport. Transport in a horizontal position may damage the appliance by moving the refrigerant and damaging the compressor's suspensions. **Damage caused by transportation in a horizontal position is not covered by the warranty**.

If necessary, the outdoor unit may be tilted during manual handling (to go through a door or use a staircase).

This operation must be conducted very carefully and the appliance must be immediately restored to the upright position.

2.2.3 Containing the refrigerant circuits

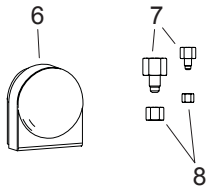
All refrigerant circuits are susceptible to contamination from dust and moisture. If such pollutants enter the refrigeration circuit, they can affect the reliability of the heat pump.

☞ **Please ensure correct containment of the connections and refrigerant circuits (hydraulic unit, outdoor unit).**

☞ **In the case of subsequent failure and after inspection, the detection of moisture or foreign objects in the compressor oil would systematically make the warranty null and void.**

- Check upon receipt that the refrigeration circuit caps and connections mounted on the hydraulic unit and outdoor unit are properly sealed and locked (cannot be loosened with bare hands). If this is not the case, tighten them using a wrench.
- Also check that the refrigerant connections are sealed (plastic caps or tubes crushed at the ends and brazed). If the caps must be removed during installation (for example tubes cut), reposition them as quickly as possible.

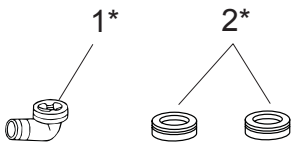
2.2.4 Accessories provided



6	Outdoor sensor	to monitor the outdoor temperature.
7	Adapter 1/2" - 5/8" (*) and/or 1/4" - 3/8"	to connect the flared connection of the hydraulic unit.
8	Nut 1/2" and/or 1/4"	

* models 6004 - 6006 only
(see table *figure 18, page 21*).

figure 9 - Accessories provided with the hydraulic unit



1*	Elbow	for condensate evacuation
2*	Caps (x2)	

* Loria duo 6010 model only

figure 11 - Accessories supplied with the outdoor unit

2.3 Positioning the refrigerant connections

☞ ⚠ **Manipulate the pipes and pass through slabs or walls <u>with protective plugs in place</u> or <u>after brazing</u>.**

☞ **Keep the protective caps or brazed ends <u>until commissioning the product.</u>**

The outdoor unit and the hydraulic unit must only be connected using copper connections (refrigerating grade), insulated separately.

Comply with with the pipe diameters (*figure 18, page 21*).

Observe the maximum and minimum distances between the hydraulic unit and the outdoor unit (*figure 18, page 21*); the guarantee of the performances and the system's service life depend on this.

The minimum length of the cooling connections is 5 m for correct operation.

The appliance's warranty will become void if it is applied with cooling connections that are shorter than 5 m (tolerance +/-10%).

If the refrigeration connections are exposed to weathering or UV rays and the insulation is not UV-resistant, protection must be provided.

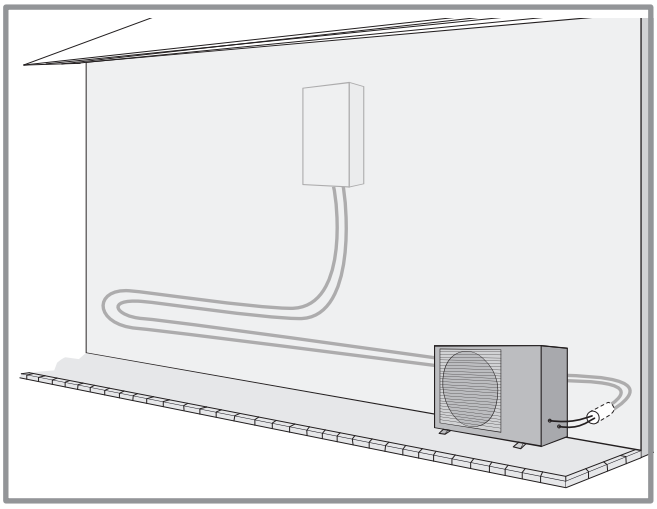


figure 10 - Recommended example of refrigerant connections layout

2.4 Installing the outdoor unit

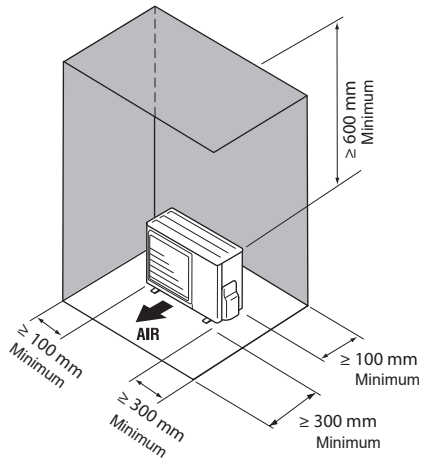
2.4.1 Installation precautions

☞ **The outdoor unit must only be installed outdoors. If a shelter is required, it must have broad openings on all 4 walls and comply with the installation clearances.**

- Choose the installation site after talks with the customer.
- Prioritise a site that is sunny and sheltered from strong cold predominant winds (mistral, tramontane, etc.).
- The unit must be easily accessible for future installation and maintenance work.
- Ensure that the connectors can be easily connected to the hydraulic unit.
- The outdoor unit can be exposed to bad weather, however avoid installing it in places where it will become dirty or have excessive water dripping onto it (for example under a leaky drainpipe).
- Water may be released from the outdoor unit when in operation. Do not install the appliance on a terrace; install it in a well-drained location (bed of gravel or sand). If installed in a region where the temperature may drop below 0°C for a long period of time, check that the ice does not cause any danger. A drainage pipe can also be connected to the outdoor unit (see *page 17*).
- Nothing should obstruct the air from circulating through the evaporator and out of the fan.
- Keep the outdoor unit away from sources of heat or inflammable products.
- Ensure that the appliance does not disturb neighbours or users (noise level, draughts caused, low temperature of the air blown causing a risk of freezing plants in its path).
- The surface on which the outdoor unit is mounted must:

- Be permeable (earth, gravel bed...),
- Support its weight comfortably,
- Allow for secure attachment,
- Not transmit any vibrations to the residence. Anti-vibration pads are available as an optional extra.

- The wall bracket cannot be used in conditions likely to transmit vibrations, where installation on the ground is preferred.



☞ **Loria 6004, 6006 and 6008 models**

☞ **Loria 6010 model**

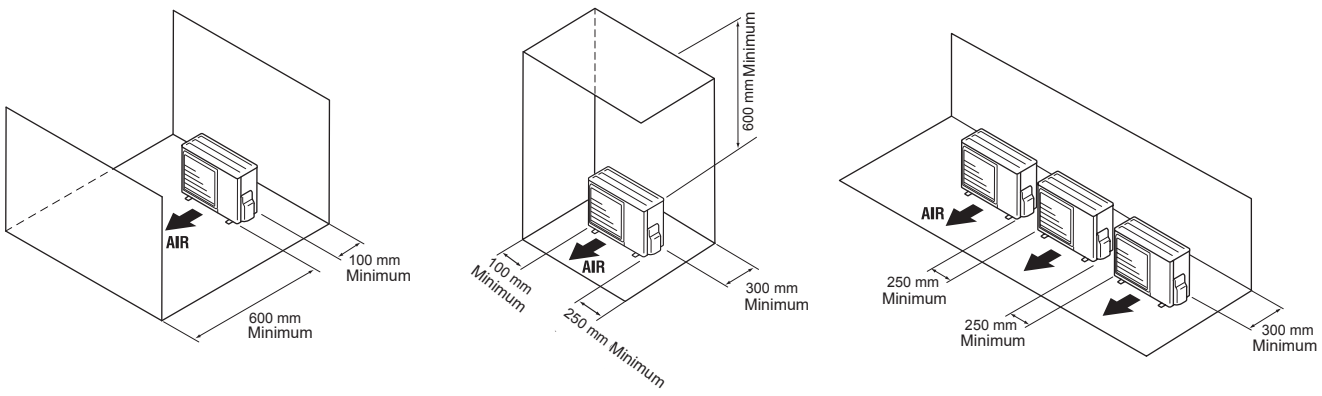


figure 12 - Minimum installation clearances around the outdoor unit

2.4.2 Positioning the outdoor unit

The outdoor unit must be raised by at least 50 mm from the ground. In snowy regions, this height must be increased but must not exceed 1.5 m (*figure 13*).

- Fasten the outdoor unit using screws and elastic tightening or toothed lock washers to prevent them from coming loose.

  ☞ **Warning** In regions with heavy snowfall, if the outdoor unit's entrance and exit are blocked by snow it may be difficult to heat up and may probably cause a breakdown. Build a canopy or position the unit on a high stand (local configuration).

- Put the appliance on a solid support to minimise impact and vibration.
- Do not set the unit directly on the ground as this may generate disruptions.

2.4.3 Connecting the condensate evacuation pipe

(see *figure 13*).

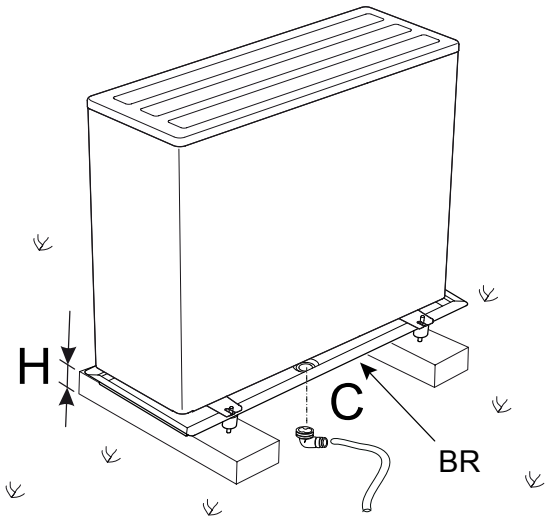
☞ **The outdoor unit can generate a large volume of water (called condensate).**

If an evacuation pipe must be used:

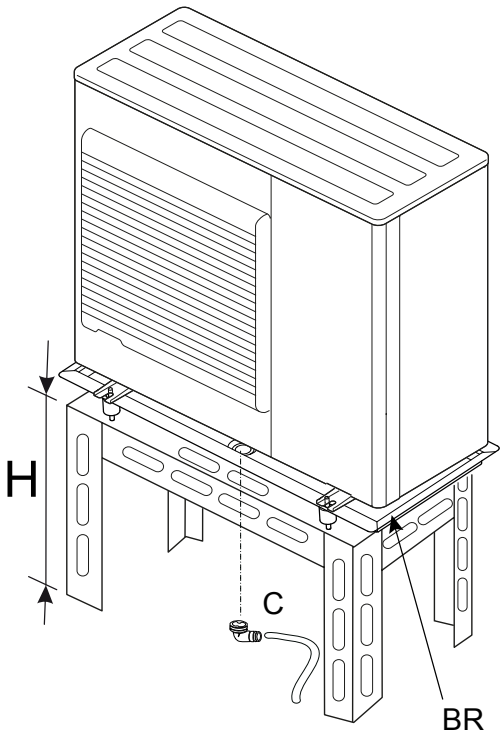
- Install the condensate drain pan (**BR**) (optional, see *page 4*).
- Use the elbow provided (**C**) and connect a hose of 16 mm diameter to discharge the condensates.
- Use the plug(s) supplied (**B**) to plug the orifice of the condensate drain pan.

Provide for the gravitational discharge of the condensates (waste water, rainwater, gravel bed).

☞ **If the appliance is installed in a region where the temperature may fall below 0°C for long periods, fit the drain hose with a trace heater to prevent it from icing over. The trace heater must not only heat the drain hose but also the bottom of the appliance's condensate drain pan.**



* In regions subject to frequent snow, (H) must be greater than the average snow layer.



☞ **Loria 6010 model only**

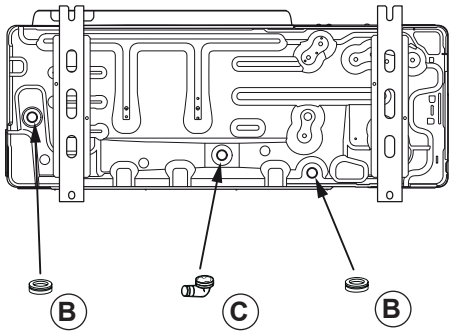


figure 13 - Positioning the outdoor unit, discharging condensates

2.5 Installing the hydraulic unit

2.5.1 Installation precautions

- Choose the installation site after talks with the customer.
- The room where the appliance operates must comply with the regulations in force.
- To ease maintenance operations and provide access to the various parts, sufficient space should be left around the hydraulic unit.
- In accordance with EN 378-1 -2017 standard (Refrigerating systems and heat pumps - Safety and environmental requirements), the system's hydraulic unit and all refrigeration connections passing through inhabited areas must comply with the minimum room volume requirements shown hereafter.

  The minimum volume of a room (in m³) is calculated using the formula: "fluid fill load" (in kg) / 0.39.

  Alternatively, you must ensure that:

  - the location has natural ventilation through another room where the combined volume of the two rooms is greater than "liquid fill load" (in kg) / 0.39 kg/m³. The opening between the two rooms must have a door clearance of at least 1 cm.

  - or that the location is mechanically ventilated.
- Be careful to keep the heat pump away from inflammable gas during installation, in particular when it requires brazing. The appliances are not fireproof and should therefore not be installed in a potentially explosive atmosphere.

- To avoid condensation inside the condenser, remove the refrigerant circuit caps **only when positioning the refrigerant connections**.
- If the refrigerant connection is only made at the end of the installation, ensure that the refrigerant circuit caps* remain in place and tight throughout the installation process.
  * (Side of the hydraulic unit and side of the outdoor unit).
- After any intervention on the refrigeration circuit and before final connection, replace the caps in order to avoid any pollution from the refrigeration circuit (sealing using tape is prohibited).

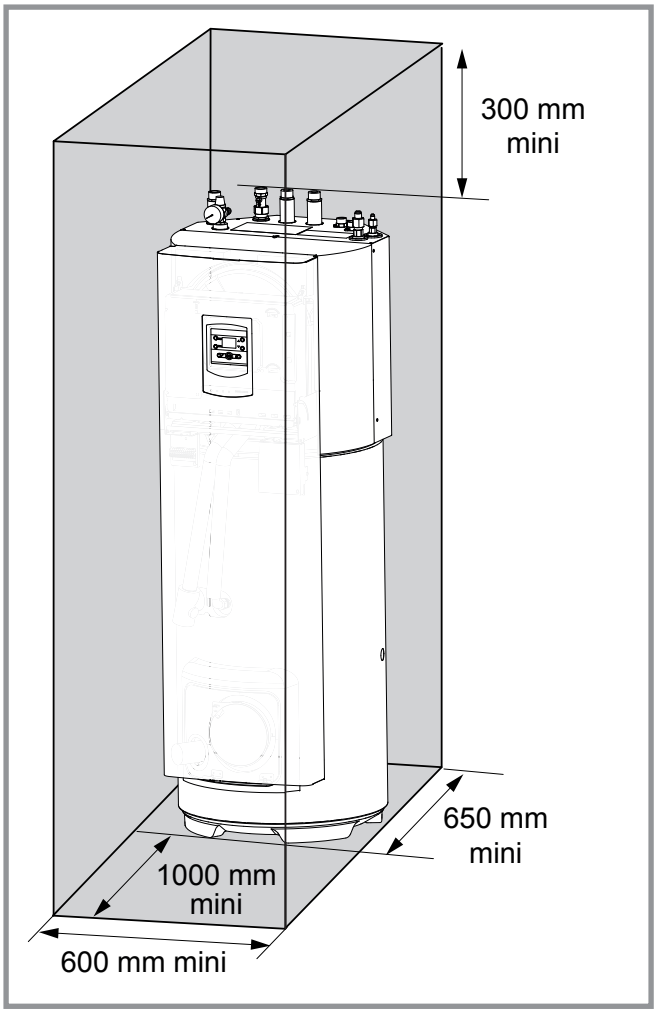


figure 14 - Minimum installation clearances around the hydraulic unit

3 Refrigerant connection and filling the installation with gas

☞ **This appliance uses refrigerant R410A.**

Comply with the legislation for handling refrigerants.

3.1 Rules and precautions

☞ **Connections must be made on the day of the filling the installation with gas (see § *3.4, page 22*).**

• Tooling

- Pressure gauge kit (*Manifold*) with hoses exclusively reserved for HFCs (Hydrofluorocarbons).
- Vacuum gauge with isolation valves.
- Special HFC vacuum pump (use of a traditional vacuum pump is authorised if and only if it is fitted with a non-return valve on the suction side).
- Flaring tool, pipe-cutter, Deburrer, Wrenches.
- Approved refrigerant detector (sensitivity 5g/year).

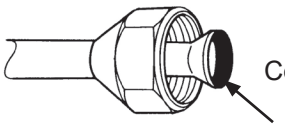
☞ **The use of tools that have been in contact with HCFCs (R22 for example) or CFCs is prohibited.**

☞ **The manufacturer shall not be held liable with regard to the warranty if the above instructions are not complied with.**

• Flared connections

☞ **Lubrication with mineral oil (for R12, R22) is prohibited.**

- Only lubricate with polyolester refrigeration oil (POE). If POE oil is not available, fit without lubrication.



Coat the flared surface with **PEO refrigerant oil**.

Do not use mineral oil.

• Brazing on the refrigeration circuit (if necessary)

- Silver brazing (40% minimum recommended).
- Brazing with a dry nitrogen stream only.

• Important notes:

- After any intervention on the refrigeration circuit and before final connection, replace the caps in order to avoid any pollution from the refrigeration circuit.
- To eliminate any filings in the pipes, use dry nitrogen to avoid introducing any humidity that may adversely affect the appliance's operation. In general, take every precaution to avoid humidity penetrating the appliance.
- Insulate the gas and liquid pipes to avoid condensation. Use insulating sleeves that resist temperatures of over 90°C. In addition, if the level of humidity around the refrigerating pipes could exceed 70%, protect the latter with insulating sleeves. Use an insulating material thicker than 15mm if the humidity level reaches 70~80%, and an insulating material thicker than 20mm if the humidity level exceeds 80%. If the recommended thicknesses are not complied with under the conditions described above, condensation will form on the surface of the insulation material. Finally, use insulating sleeves with a thermal conductivity equal to 0.045 W/mK or less when the temperature is 20°C. The insulation must be impermeable to prevent steam from passing during the defrosting cycles (glass wool is prohibited).

3.2 Shaping the refrigeration pipes

3.2.1 Bending

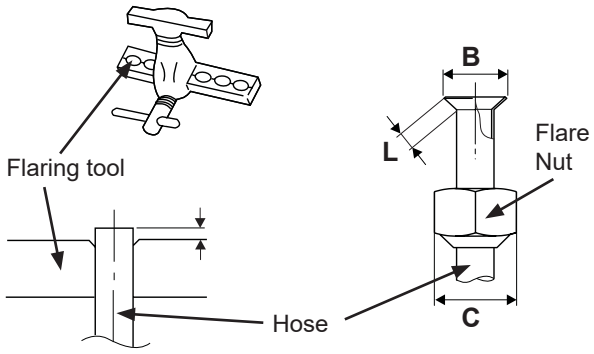
The refrigeration pipes must be shaped only on a bending machine or with a bending spring in order to avoid any risk of crushing or breakage.

☞ **Warning!**

- Remove the nearby insulation before bending the tubes.
- Do not bend copper to an angle of more than 90°.
- Do not bend tubes more than 3 times at the same point to prevent the pipe from splitting (hardening of the metal).

3.2.2 Creating the flarings

- Cut the pipe to an appropriate length with a pipe-cutter without deforming it.
- Carefully deburr it, holding the pipe downwards to avoid introducing filings into the pipe.
- Remove the flare nut from the connector on the valve to be connected and thread the tube through the nut.
- Flare it and leave the tube protruding from the flaring tool.
- After flaring, check the condition of the face (**L**). This must not show any scratches or traces of fracturing. Also check the dimensions (**B**).



ø of pipe	Dimensions in mm		
	L	B $^{0}/_{-0.4}$	C
6.35 (1/4")	1.8 to 2	9.1	17
9.52 (3/8")	2.5 to 2.7	13.2	22
12.7 (1/2")	2.6 to 2.9	16.6	26
15.88 (5/8")	2.9 to 3.1	19.7	29

figure 15 - Flaring for flare connections

3.3 Checks and connections

☞ **The refrigeration circuit is very sensitive to dust and humidity: check that the area around the connection is clean and dry before removing the caps protecting the refrigeration connectors.**

☞ **Blowing indicator value: 6 bar for at least 30 seconds for a 20 m connection.**

Gas connection control (large diameter)).

① Connect the gas connection to the outdoor unit. Blow dry nitrogen into the gas connection and observe its end:

- If water or impurities emerge, use a new refrigerant connection.

② Otherwise, perform the flare and immediately connect the refrigerant connection to the hydraulic unit.

Liquid connection control (small diameter)).

③ Connect the liquid connection to the hydraulic unit.

- Blow dry nitrogen into the **gas connection – condenser - liquid connection assembly** and observe its end (side nearest the outdoor unit).
- If water or impurities emerge, use a new refrigerant connection.
- Otherwise, perform the flare and immediately connect the refrigerant connection to the outdoor unit.

Notes:

☞ **Take particular care when positioning the tube opposite its connector so as not to risk damaging the threads. A correctly aligned connector can be fitted easily by hand without much force being required.**

☞ **Depending on the case, connect an adapter (reducer) 1/4"- 3/8" or 1/2"- 5/8" (see** *figure 18, page 21*).

☞ **Comply with the indicated tightening torques (***figure 17*).

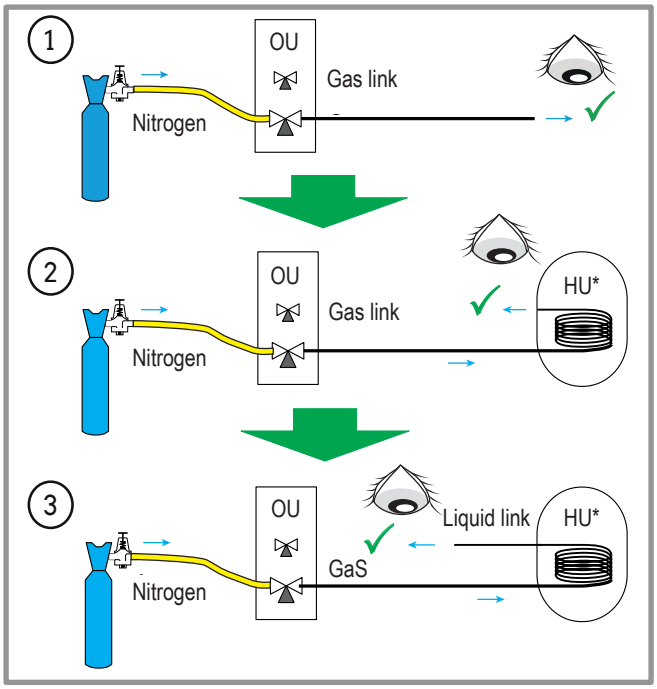
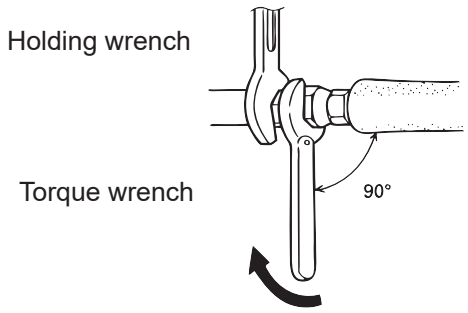


figure 16 - Checking refrigeration connections



Name	*Tightening torque*
Flare nut 6.35 mm (1/4")	14 to 18 Nm
Flare nut 9.52 mm (3/8")	33 to 42 Nm
Flare nut 12.7 mm (1/2")	50 to 62 Nm
Flare nut 15.88 mm (5/8")	63 to 77 Nm
Plug (A) 3/8", 1/4"	20 to 25 Nm
Plug (A) 1/2"	25 to 30 Nm
Plug (A) 5/8"	30 to 35 Nm
Plug (B) 3/8", 5/8"	10 to 12 Nm
Plug (B) 1/2", 1/4"	12.5 to 16 Nm

Plugs A / B: see *figure 19, page 23*

figure 17 - Tightening torques

Heat pump model		Loria duo 6004, 6006		Loria duo 6008		Loria duo 6010	
		gas	liquid	gas	liquid	gas	liquid
Outdoor unit connections		1/2"	1/4"	5/8"	1/4"	5/8"	3/8"
Refrigerating connections	Diameter	(D1) 1/2"	(D2) 1/4"	(D1) 5/8"	(D2) 1/4"	(D1) 5/8"	(D2) 3/8"
	Minimum length (L)	5					
	Maximum length* (L)	15					
	Maximum length** (L)	30					
	Maximum level difference** (D)	20					
Male-female adapter (reduction)		(R1) 1/2" - 5/8"	(R2) 1/4" - 3/8"	Without	(R2) 1/4" - 3/8"	Without	
Hydraulic unit connections		5/8"	3/8"	5/8"	3/8"	5/8"	3/8"

*: Without additional charge of R410A.

**: Taking account of any additional charge (see *3.5, page 25*).

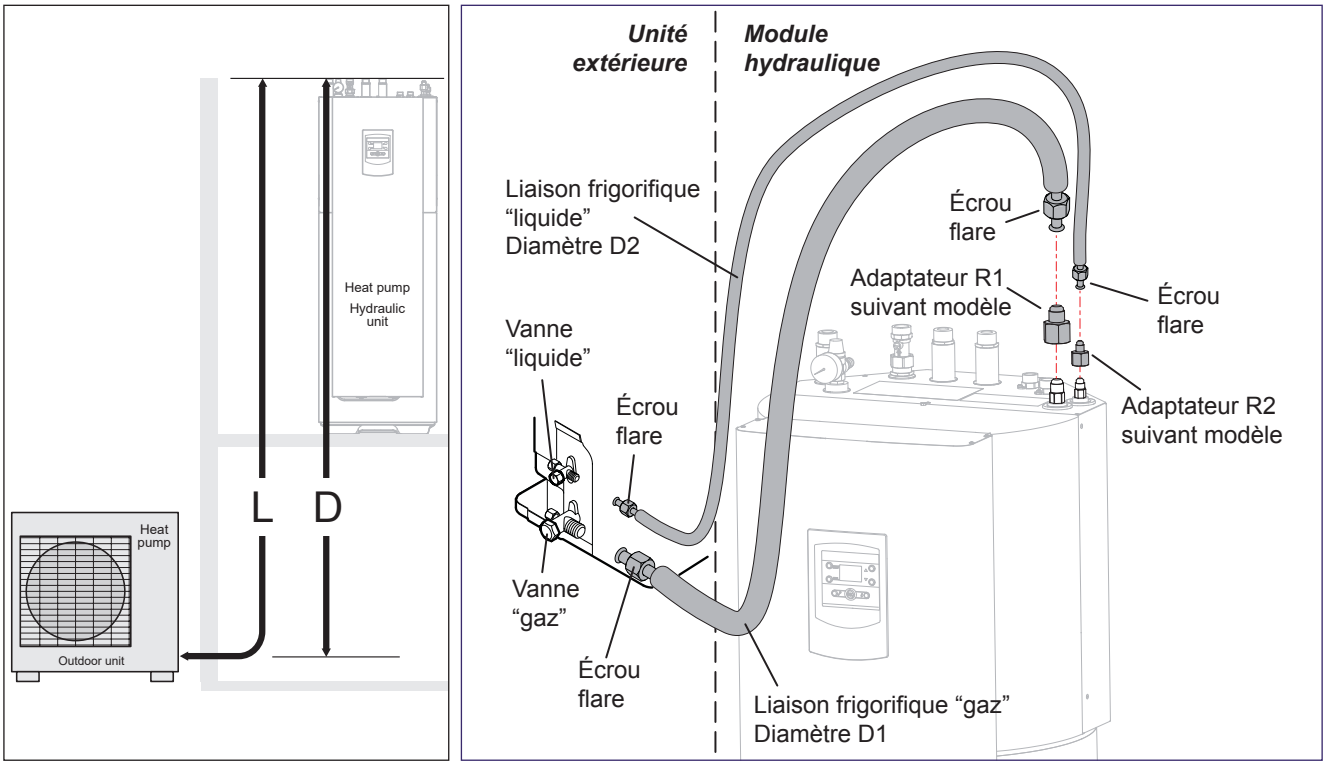


figure 18 - Refrigerating link connection (accepted diameters and lengths)

3.4 Filling the installation with gas

- ☞ **This operation is only to be carried out by qualified fitters in compliance with the legislation for the handling of refrigerants.**
- ☞ **Creating a vacuum with a vacuum pump is essential (see ANNEX 1).**
- ☞ **Do not use equipment that has previously been used with a refrigerant other than a HFC.**
- ☞ **Remove the refrigerant circuit caps only when making the refrigerant connections.**

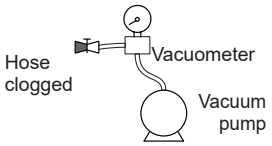
⚠ **If the outdoor temperature is below +10°C:**

- The 3-vacuum method must be used (see ANNEX 2).
- A dehydrator filter should be installed (highly recommended if the outdoor temperature is below +5°C).

ANNEX 1

Method for calibrating and checking a vacuum pump

- Check the oil level of the vacuum pump.
- Connect the vacuum pump with the vacuum gauge as shown in the diagram.



- Pump down for 3 minutes.
- After 3 minutes, the pump reaches its vacuum threshold value and the vacuum gauge needle stops moving.
- Compare the obtained pressure with the value in the table. Depending on the temperature, this pressure must be less than the value indicated in the table.

  => If this is not the case, replace the seal, hose or pump.

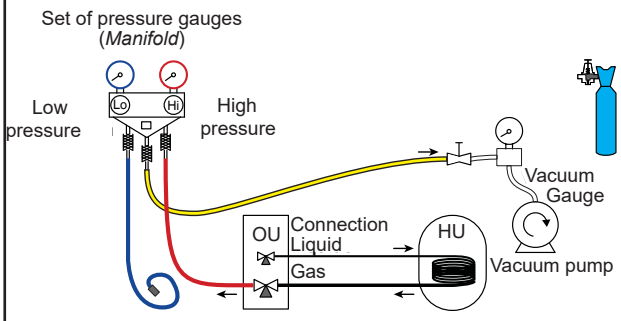
T °C	5°C<T<10°C	10°C<T<15°C	15°C < T
Pmax - bar - mbar	0.009 9	0.015 15	0.020 20

ANNEX 2

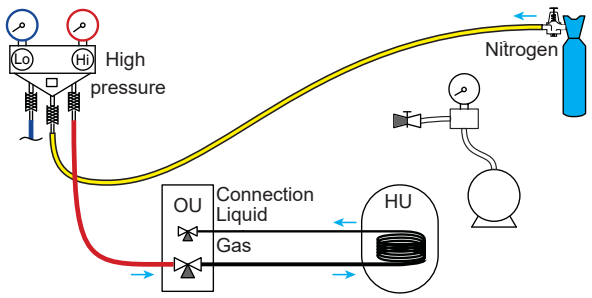
3-vacuum method

- Connect the high pressure hose from the manifold to the load orifice (gas connection). A valve must be mounted on the hose from the vacuum pump in order to isolate it.

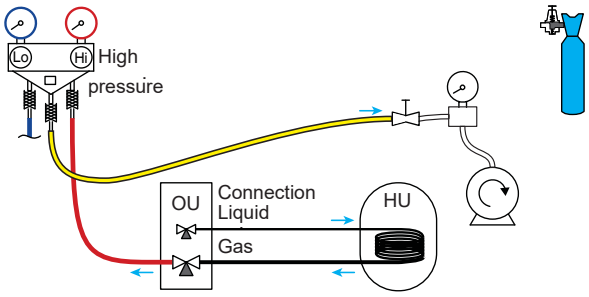
a) Pump down to the desired value and maintain this value for 30 min (see table in ANNEX 1),



b) Stop the vacuum pump, close the end valve of the service hose (yellow), connect this hose to the expansion valve of the nitrogen cylinder, inject 2 bars then close the hose valve,



c) Reconnect the hose to the vacuum pump, turn on and gradually open the hose valve.

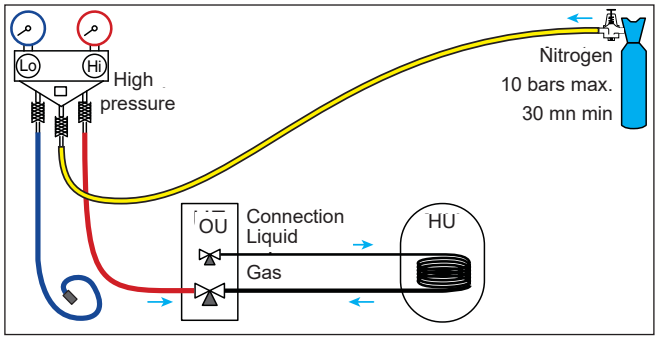


d) Repeat this operation at least three times.

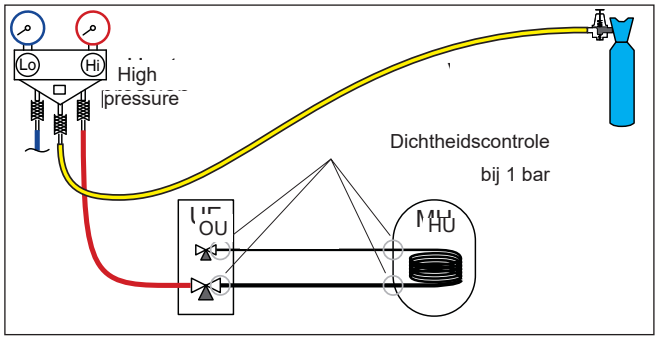
☞ **Reminder: it is strictly forbidden to perform these operations with the refrigerant.**

3.4.1 Leak test

- Remove the protective plugs (**B**) from the charging hole (*Schrader*) in the gas valve (large diameter).
- Connect the high pressure hose from the *Manifold* to the load orifice (*figure 19*).
- Connect the cylinder of nitrogen to the *Manifold* (use only type U dry nitrogen).
- Flow the pressurised nitrogen (10 bar maximum) in the refrigerant circuit (**gas connection – condenser - liquid connection** assembly).
- Leave the circuit under pressure for 30 minutes.



- Search for leaks with a leak detector product, repair and repeat the test.



- When the pressure is stable and any leakage is excluded, empty the nitrogen to produce a pressure greater than atmospheric pressure (0.2 to 0.4 bar).

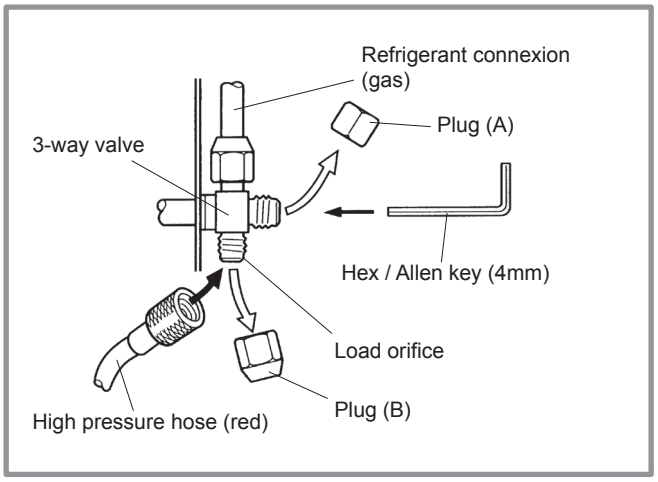
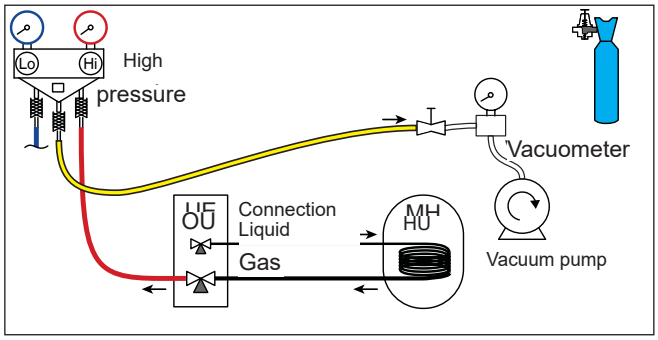


figure 19 - Connecting the hose on the gas valve

3.4.2 Pump down

⚠ The 3-vacuum method (ANNEX 2) is highly recommended for all installations, especially when the outdoor temperature is below 10°C.

- If necessary, calibrate the *Manifold* pressure gauge(s) to 0 bar. Adjust the vacuum gauge to the atmospheric pressure (≈ 1013 mbar).
- Connect the vacuum pump to the *Manifold*. Connect a vacuum gauge if the vacuum pump is not equipped with this.



- Pump down until the residual pressure* in the circuit falls below the value given in the following table (* measured with the vacuum gauge).

T °C	5°C<T<10°C	10°C<T<15°C	15°C < T
Pmax - bar	0.009	0.015	0.020
- mbar	9	15	20

- Let the pump continue to operate for a further 30 minutes after reaching the required vacuum.
- Close the *Manifold* valve, then stop the vacuum pump **without disconnecting any of the hoses in place**.

3.4.3 Filling the installation with gas

⚠ If an additional charge is required, add the additional charge before filling the hydraulic unit with gas. See § *"Additional charge", page 25*.

- Remove the access plugs (**A**) from the valve controls.
- First open the liquid valve (small valve) fully and then the gas valve (large valve) using a hex/Allen key (counter-clockwise direction) without forcing excessively against the stop.
- Quickly remove the hose from the *Manifold*.
- Refit the 2 original caps (ensure that they are clean) and tighten them to the recommended tightening torque as shown in the table *figure 17, page 20*. The seal is produced in the caps via a metal-on-metal contact only.

The outdoor unit does not contain any additional refrigerant, enabling the installation to be drained.

Drain by flushing is strictly forbidden.

3.4.4 Final sealing test

The sealing test must be performed with a certified gas detector (sensitivity 5g/year).

Once the refrigerating circuit has been filled with gas as described above, check all of the installation's refrigerating connectors for leaks (***Loria duo 6004, 6006 models:*** 6 connections - ***Loria duo 6008 model:*** 5 connections - ***Loria duo 6010 model:*** 4 connections). If the flarings have been made correctly, there should be no leaks. Where necessary, check the tightness of the refrigerant valve caps.

☞ **If there is a leak:**

- Bring the gas into the outdoor unit (pump down). The pressure should not drop below atmospheric pressure (0 bar as read at the *Manifold*) so as not to contaminate the recovered gas with air or moisture.
- Refit the faulty connection,
- Repeat the commissioning procedure.

3.5 Additional charge

Loria duo ... 6004, 6006 and 6008	*25 g of R410A per extra metre*	
Length of the connections	15 m	30 m max.
Additional charge	none	375 g
Loria duo 6010	***40 g of R410A per extra metre***	
Length of the connections	15 m / 16 m	30 m max.
Additional charge	none / + 40 g	+ 600 g

The outdoor unit charge corresponds to the maximum distances between the outdoor unit and the hydraulic unit defined in *figure 18, page 21*. For greater distances, an additional charge of R410A is required. The additional charge depends, for each type of appliance, on the distance between the outdoor unit and the hydraulic unit. The additional charge of R410A must only be added by a qualified specialist.

• Example for Loria duo 6004:

An outdoor unit at a distance of 17 m from the hydraulic unit will require an additional charge of:

Additional charge = (17 – 15) x 25 = 50 g

The charge must be introduced after pump down and before the hydraulic unit is filled with gas, as follows:

Disconnect the vacuum pump (yellow hose) and replace with a cylinder of 410A **in the liquid drawing position**.

- Open the tap of the cylinder.
- Bleed the yellow hose by loosening it slightly on the *Manifold*side.
- Place the cylinder on scales with a minimum accuracy of 10g. Note the weight.
- Carefully open the blue tap slightly and monitor the value displayed on the scales.
- As soon as the value displayed has dropped by the value of the calculated additional charge, close the cylinder and disconnect it.
- Quickly disconnect the hose from the appliance.
- Add the gas to the hydraulic unit.

☞ **Warning!**

• Only use R410A!

• Only use tools suitable for R410A (pressure gauge kit).

• Always charge in liquid phase.

• Do not exceed the maximum length or difference in height.

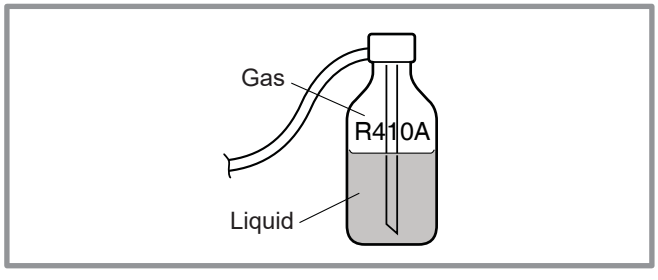


figure 20 - Gas cylinder R410A

3.6 Collecting refrigerant in the outdoor unit

☞ **Ensure that all electrical power supplies have been cut off before starting work.**

☞ ⚠ **Stored energy: after disconnecting the power supplies, wait 1 minute before accessing the internal parts of the equipment.**

Perform the following procedures to collect the refrigerant. Ensure that the pressure gauge kit (*Manifold*) has been previously installed.

- **1**- Power off the appliance and its peripherals (hydraulic unit, outdoor unit, back-up system(s)).
- **2**- Remove the front panel. Open the power control box. Switch the **DIP SW1** of the interface board to **ON**.
- **3**- Power ON the appliance and its peripherals (the green and red LEDs on the board start flashing; 1 sec. ON / 1 sec. OFF repeated) => The pump starts up. The outdoor unit starts in the cold mode for approximately 3 minutes after it is switched on.
- **4**- **Immediately after the outdoor unit starts**: close the liquid valve on the outdoor unit.
- **5**- Gradually close the gas valve on the outdoor unit **so that it is closed when the relative pressure drops below 0.02 bar** as read at the *Manifold* (about 1 or 2 minutes after closing the liquid valve), while the outdoor unit keeps running.
- **6**- Cut off the main power supply.
- **7**- The refrigerant collecting operation is complete.

Notes:

- When the heat pump is operating, the pump down operation may not be activated, even if the **DIP SW 1** switch is set to **ON**.
- Do not forget to return the **DIP SW 1** switch to **OFF** after the pump down operation.
- If the pump down operation fails, try the procedure again by turning off the machine and opening the "gas" and "liquid" valves. After 2 to 3 minutes repeat the pump down operation.

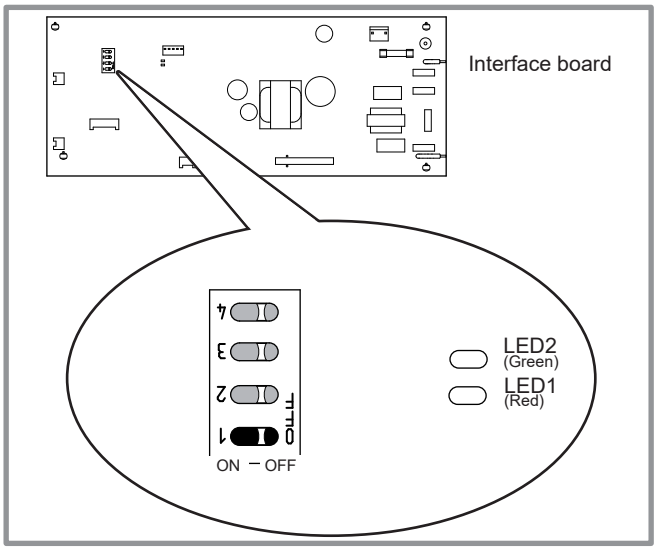


figure 21 - Location of DIP switches and LEDs on the hydraulic unit interface board

4 Hydraulic connections

☞ **Overview**

The connection must comply with good engineering practices according to the regulations in force.

Reminder: Make the assembly seals according to good engineering practices in force for plumbing work:

- Use suitable seals (fibre seals, O rings).
- Use Teflon or hemp tape.
- Use sealant (synthetic as required).

Reminder: The presence on the installation of a CB disconnection function (IEC 61770), designed to avoid heating water from returning to the drinking water network, is required by articles 16.7 and 16.8 of the Standard Departmental Sanitation Rules.

Glycol must be used if the initial temperature is less than 10°C (cooling on the fan-coil heater). If water containing glycol is used, carry out an annual check of the quality of the glycol. Use monopropylene glycol only. **Never use monoethylene glycol.**

☞ **In certain installations, the presence of different metals can cause corrosion problems; in this case, the formation of metal particles and sludge in the hydraulic circuit is seen. Use a corrosion inhibitor in the proportions recommended by its manufacturer.**

- Please refer to the section entitled "Treatment of domestic and heating water" in our price catalogue.

☞ **It is also necessary to ensure that the treated water does not become aggressive.**

4.1 Rinsing the installation

Before connecting the hydraulic unit to the installation, **rinse the heating system correctly** to eliminate the particles that could compromise the correct operation of the appliance. Do not use solvents or aromatic hydrocarbons (petrol, paraffin, etc.).

Add an alkaline product to the water and a dispersant.

Rinse the installation several times before final filling.

4.2 Connections

The heating circulating pump is built into the hydraulic unit.

The diameter of the pipe between the hydraulic unit and the heating manifold must be at least equal to 1 inch (26x34 mm).

Tightening torque: 15 to 35 Nm.

• Water volume:

To maintain a comfortable level for the user, please comply with the minimum water volume per circuit (see table, §*1.3, page 4*). Circuit equipped with dynamic radiators: a buffer must be installed and the minimum volume must comply with the specifications (§*1.3*).

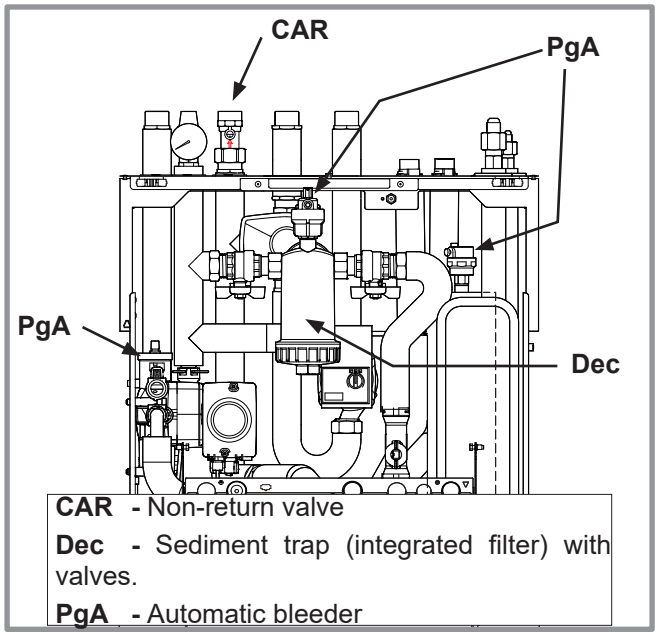


figure 22 - Bleeders and non-return valve

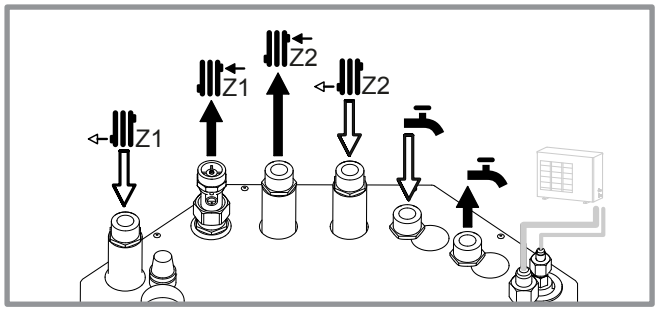


figure 23 - Hydraulic connections

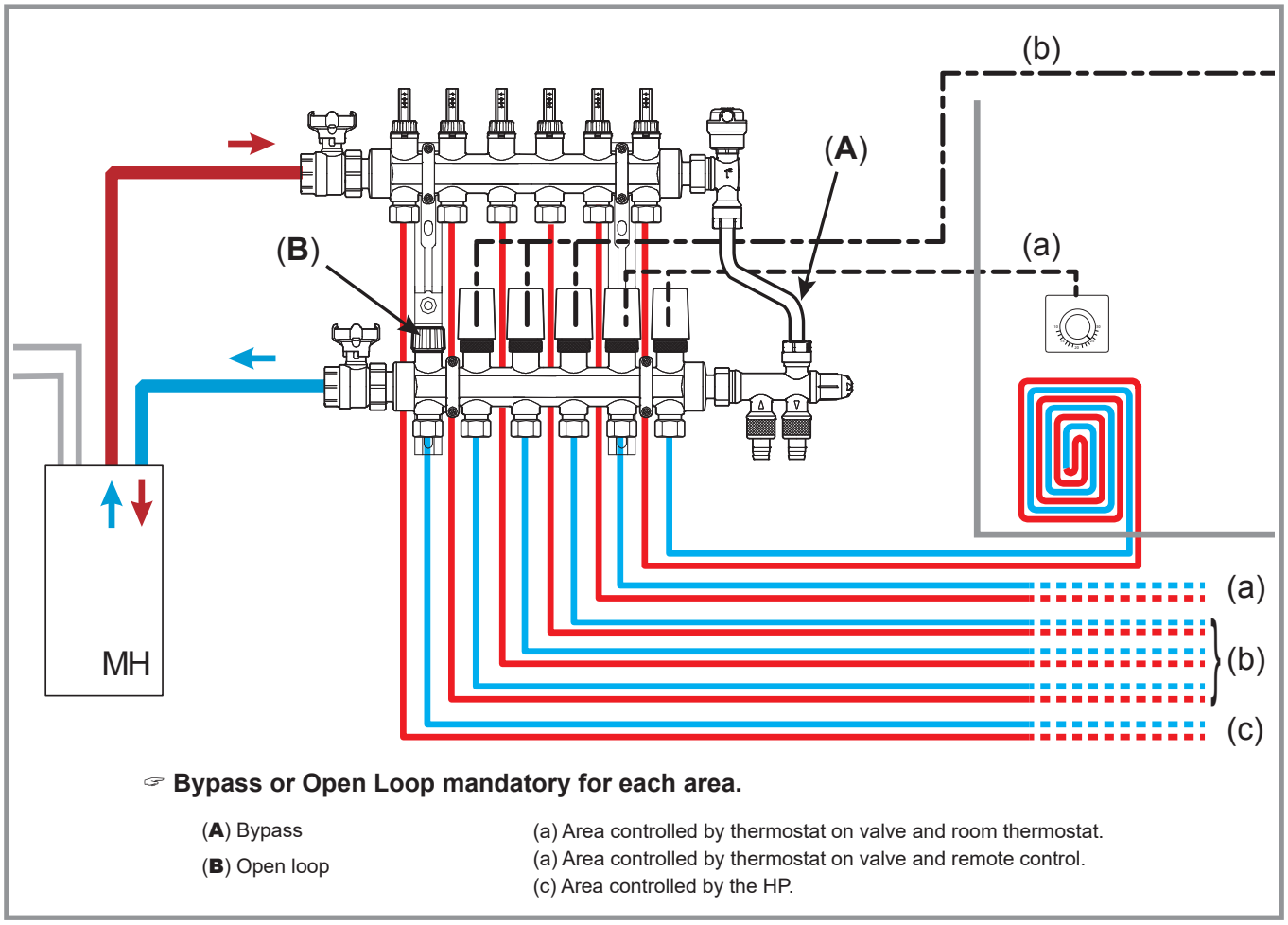
• Flow requirements:

- Calculate the diameter of the pipes according to the flow rates and the lengths of the hydraulic circuits
- The appliance will operate correctly if the flow range complies with the specifications (see table, §1.3, page 4). For this purpose, the HP is equipped with a flow meter that ensures a sufficient minimum flow in the heat exchanger. If flow is insufficient (§1.3) the appliance will show a safety error.

☞ **For an installation with thermostat valves (floor heating system or radiator), a differential (bypass) valve must be installed or a valve-free hydraulic loop must be maintained far enough away from the HP to guarantee a minimum flow rate (§1.3).**

- Connect the pipe of the central heating to the hydraulic unit respecting the direction of flow.
- Use union connectors to facilitate removing the hydraulic unit.
- Prioritise connector hoses to avoid transmitting noise and vibrations to the building.
- Connect the safety valve evacuation to the drain

Verify the correct functioning of the expansion system. Control the vessel pressure (precharge 1 bar) and the safety valve setting.



☞ **Bypass or Open Loop mandatory for each area.**

(**A**) Bypass

(**B**) Open loop

(a) Area controlled by thermostat on valve and room thermostat.
(a) Area controlled by thermostat on valve and remote control.
(c) Area controlled by the HP.

figure 24 - Connecting the floor heating system

4.3 Connecting to an underfloor heating circuit

figure 24

To ensure that the installation operates correctly on a floor heating system equipped with thermostat valves, provide a bypass (**A**) or an open loop (**B**) to guarantee the minimum flow rate required (see *"1.3 Specifications", page 4*).

☞ **In the event of non-compliance with the minimum flow rate, the HP shuts down (error 131 - see** *"8.2 Hydraulic unit errors", page 49***).**

4.4 Connecting to a dynamic radiator or fan-coil heater circuit

A buffer must be installed on the dynamic radiator return circuit (comply with the **minimum circulating water volume** (see table, §*1.3*). Also refer to *"Overall hydraulic layout", page 28 and page 29).*

Circuit...		
...combined (HC2)	**...direct (HC1)**	
UFH-R	DynR or FC	Buffer on HC1 return
DynR or FC	Radiators	Buffer on return of 2 circuits
DynR or FC	DynR or FC	

4.5 Connecting to the DHW circuit

The dielectric function is produced using polyamide wire hoses (dielectric connections are not needed).

Mandatory: Place on the cold water supply a security unit with calibrated valve 7 to 10 bar max. (depending on local regulations), which will be connected to the sewer vent. Operate the safety unit according to the manufacturer's specifications.

There should be no valve between the safety unit and the tank.

We recommend that a thermostatic mixer be placed on the hot water outlet.

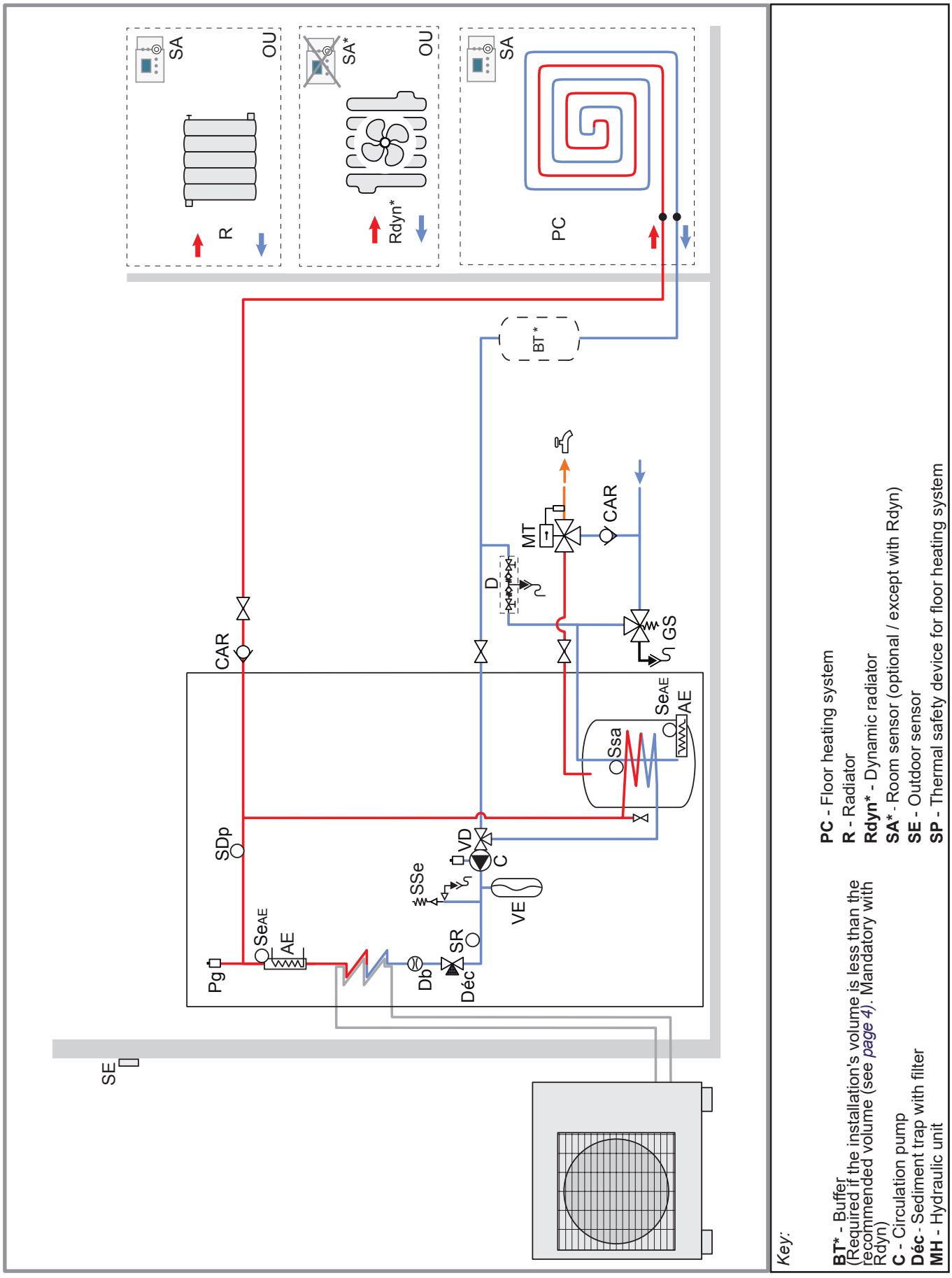
Filling and draining the installation

See § *"6 Commissioning", page 38*

4.6 Overall hydraulic layout

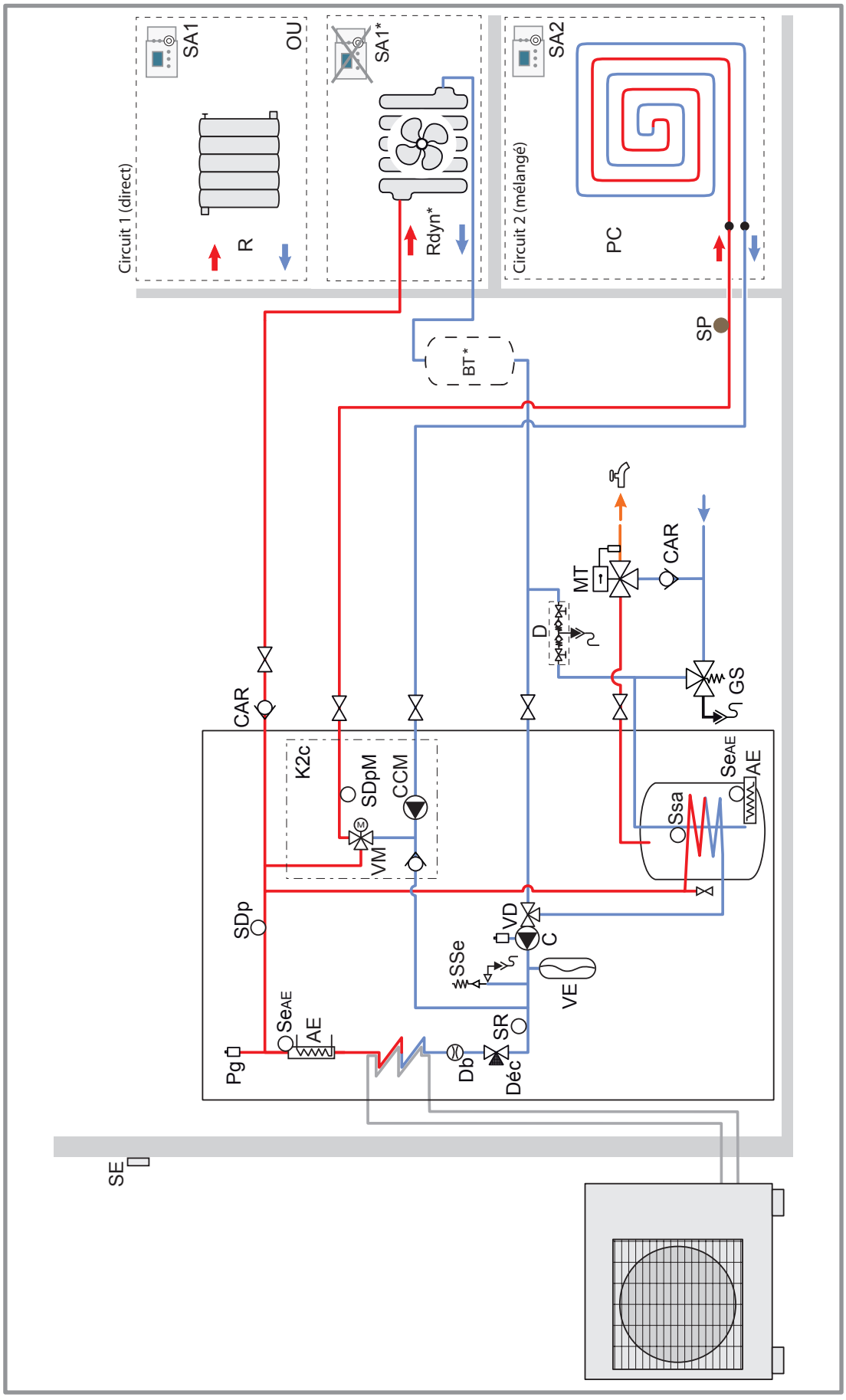
Installation configuration - see *page 55*

Parameter **4 - 1 - Pre-setting (1 heating circuit)**



Installation configuration - see *page 44*

Parameter **4 - 2 (2 heating circuits)**



Key:

Bd - Decoupling cylinder
BT* - Buffer
(Required if the installation's volume is less than the recommended volume (see *page 4*). Mandatory with Rdyn)
C - Direct circuit circulation pump
CCM - Mixed circuit circulation pump
Déc - Sediment trap with filter
K2C -2-area kit
MH - Hydraulic unit
PC - Floor heating system
R - Radiator
Rdyn* - Dynamic radiator
SA1/SA2 - Circuit 1/ circuit 2 room sensor
(optional / * except with Rdyn)
SE - Outdoor sensor
SDpM - Mixed circuit initial flow sensor
SP - Thermal safety device for floor heating system
VM - Mixing valve

5 Electrical connections

5.1 Electrical power connections (LV)

Always check that the electric power supply is switched off before works.

5.1.1 Characteristics of the electrical power supply

The electrical installation must be conducted in accordance with the regulations in effect and in particular:

The electrical connections will only be made when all of the other assembly operations (attachment, assembly,...) have been carried out.

☞ **Warning!**

The contract taken out with the energy supplier must be sufficient to cover the power of the heat pump as well as the sum of the power requirements of all of the appliances likely to be operated at the same time. When the power is too low, check with the energy provider the value subscribed to in your contract.

Never use a socket for the power supply.

The heat pump must be directly powered (without external switch) by dedicated lines that are protected from the electrical housing by bipolar circuit breakers dedicated to the heat pump, curve C for the outdoor unit, curve C for the electrical DHW back-ups (see tables *page 31*).

The electrical installation must be equipped with a differential protection of 30 mA.

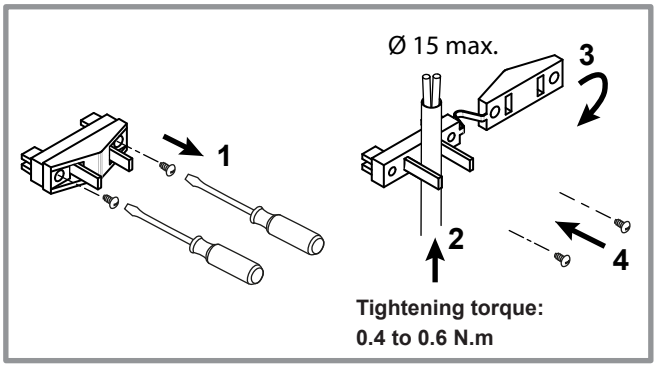
This appliance is designed to operate under a nominal voltage of 230 V +/- 10%, 50 Hz.

5.1.2 Electrical connections

It is essential to maintain the phase-neutral polarity when making the electrical connections.

Rigid wires are preferable for fixed installations, particularly in a building (see *page 31*).

Clamp the cables using cable clamps to avoid any accidental disconnection of the conductive wires.

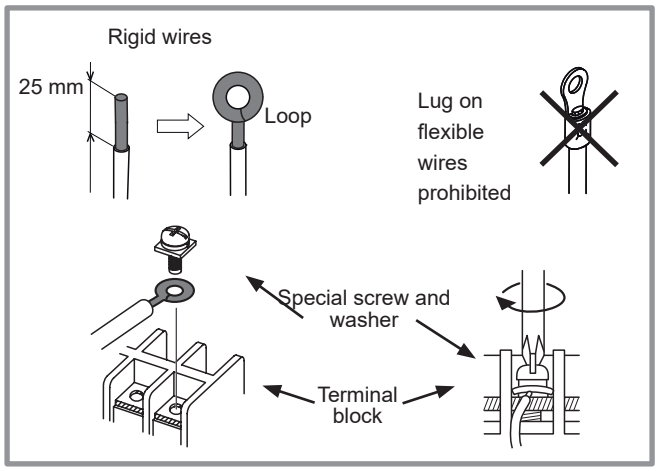


Connection to Earth and Earth bonding continuity are essential.

• Connecting to screw terminals

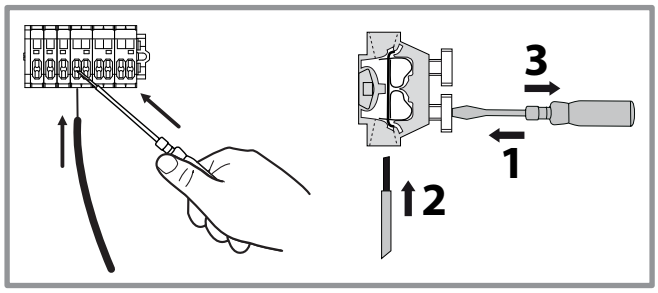
☞ **Use of ring terminals or tips is prohibited.**

- Always choose a rigid wire that complies with current standards.
- Strip the end of the wire over a length of around 25 mm.
- With round nosed pliers, make a loop with a diameter that corresponds to the terminal's tightening screws.
- Tighten the terminal screw on the loop very firmly. Insufficient tightening can cause overheating, leading to breakdown or even a fire.



• Connecting to spring terminals

- Strip the end of the wire over a length of around 10 mm.
- Push the spring with a screwdriver so that the wire enters the cage.
- Slide the wire into the opening provided for this purpose.
- Remove the screwdriver and then check that the wire is jammed in the cage by pulling on it.



5.1.3 Overview of the electrical connections

The electrical diagram of the hydraulic unit is detailed in *page 60*.

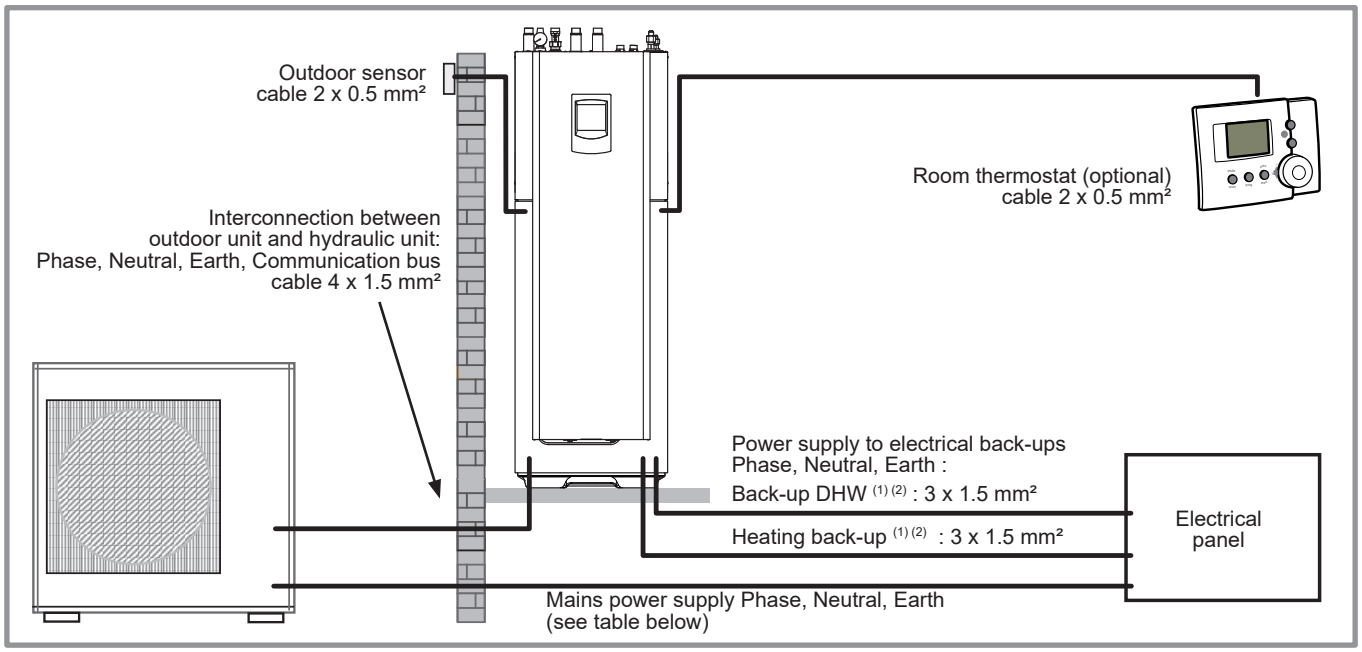


figure 25 - Overall layout of the electrical connections for a single installation (1 heating circuit)

5.1.4 Cable section and protection rating

- **Provide a disconnection means for all power supplies according to the installation rules (EN 60335-1).**
- **The cable sections are given for information purposes only and do not exempt the installer from checking that these sections correspond to the requirements and comply with the prevailing standards** (also take into account the connection length)**.**
- **Always check that the electric power supply is switched off before works.**

• Power supply to outdoor unit

Heat pump (HP)		*230 V - 50 Hz electric power supply*	
Model	***Max. power absorbed***	***Cable*** (1) ***(phase, neutral, earth)***	***Curve C circuit breaker size***
Loria duo 6004	2530 W	3 x 1.5 mm²	16 A
Loria duo 6006	2875 W		
Loria duo 6008	4025 W	3 x 2.5 mm²	20 A
Loria duo 6010	4255 W		

• Interconnection between the outdoor unit and the hydraulic unit

Hydraulic unit		*Power supply*	*Outdoor unit*
Model	***Max. power absorbed***	***Cable*** (1) ***(phase, neutral, earth, communication bus)***	***Model***
Loria duo 6004 <=> 6008	100 W	4 x 1.5 mm²	WOYA0x0LFC(A)
Loria duo 6010			WOYA100LFTA

• Power supply to the electrical back-ups:

Loria duo 6004, 6006, 6008, 6010			*Power supply to the electrical back-ups*	
Model	***Power***	***Nominal current***	***Cable*** (1) ***(phase, neutral, earth)***	***Curve C circuit breaker size***
Back-up DHW	1600 W	7 A	3 x 1.5 mm² (2)	16 A
Heating back-up	3000 W	13 A	3 x 1.5 mm² (2)	16 A

(1) Cable type 60245 IEC 57 or 60245 IEC 88.

(2) Note: The cable used to connect the electrical back-up must not exceed 3 x 2.5 mm² (the spring terminal cannot receive wires with a diameter exceeding 2.5 mm²).

5.1.5 Electrical connections on the outdoor unit side

To access the connector terminals:

• Loria duo 6004, 6006 and 6008 models

- Remove the cover (*figure 26*).

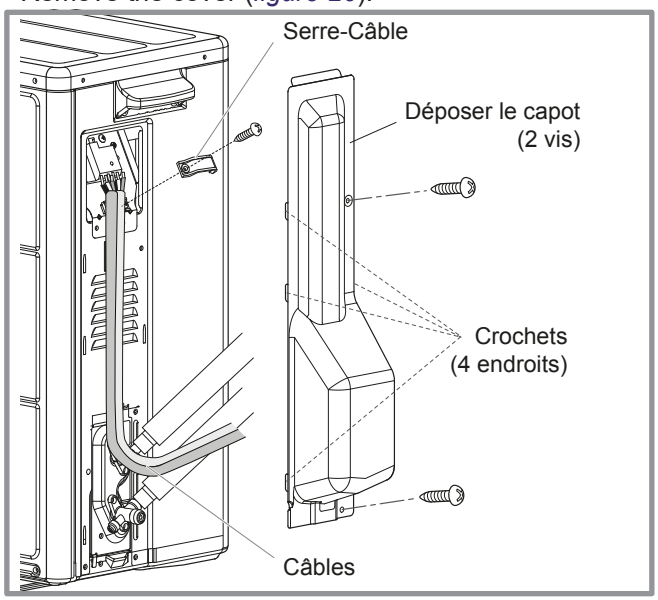


figure 26 - Accessing the outdoor unit's terminal block (Loria duo 6004, 6006, 6008)

• Loria duo 6010 model

- Remove the front panel, remove the cover.

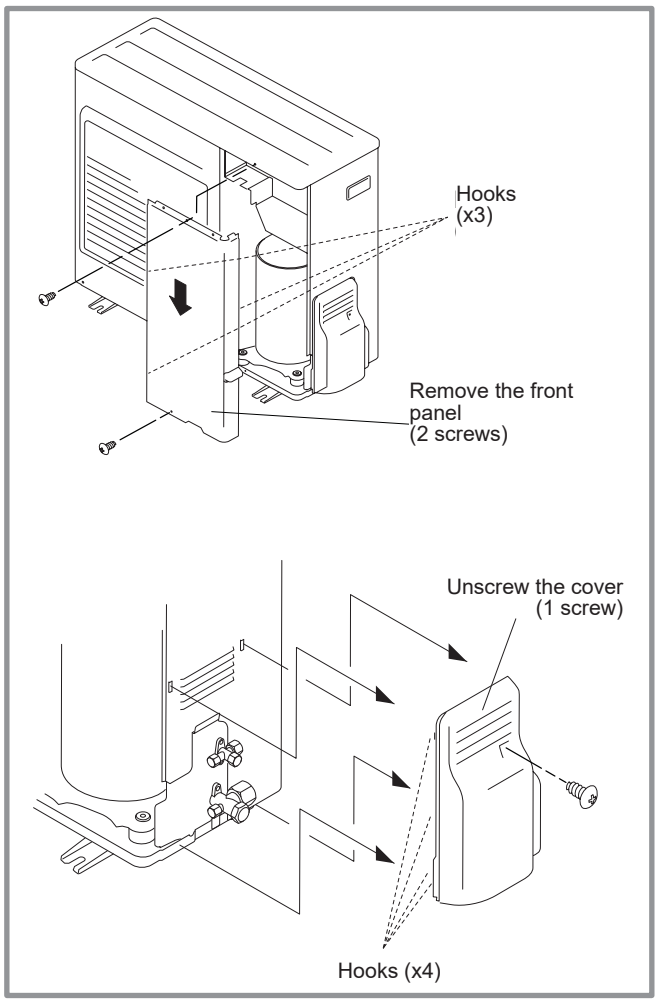


figure 28 - Accessing the outdoor unit's terminal block (Loria 6010)

- Make the connections according to the diagram (*figure 27*).
- Use cable clamps to prevent the conductors from being disconnected accidentally.

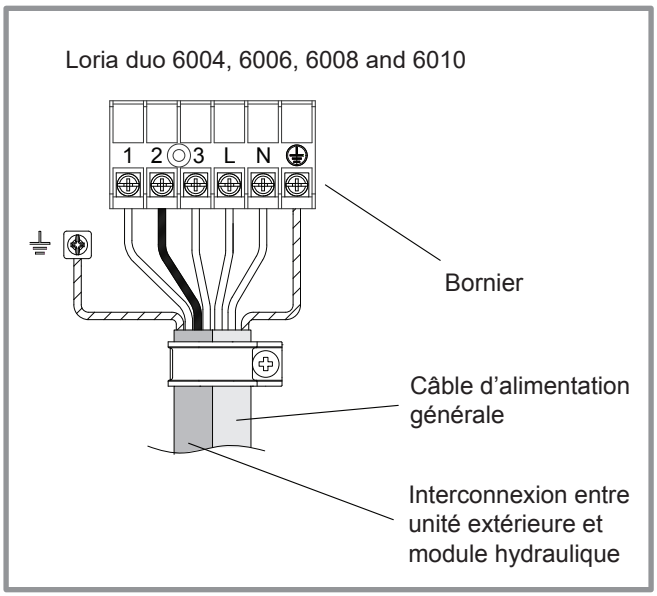


figure 27 - Connections to the outdoor unit's terminal block

5.1.6 Electrical connections on the hydraulic unit side

To access the connector terminals:

- Remove the front panel (2 screws Ø 13).
- Rotate the electric box
  (2 screws - *figure 30, page 33*)

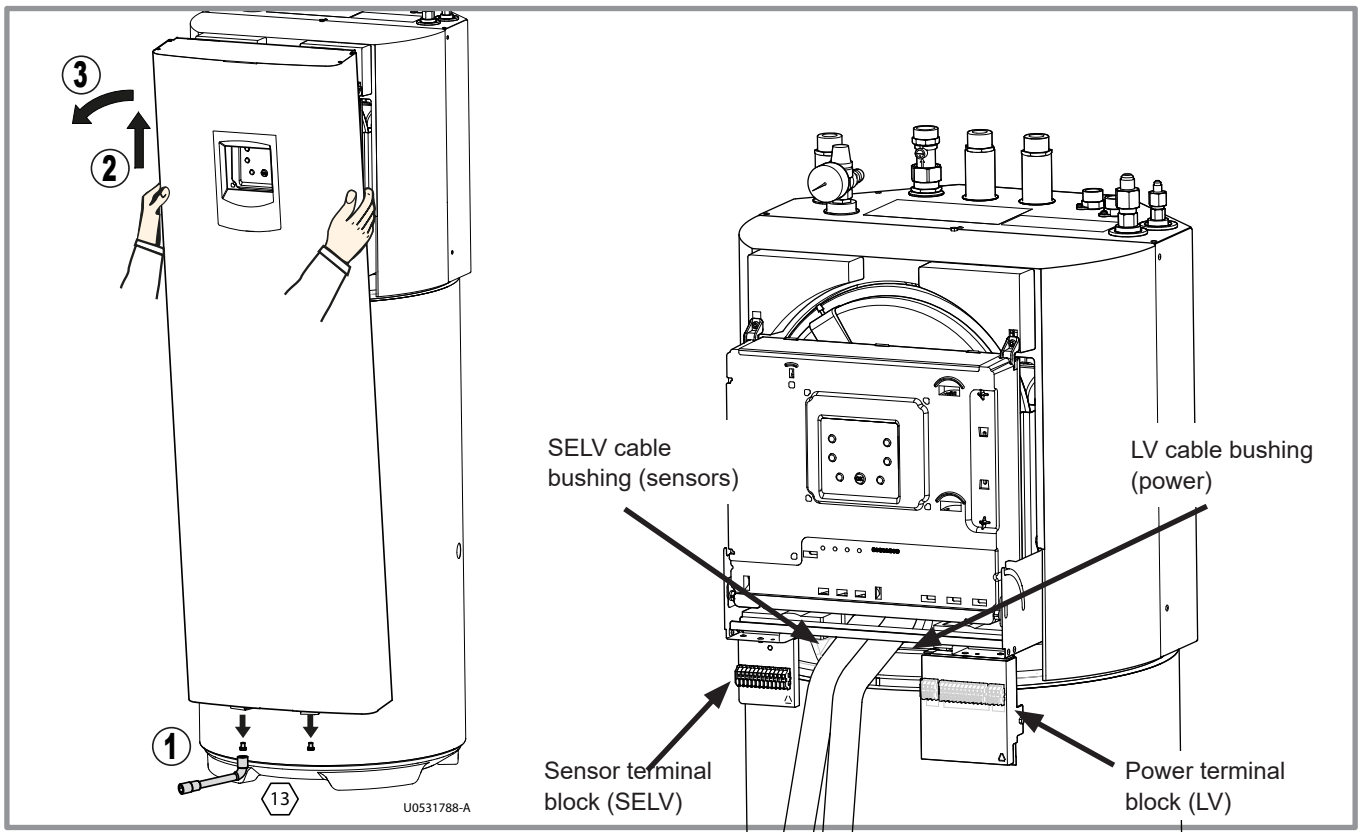


figure 29 - Removing the front panel

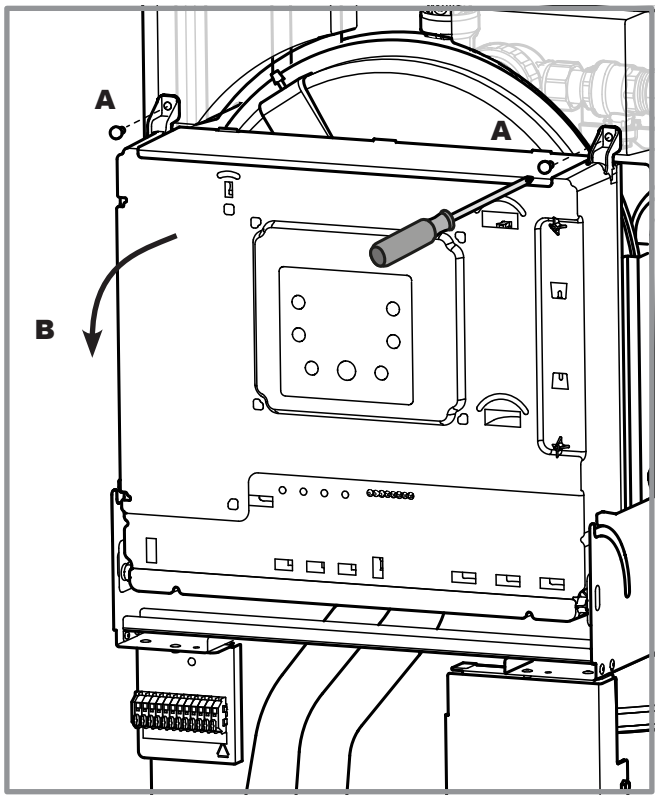
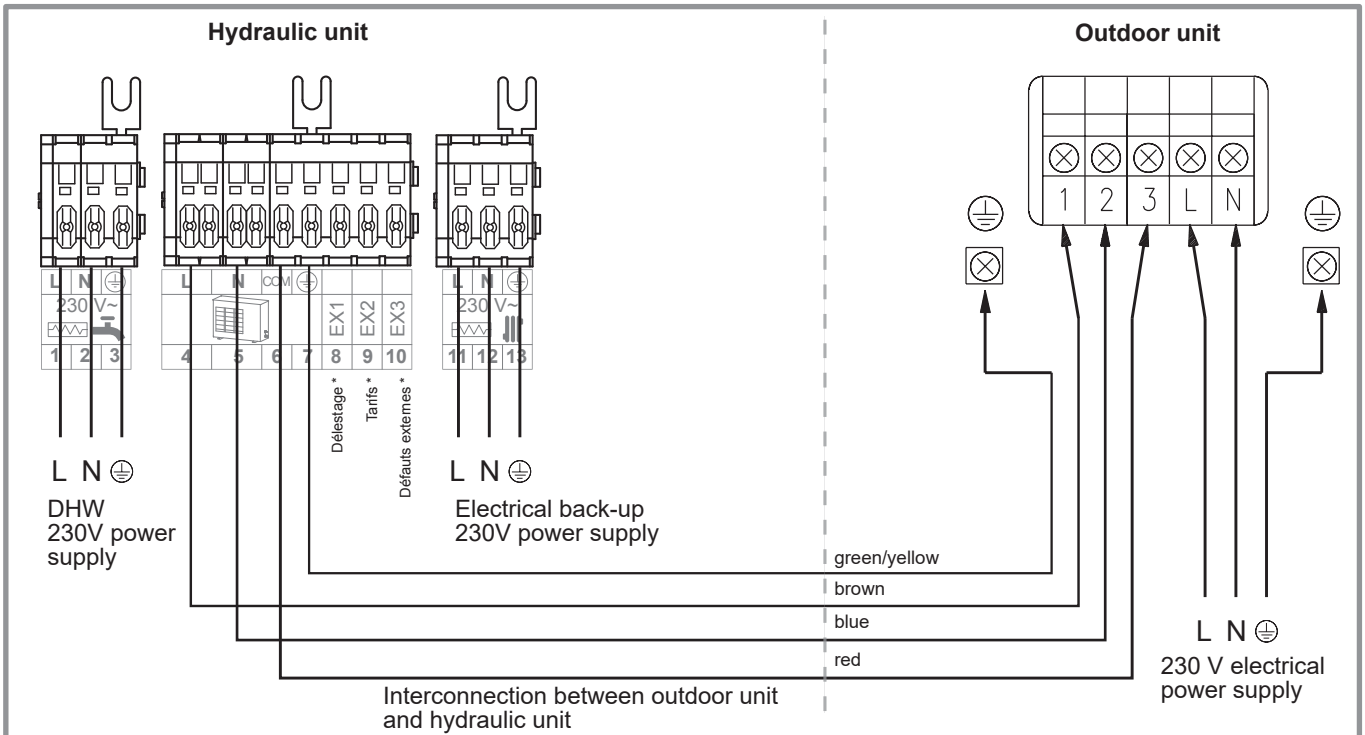


figure 30 - Access

- Do not place the sensor lines and the sector supply lines in parallel in order to avoid interferences due to voltage points in the sector supply.
- Do not lay the electrical cables on piping (water and refrigerant pipes).

Ensure that all of the electrical cables are housed in the spaces provided (*figure 32*).

- Make the connections according to the diagram (*figure 31*).



* to outdoor component contact

If the control device does not provide a potential-free contact, the contact must be relayed to create equivalent wiring.

In all cases, please refer to the instruction manuals for the external components (load shedder, etc.) to create the wiring.

figure 31 - Connection to the terminal board (hydraulic unit)

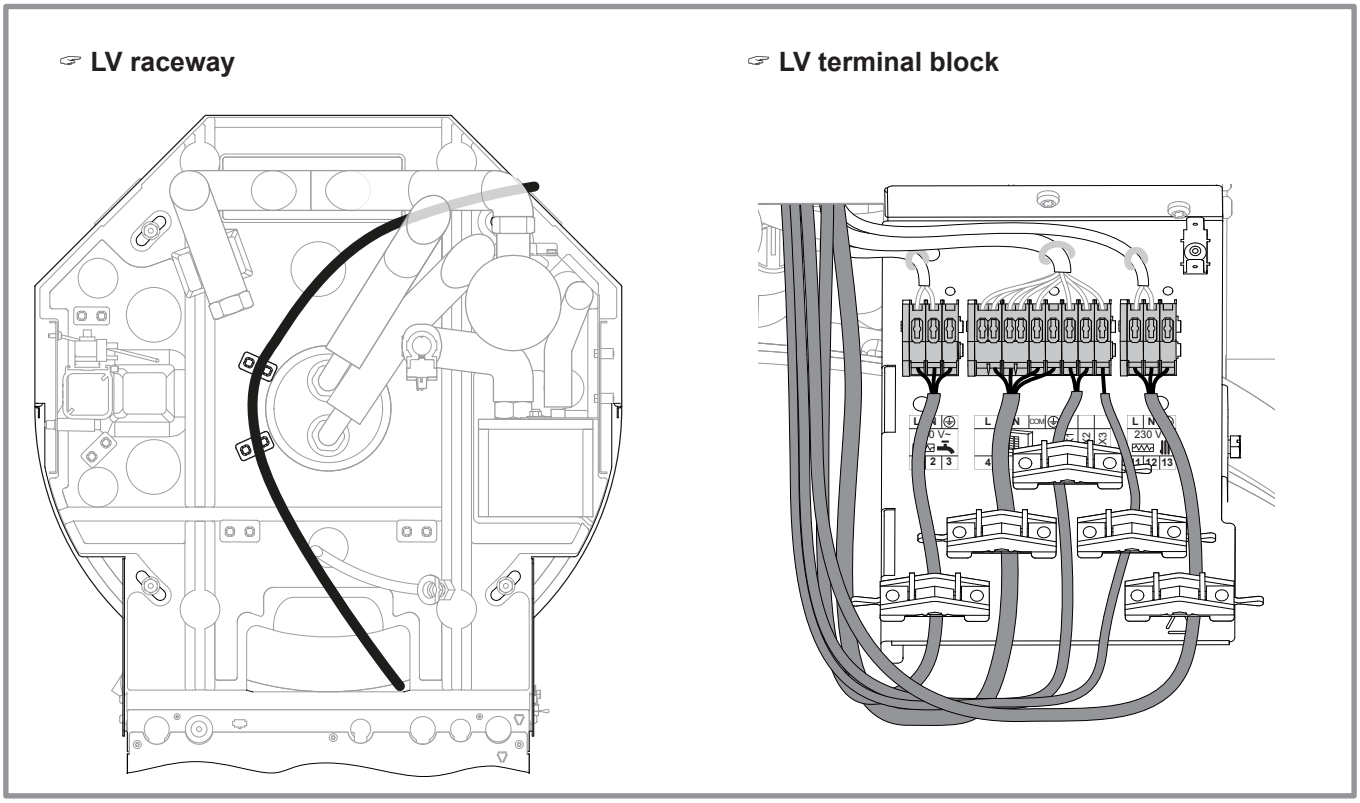


figure 32 - LV cable bushing

• Interconnection between the outdoor unit and the hydraulic unit

Comply with the correspondence between the markings on the hydraulic unit's terminals and those on the outdoor unit when connecting the interconnection cables (*figure 31*).

An incorrect connection can cause the destruction of one of the units.

• Electrical back-ups (heating and DHW)

- Connect the power supply of the back-ups to the mains supply board (*figure 31*).

• Contract with the power supplier.

The heat pump's operation can be controlled to suit special contracts:

Input	
Use of inputs in mode 1 (parameter 76 = 1)	
EX1	Heating control (for controlling the switch to reduced heating mode on the HP).
EX2	DHW control (to force refilling of the DHW tank (forced operation)).
Use of inputs in mode 0 (parameter 76 = 0)	
EX1	Load shedding / peak shaving (to prohibit back-ups (and the compressor if parameter **76** = **1**)).
EX2	Peak/Off-peak times (to control the switch to DHW comfort mode on the HP).
EX1 + EX2	Launch of DHW forced operation.

- **Peak/off-peak rates, day / night rates**

In particular, domestic hot water (DHW) at Nominal temperature will be produced during the off-peak hours when electricity is cheaper.

Connect the "energy supplier" contact to input **9 (Rates - EX2)**.

- **Load shedding or peak shaving**

The purpose of load shedding is to reduce the electrical consumption when it is too high compared to the contract with the energy supplier.

Connect the load shedder to input **8 (Load Shedding - EX1)**.

• Faults outside the heat pump

All information devices (thermostat, pressure switch, heated floor safety device, etc.) may indicate an external problem and stop the heat pump.

- Connect the external device to input **10 (External errors - EX3)**.
- 230 V on input **EX3** = heat pump shutdown (the system displays error ***Er 73***).

• Energy meter

A signal is used to show the energy distribution for Heating/DHW functions by connecting a compatible energy meter. Depending on the appliance (refer to the meter's instructions manual):

❶ If the metering convention is:

0V for heating and 230V for DHW (applicable to the **HP pack**), connect the meter to the connector (**Y8** - terminals **3** and **4**) (*figure 33).*

❷ If the metering convention is:

230V for heating and 0V for DHW, connect the meter to the connector (**Y8** - terminals **1** and **2**) (*figure 33).*

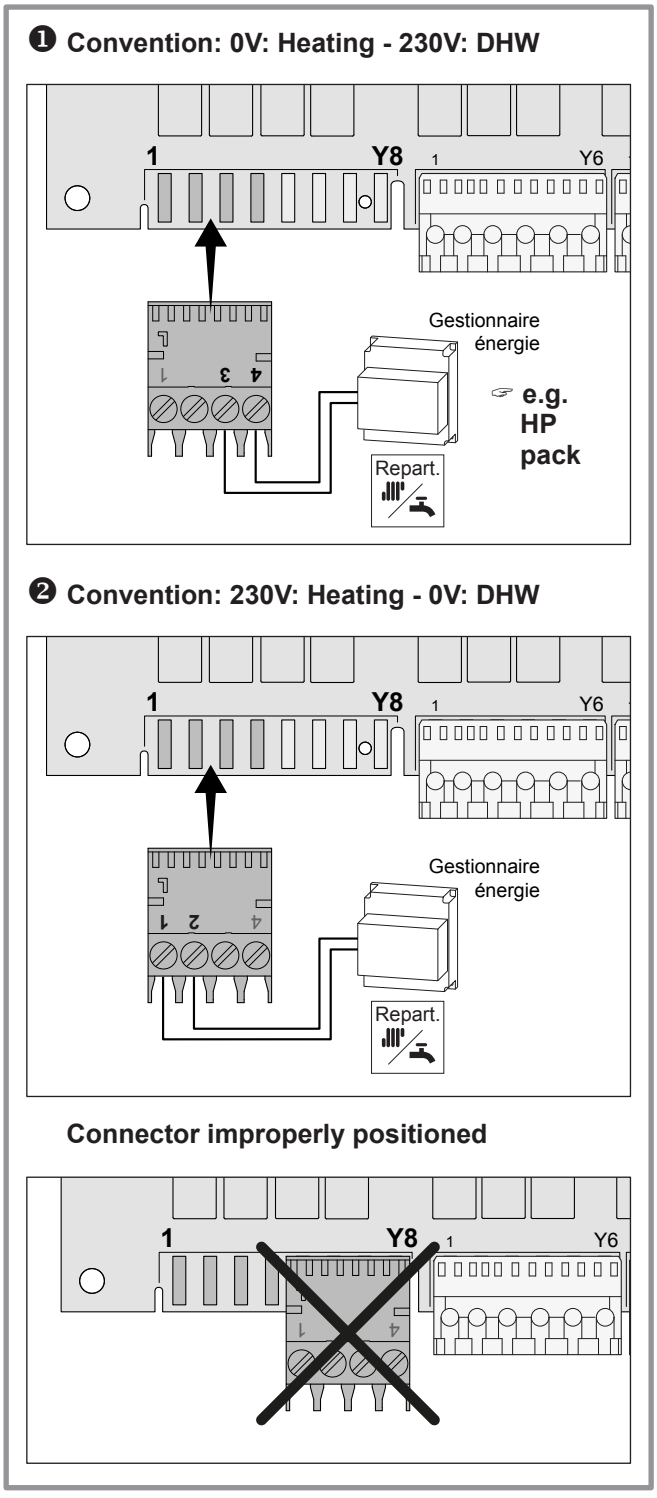


figure 33 - Connection (energy meter)

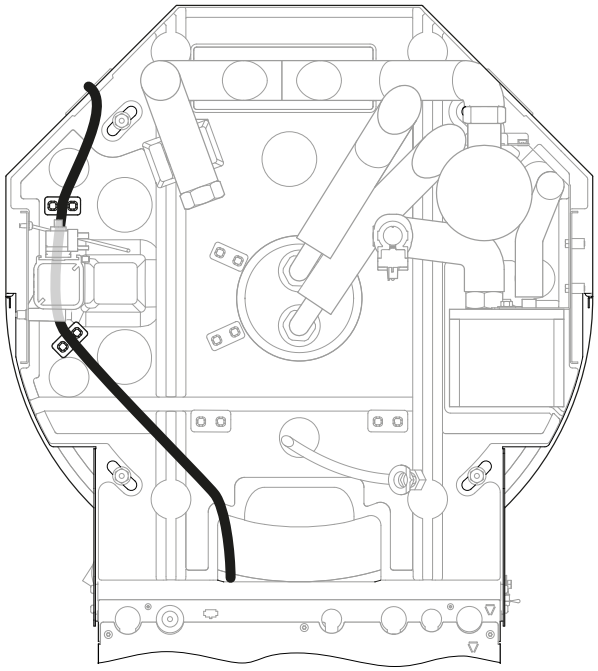
5.2 Electrical connections - SELV

The elements described below are Safety Extra-Low Voltage devices (SELV). Comply with the regulations applicable to such devices.

Comply with the safety distances between SELV and LV (power) cables.

Ensure that all of the electrical cables are housed in the spaces provided (*figure 34*).

☞ **SELV raceway**



☞ **SELV terminal block**

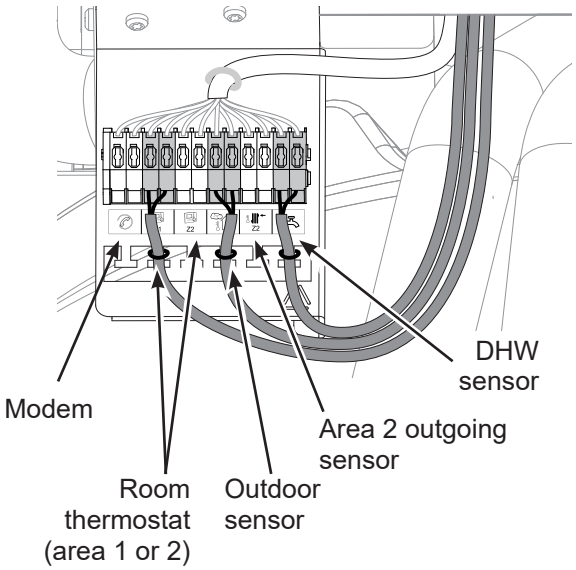


figure 34 - SELV cable bushing

5.2.1 Outdoor sensor

The Outdoor sensor is required for the correct operation of the heat pump.

Place the sensor on the coldest part, generally the northern or north-eastern side. In any case, it must not be exposed to the morning sun. It must be installed so that it is easily accessible but at least 2.5 m from the ground. Avoid sources of heat such as chimneys, the tops of doors or windows, nearby extraction ducts, underneath balconies and porches, that would insulate the sensor from the variations in the temperature of the outside air.

- Connect the outdoor sensor (*figure 34*).

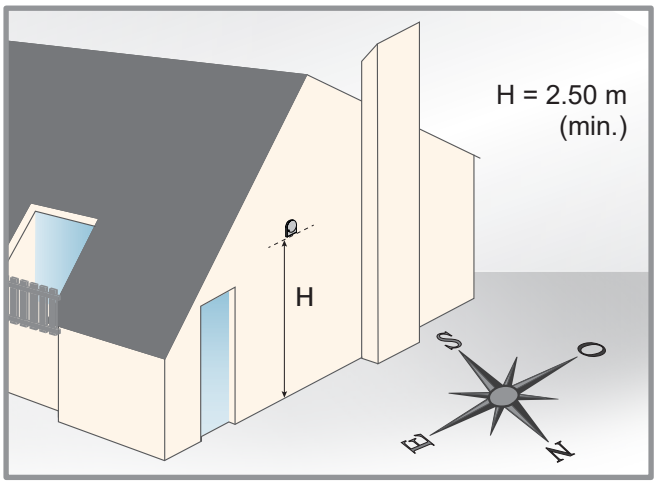


figure 35 - Outdoor sensor (recommended exposure)

5.2.2 Room thermostat

☞ **Dynamic radiator or fan-coil area**

If the installation is equipped with fan-coils / dynamic radiators, **do not use a room thermostat.**

☞ **Radiator or floor heating area**

Consult the assembly instructions on the packaging of the sensor.

The thermostat must be installed in the area requiring control on a very uncluttered wall. It must be installed so as to be easily accessible. Avoid sources of direct heat (chimney, television, cooker, sunlight) and areas exposed to draughts (ventilation, doors).

Draughts due to the building usually cause cold air to enter via the electrical ducts. Seal the electrical ducts if there is a cold draught at the back of the room thermostat.

Connect the room thermostat 1 (*figure 34*).
Connect the room thermostat 2 (*figure 34*).

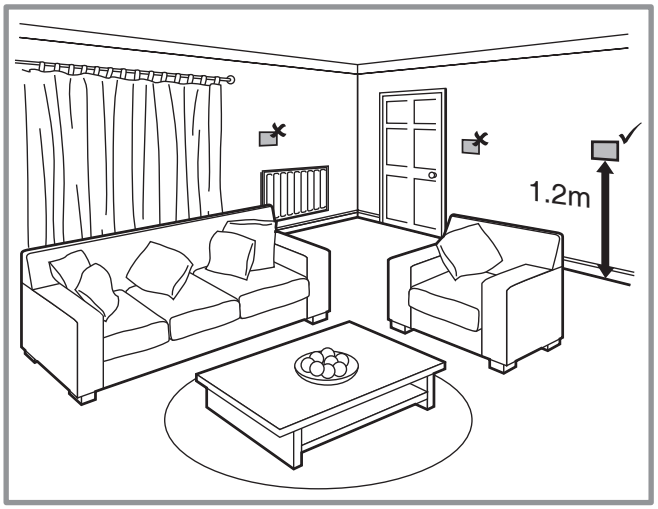


figure 36 - Position of the room thermostat

5.2.3 Telephone modem (optional)

Connect the telephone control outlet to the modem terminals (see *figure 34*). The telephone control is used to switch the mode currently in use:

Use	Current mode		Switch
Heating	PROG ☼ ECO OFF	⇔	🧳
Cooling	PROG ❄ ECO	⇔	OFF
DHW	PROG ☼ ECO	⇔	OFF

6 Commissioning

6.1 Checks before commissioning

• Hydraulic circuit

- Make sure that the installation has been rinsed.
- Check the water flow direction and that all of the valves are open.

• Electrical circuit

- Check that the phase-neutral polarity of the electrical power supply is respected.
- Check that all the equipment is connected to the relevant connection terminals.

6.2 Commissioning

6.2.1 Filling and draining the installation

- Fill the installation.
- Perform a leak test for the whole installation.
- Do not operate the circulating pump while filling. Open all the drain valves in the installation to remove the air contained in the pipes.
- Close the drains and add water until the pressure of the hydraulic circuit reaches 1.5 bar.

6.2.2 First power on

- Close the installation's main circuit breakers.

  When first put into service (or in winter), to preheat the compressor, close the main circuit breakers of the installation (outdoor unit power supply) for several hours before the tests.

  To guarantee the correct operation of inputs **EX1**, **EX2**, **EX3**: Check that the phase-neutral polarity of the electrical power supply is respected.

When put into service and every time that the main circuit breaker is cut off then reconnected, the outdoor unit requires approximately 3 minutes to start up even if the regulation has demanded heating.

While the regulator is being initialised the display shows all icons.

Note: When starting up the heating function after the HP has been fully shut down and for a heating network temperature not exceeding 17°C, the electrical back-up is automatically activated.

6.2.3 Draining the hydraulic unit

Press and hold the  button for 5 seconds; the display will show the "  " icon.

- Set parameter **96** (Appliance test) to **10** (automatic drainage activated: valve in the intermediary position and activation of all circulation pumps).
- Open all the drain valves in the installation to remove the air contained in the pipes.
- Close the drains and add water until the pressure of the hydraulic circuit reaches 1.5 bar.
- Reposition the valve to the operating position (set parameter **96** to **0** (no test).

  ☞ **Precise filling pressure is determined by the manometric head of the installation.**

- Check there is not a leak.

6.2.4 Setting the parameters

Configure all of the specific settings for the regulation (configuration of the installation in particular): list of settings *page 44*).

6.3 Cleaning the sediment trap

Immediately after commissioning, clean the filter of the sediment trap (remove waste generated by the installation: seals, oakum, filings, etc.).

Before works, check that the working environment is hazard-free. Switch off the appliance and allow the system to cool to room temperature before performing maintenance operations on the appliance.

- Close the two valves. Open the bleeder.
- Carefully unscrew the cover. The water gradually begins to drain. Ensure that this water is collected in a tank of appropriate dimensions.
- When the water stops running, completely remove the magnet catch cover.
- Remove the filter protection sheath to easily remove ferrous particles.
- Clean with water and rinse thoroughly under the tap to fully remove all impurities.
- Check the condition of the o-ring seal and replace if damaged.
- Reassemble the device in the reverse order to that described above.

☞ **Check that there are no signs of leaks before recommissioning.**

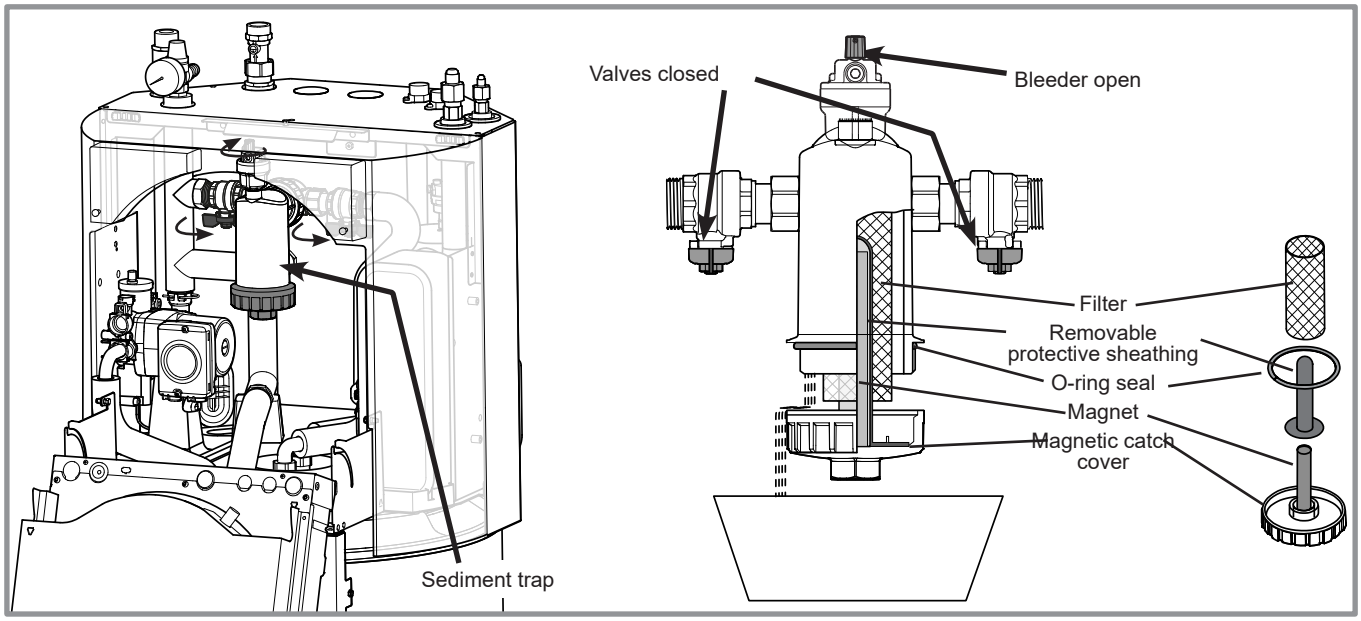


figure 37 - Cleaning the sediment trap

6.4 Circulation pump operation

The speed of the heating circulation pump can be adjusted via the user interface (see *"Circulation pump", page 46*). By default, the pump is set to the maximum speed (speed 4).

Circulation pump errors:

- When error **Er 76** is displayed, check all components that may block the hydraulic flow (e.g. filtering components, valves, etc.). This prevents operation with a too low flow rate (**Er 3**).
- If the flow rate is too low, error **Er 3** is displayed. The pump is shut down for a few minutes only, before trying again.
- If the problem persists, **Er 131** is displayed. The appliance then becomes locked: press "**OK**" to restart the appliance.

6.5 Floor drying mode

The control can be configured to manage the floor drying function of the floor heating system (parameter **94**, *page 47*).

This mode is used to manually configure the initial constant heating / HP setpoint for each circuit.

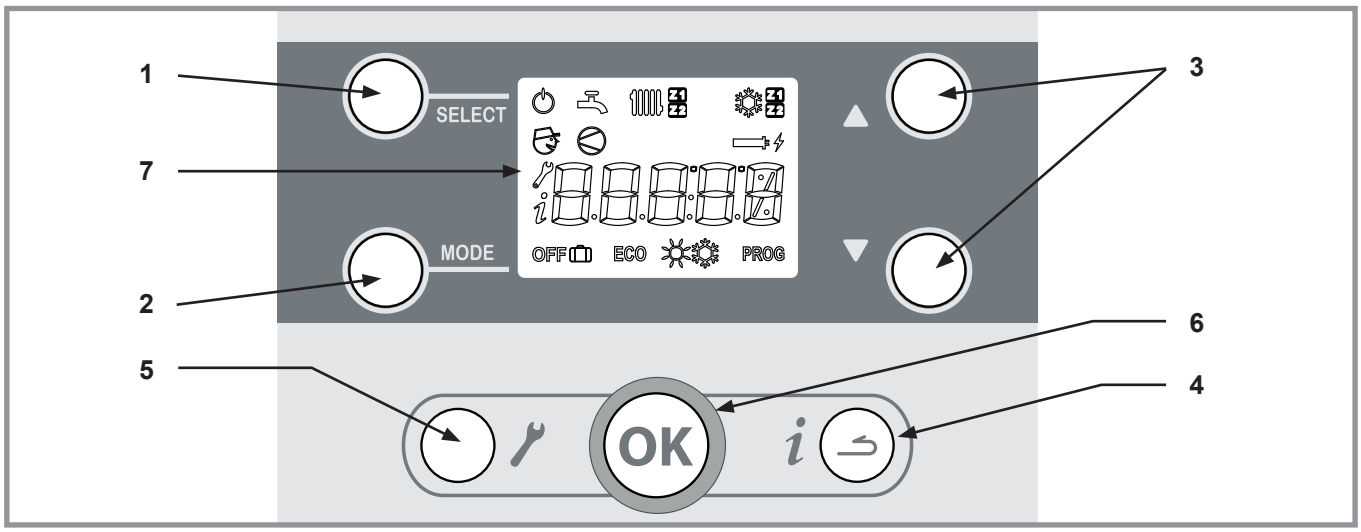
The parameter must be set to "**Off**" to deactivate the floor drying mode.

Floor drying mode does not work if the room thermostat is connected.

The room thermostat must be disconnected for this mode to work.

7 Controller

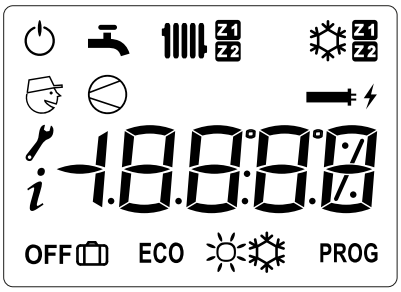
7.1 User interface



Ref.	*Functions*	*- Definition of the functions*
1	• SELECT	- Browse and select the available **uses**.
2	• MODE	- Browse and select the **mode** for the pre-selected use.
3	• Settings • Scrolling	- Configure the setpoints of the selected function using the ▲ and ▼ **keys.** - Scroll through the information and parameter lines. - Configure the modifiable values (after pressing **OK** to confirm).
4	• Information • "ESC" output	- Access the "**information**" menu (the *i* icon appears) - **Exit** the menu currently displayed - **Cancel** a modification being made
5	• Configuration	- Access the **user** level (press and release: the icon appears). - Access the **installer** level (press and hold (for more than 5s)**:** the icon appears). List of parameters : see *7.4.4, page 44*.
6	• OK	- Confirm (Configuration, Setpoint for the pre-selected mode)
7	• Display	- Display: see § *"Description of the display (user interface).", page 41* - View the settings.

* These parameters (or menus) may not appear. They depend on the appliance's configuration (on the options selected).

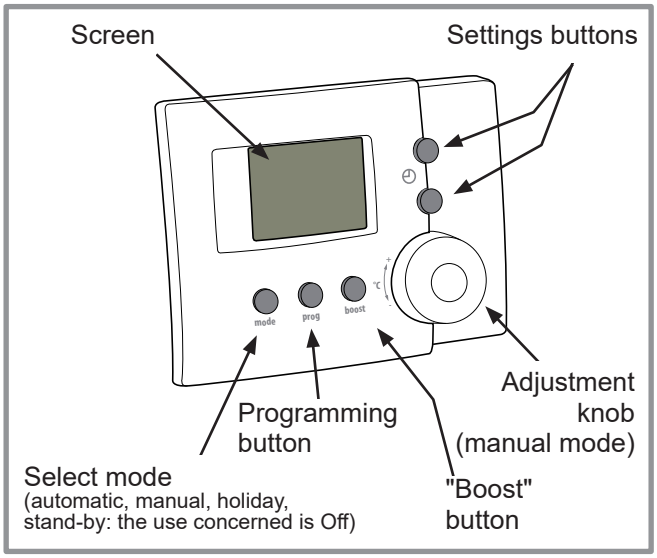
• Description of the display (user interface).



Icons	*Definitions*
	Access the **User** settings
Z1 Z2	**Use for heating** (reference to the circuit concerned Z1 or Z2)
	Use for DHW
Z1 Z2	**Use for cooling** (reference to the circuit concerned Z1 or Z2)
	Stand-by (1)
	Compressor operation
	Electrical back-up operation (heating or DHW)
PROG	**PROG mode:** Controlled operation according to the: - programme set in the User interface or the - programme set on the room thermostat
ECO	**Constant mode** (with **reduced** temperature setpoint)
or	**Constant mode** for heating or cooling (with **comfort** temperature setpoint)
	Absence mode
OFF	The use concerned is in Off mode (area 1 / 2 - DHW)
	Read information
	Access the **Installer** settings

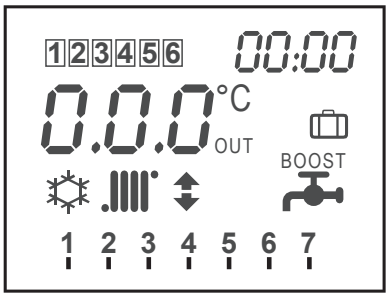
(1) Frost protection provided that the electric power supply to the HP is not switched off.

7.2 Room thermostat (optional)



If the installation is equipped with one or more room thermostats, the timer for each area is exclusively managed on the dedicated thermostat. Refer to the room thermostat instruction manual.

• Description of the display (room thermostat).



Icons	*Definitions*
	Heating indicator
	DHW indicator
	Cooling indicator*
	Current configuration
BOOST	Exemption (Heating or DHW)
	Absence mode
0.0.0	Display: Temperature / Setpoint value / Error codes
OUT	Outdoor indicator temperature
18:30	Time display
1 2 3 4 5 6	Current programming period (4 max.)
1 2 ... 7	Current day (1 = Monday, ... 7 = Sunday)

7.3 Start temperature calculation

7.3.1 Weather-dependent control

The operation of the heat pump is controlled by the weather-dependent setpoint.

The set temperature for the water in the heating circuit is adjusted according to the outdoor temperature.

If there are thermostatic valves on the installation, these must be fully open.

• Manual configuration

During installation, the weather-dependent setpoint must be configured according to the heat emitters and the residence's insulation.

The weather-dependent setpoint curves (*figure 38*) refer to an ambient setpoint of 20°C.

The weather-dependent setpoint slope (parameter **30/50** - see *"Heating setting, circuit 1 (direct)", page 45*) determines the impact of variations in outdoor temperature on the variations in initial heating temperature.

The steeper the slope, the more a slight reduction in the outdoor temperature causes a significant increase in the initial water temperature in the heating circuit.

The weather-dependent setpoint offset (parameter **31/51**) modifies the initial temperature of all the curves, without modifying the slope (*figure 39*).

The corrective actions if discomfort is experienced are listed in the table (*figure 40*).

7.3.2 Room influence

When the room influence is activated (parameter 33 for circuit 1 and 53 for circuit 2), the heating circuit water setpoint temperature is adjusted according to the outdoor temperature and the room temperature.

The room temperature's impact is weighted by this parameter, from 1 to 99%.

7.3.3 Room control

When the room influence is set to 100%, the heating circuit water setpoint is calculated only according to the difference between the room setpoint and the room temperature.

This operating mode provides better thermal comfort.

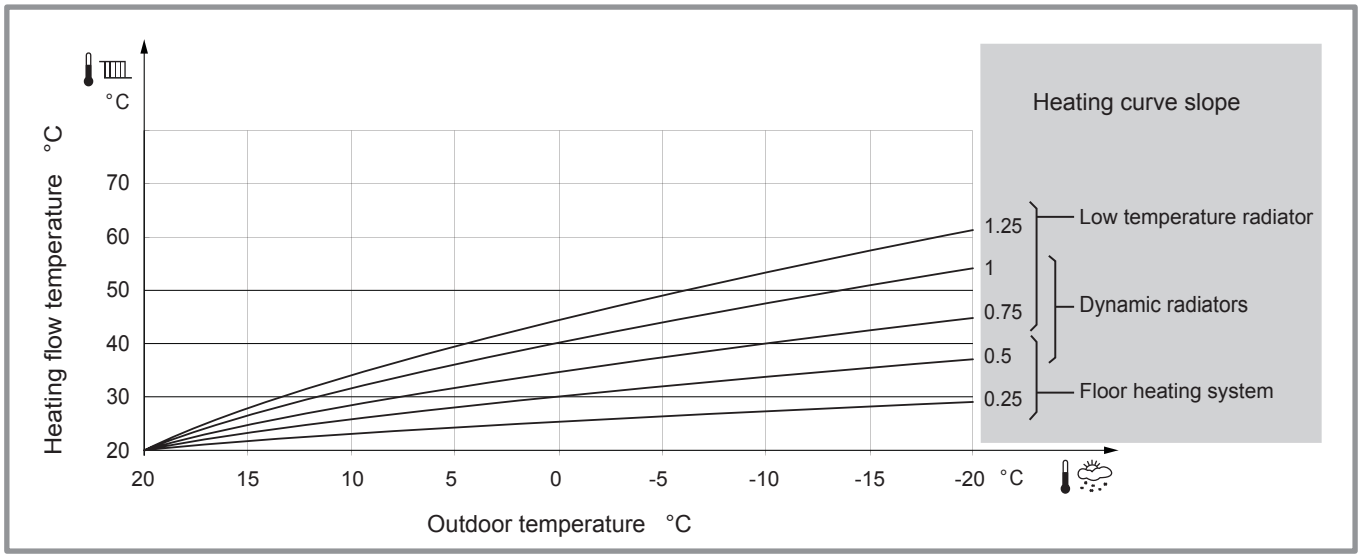


figure 38 - Heating curve slope (line 30 / 50)

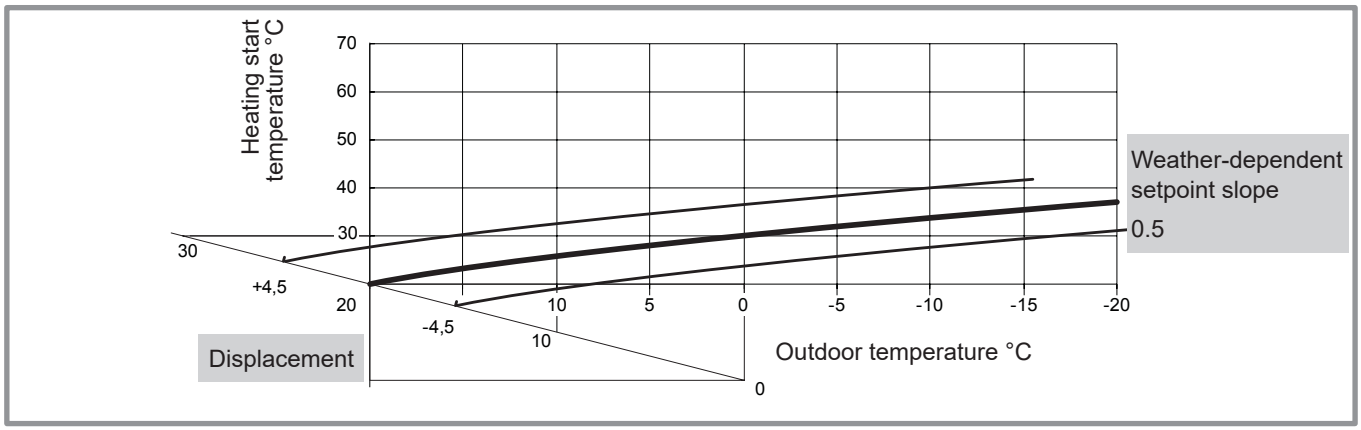


figure 39 - Heating curve displacement (line 31 / 51)

Feelings... ... in warm weather		... in cold weather	Corrective actions on the weather-dependent setpoint: Slope (line **30 / 50**)	Offset (line **31 /51**)
OK	&	OK	No correction	No correction
Cold	&	Hot	−	+
Cold	&	OK	−	+
Cold	&	Cold	No correction	+
OK	&	Hot	−	No correction
OK	&	Cold	+	No correction
Hot	&	Hot	No correction	−
Hot	&	OK	+	−
Hot	&	Cold	+	−

figure 40 - Corrective actions in case of discomfort

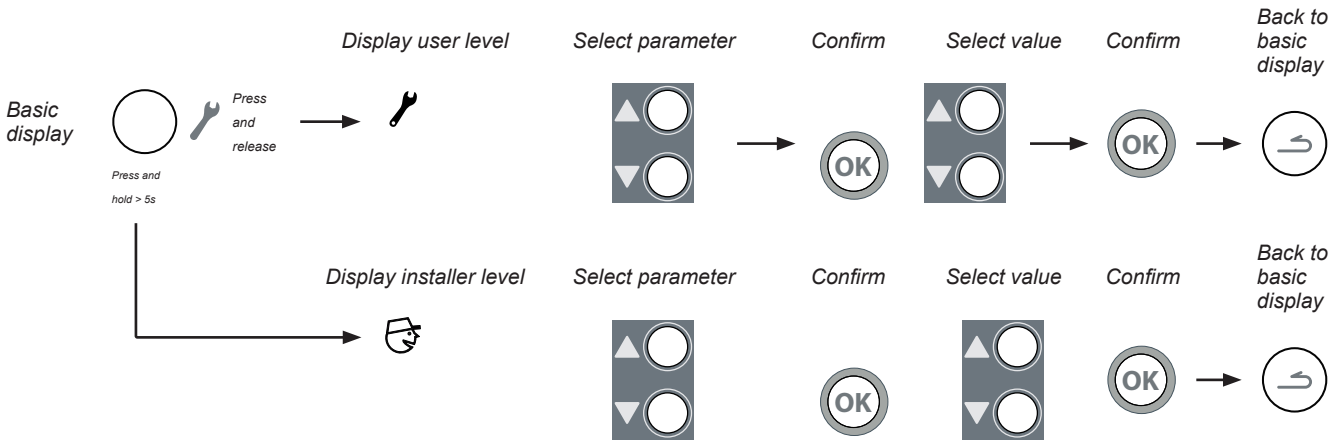
7.4 Regulation parameters

7.4.1 Overview

Two viewing modes are available: - User. - Installer.

The access levels are specified in the second column of the table with the corresponding icons.

7.4.2 Setting parameters



7.4.3 Recommended settings for the parameters depending on the installation's transmitters

Heating		VLT Radiators / Heating-cooling floor	Low temperature radiators	Classic temperature radiators	Dynamic radiators or fan-coil heaters
Heating curve slope	**30** (CC1)	**0.25 to 0.5**	**0.5 to 1.25**	**1.25 to 3**	**0.4 to 1.1**
	50 (CC2)				
Curve off-set	**31** (CC1)	**0**	**0**	**0**	**4**
	51 (CC2)				
Max. initial setpoint	**32** (CC1)	**55°C** (factory setting)	**55°C** (factory setting)	**55°C** (factory setting)	**55°C** (factory setting)
	52 (CC2)				
Influence of room temp.	**33** (CC1)	With room thermostat. The settings depend on the accuracy of the temperature measured by the room thermostat (and therefore of its installation - see *page 37*).			0% (room thermostat prohibited)
	53 (CC2)				

7.4.4 List of parameters

No.		Description of parameter	Configurationor display range	Basic setting
Time / Date setting				
1		Hours / minutes	00:00... 23:59	**01:00**
2		Month / Day	1 - 1 .... 12 - 31	**MM-DD**
3		Year	2018 ...	**YYYY**
Installation configuration				
4		Two heating circuits option	1 ... 3	**1**
		This control enables you to choose one of the 2 pre-selected installation configurations. 1 (1 heating circuit) ; 2 (2 heating circuit) ; 3 (not used).		
6		General cooling authorisation.	0 (not allowed)... 1 (allowed)...	**0**
7		Heating back-up prohibited (1)	0 (no)... 1 (yes)	**0**
8		DHW back-up prohibited	0 (no)... 1 (yes)	**0**
9		Software version	0... 99	**-**
Absence mode				
10		Absence mode temperature setpoint	5 °C... 20 °C	**13 °C**
		Adjustment of the temperature setpoint used during absence mode.		
Heating time programme (2), circuit 1 (direct)				
11		Pre-selection (day / week)	1 ... 10	**-**
		1 = Monday; **2** = Tuesday… **7** = Sunday; **8** = Monday to Friday; **9** = Saturday and Sunday **10** = Monday to Sunday (modifications are applied to the whole week)		
12		1st phase of the selected day (start of comfort)	00:00... 23:45	**06:00**
13		1st phase of the selected day (end of comfort)	00:15... 24:00	**22:00**
14		2nd phase of the selected day (start of comfort)	00:00... 23:45	**- -:- -**
15		2nd phase of the selected day (end of comfort)	00:15... 24:00	**- -:- -**
16		3rd phase of the selected day (start of comfort)	00:00... 23:45	**- -:- -**
17		3rd phase of the selected day (end of comfort)	00:15... 24:00	**- -:- -**
Heating time programme (1) (2), circuit 2 (combined)				
18		Pre-selection (day / week)	1 ... 10	**-**
		1 = Monday; **2** = Tuesday… **7** = Sunday; **8** = Monday to Friday; **9** = Saturday and Sunday **10** = Monday to Sunday (modifications are applied to the whole week)		
19		1st phase of the selected day (start of comfort)	00:00... 23:45	**06:00**
20		1st phase of the selected day (end of comfort)	00:15... 24:00	**22:00**
21		2nd phase of the selected day (start of comfort)	00:00... 23:45	**- -:- -**

(1) These parameters (or menus) may not appear. They depend on the appliance's configuration (on the options selected).
(2) With a room thermostat, these menus are not shown on the user interface. The time programme is only managed using the room thermostat in the area considered.

No.		Description of parameter	Configurationor display range	Basic setting
22		2nd phase of the selected day (end of comfort)	00:15... 24:00	**- -:- -**
23		3rd phase of the selected day (start of comfort)	00:00... 23:45	**- -:- -**
24		3rd phase of the selected day (end of comfort)	00:15... 24:00	**- -:- -**
DHW time programme				
25		Pre-selection (day / week)	1 ... 10	**-**
		1 = Monday; **2** = Tuesday… **7** = Sunday; **8** = Monday to Friday; **9** = Saturday and Sunday **10** = Monday to Sunday (modifications are applied to the whole week)		
26		1st phase of the selected day (start of comfort)	00:00... 23:45	**00:00**
27		1st phase of the selected day (end of comfort)	00:15... 24:00	**05:00**
28		2nd phase of the selected day (start of comfort)	00:00... 23:45	**14:30**
29		2nd phase of the selected day (end of comfort)	00:15... 24:00	**17:00**
Heating setting, circuit 1 (direct)				
30		Heating curve slope	0.10... 4.00	**0.7**
31		Heating curve displacement	-4.5... 4.5°C	**0 °C**
32		Max. initial heating setpoint	20... 60°C	**50 °C**
33		Room temperature influence	0... 100%	**50%**
		If the installation is fitted with a room thermostat (area 1): This function enables you to choose the ambient temperature's influence on the setting. If no value is entered, only the weather-dependent setpoint is configured.		
34		Parameter not used	0 (not used)... 1 (on)	**1**
35		Zone 1 emitter type	0 (Radiator)... 1 (Underfloor heating)	**0**
36		Accelerated lowering	0 (off)... 4	**0 °C / h**

This function enables you to force the heating to stop when the temperature setpoint is lowered.
The time the heating is stopped is calculated according to the parameter and the difference in setpoint.

		Setpoint temperature difference (°C)			
		1	**2**	**3**	
Parameter (°C / h)	***0,5***	2hrs	4hrs	6hrs	**Heating stoppage time** (hours without heating).
	1	1hr	2hrs	3hrs	
	1,5	40 mn	1hr20	2hrs	
	... / ...	...	...	...	
	3	20 mn	40 mn	1hr	

NB: The function is not used if a room accessory is connected.

37		Zone 1 mid-season economy	0 (off)... 1 (on)	**0**
		The heating request stops when the exterior temperature is higher than the setpoint +1°C		

(1) These parameters (or menus) may not appear. They depend on the appliance's configuration (on the options selected).
(2) With a room thermostat, these menus are not shown on the user interface. The time programme is only managed using the room thermostat in the area considered.

No.		Description of parameter	Configurationor display range	Basic setting
Cooling setting [1], circuit 1 (direct)				
40		Cooling authorisation (circuit 1) [1]	0 (not allowed)... 1 (allowed)...	**0**
41		Cooling curve slope	0.10... 4.00	**0.7**
42		Cooling curve displacement	-4.5... 4.5°C	**0 °C**
43		Min. initial cooling setpoint	5... 30 °C	**10 °C**
Heating setting [1], circuit 2 (combined)				
50		Heating curve slope	0.10... 4.00	**0.7**
51		Heating curve displacement	-4.5...4,5 °C	**0 °C**
52		Max. initial heating setpoint	20... 60 °C	**45 °C**
53		Room temperature influence	0... 100%	**50%**
		If the installation is fitted with a room thermostat (area 2): This function enables you to choose the ambient temperature's influence on the setting. If no value is entered, only the weather-dependent setpoint is configured.		
54		Parameter not used	0 (not used)... 1 (on)	**1**
55		Zone 2 emitter type	0 (Radiator)... 1 (Underfloor heating)	**0**
57		Zone 2 mid-season economy	0 (off)... 1 (on)	**0**
		The heating request stops when the exterior temperature is higher than the setpoint +1°C		
Cooling setting [1], circuit 2 (combined)				
61		Cooling curve slope	0.1... 4.00	**0.7**
62		Cooling curve displacement	-4.5...4,5 °C	**0**
63		Min. initial cooling setpoint	5... 30 °C	**10 °C**
Circulation pump				
70		Pump speed	1... 4	**4**
Heat pump				
71		Heating standby switchover authorisation	0 (manual)... 1 (automatic)	**1**
72		Automatic change in state according to the outdoor temperature (heating <> stand by).	15... 30 °C	**18 °C**
		When the average of the outdoor temperatures reaches 18°C, the regulator switches off the heating (as an economy measure).		
73		Legionella function [1]	0 (off)... 1 (on)	**0**
		If the function is activated, check that the parameter **8** (DHW back-up prohibited) is set to 0 (no). When the function is activated, the Legionella cycles take place on Friday at 3 a.m.		

[1] These parameters (or menus) may not appear. They depend on the appliance's configuration (on the options selected).
[2] With a room thermostat, these menus are not shown on the user interface. The time programme is only managed using the room thermostat in the area considered.

No.	Description of parameter	Configurationor display range	Basic setting
74	Correction of outdoor temperature sensor	- 5... 5 °C	**-**
75	Behaviour of the appliance when suffering from an external error - EX3 (see table *page 50*).	1 (appliance locked) 2 (Area 1 off) 3 (Area 2 off)	**1**
76	Rates mode	0 (Load shedding - Peak shaving / Reduced rate)... 1 (DHW boost / Eco heating circuit)	**0**
	Peak shaving (or load shedding) contract	Back-up(s) when shut down => No. **76** set to **0** and No. **79** set to **0** Back-up(s) + compressor when shut down => No. **76** set to **0** and No. **79** set to **1** Heating operation according to reduced temperature setpoint => No. **76** set to **1**	
	Peak / off-peak times contract	DHW operation (comfort temperature setpoint) => No. **76** set to **0** DHW boost (DHW forced operation at time of switching) => No. **76** set to **1**	
77	Direction of action input 8 (Load Shedding - EX1)	0 (Load shedding or peak shaving if 0V, Normal operation if 230V)... 1 (Load shedding or peak shaving if 230V, Normal operation if 0V)	
78	Direction of action input 9 (Rates - EX2)	0 (off-peak if 0V, peak if 230V)... 1 (off-peak if 230V, peak if 0V)	
79	Compressor load shedding forbidden	0 (no)... 1 (yes)	**0**
	Only used with peak shaving (or load shedding) contract, when parameter **76** is set to 0.		
80	EU reference power	0... 10,0 kW	**-**

Adjust according to the appliance's power:

	Loria duo 6004	Loria duo 6006	Loria duo 6008	Loria duo 6010
	WOYA060LFCA	WOYA060LFCA	WOYA080LFCA	WOYA100LFTA
kW	1.8		2.3	3.1

94	Floor drying	0... 3	**0**

0 = Off; **1** = Area 1; **2** = Area 2; **3** = Area 1 + Area 2

This parameter is used to manually configure the initial constant heating setpoint for each circuit.

☞ **The room thermostat must be disconnected for this mode to work.**

☞ **The parameter must be set to "Off" to deactivate the floor drying mode.**

95	DHW forced operation (DHW boost)	0 (off)... 1 (on)	**0**
96	Appliance test	0... 9	**-**

This parameter is used to **test** the components connected to the controller. It is used to check that the relays are operating and that the wiring is correct (for this, check that each appliance is operating on the installation). The test automatically stops after 20 minutes.

☞ **During the tests, the HP safety devices are deactivated. An ongoing test must be stopped in all cases when the component operation is validated (reset the parameter to 0).**

0 = No test; **1** = Compressor test (the HP starts at 50% as well as all circulation pumps); **2** = Heating electrical back-up test + internal circulation pump test; **3** = Distribution valve test (heating position); **4** = Distribution valve test (DHW position); **5** = DHW electrical back-up test; **6** = Mixing valve (closed position) and circulation pump test for 2nd circuit; **7** = Mixing valve (open position - direct circulation) and circulation pump test for 2nd circuit;
8 = Circulation pump test for circuit 1; **9** = Circulation pump test for circuit 2; **10** = Automatic drainage activated (valve in intermediary position and activation of all circulation pumps).

97	Assist mode	0 (Assist mode off)... 1 (Assist mode on)	**0**

(1) These parameters (or menus) may not appear. They depend on the appliance's configuration (on the options selected).
(2) With a room thermostat, these menus are not shown on the user interface. The time programme is only managed using the room thermostat in the area considered.

8 Information and troubleshooting

8.1 Displaying information

The i button calls up various information.

Depending on the appliance type, the configuration and the state of operation, certain information lines may not be available.

☞ List of information

i No...	Name	Value...
1	Time.	hh:mm
2	Outdoor temperature.	... °C
3	Circuit 1: Initial temperature.	... °C
4	Circuit 1: Initial setpoint.	... °C
5	Return temperature.	... °C
6	Flow measurement.	... l/min
7	Compressor modulation level.	... %
8	Heating back-up status.	0 = off 1 = on
9	Circuit 2: Initial temperature.	... °C
10	Circuit 2: Initial setpoint.	... °C
11	DHW temperature.	... °C
12	DHW setpoint.	... °C
13	HP status.	see details § " - Status list"
14	Heating circuit 1 status.	
15	Heating circuit 2 status.	
16	DHW circuit status.	
17	DHW back-up status.	0 = off 1 = on
18	Outdoor unit error code.	(see table page 51).
Energy consumption		Value...
30	Heat. - Energy consumed this month	... kWh
31	Heat. - Energy consumed last month	... kWh
32	Heat. - Energy consumed this year	... MWh
33	Heat. - Energy consumed last year	... MWh
40	Cool. - Energy consumed this month	... kWh
41	Cool. - Energy consumed last month	... kWh
42	Cool. - Energy consumed this year	... MWh
43	Cool. - Energy consumed last year	... MWh
50	DHW - Energy consumed this month	... kWh
51	DHW - Energy consumed last month	... kWh
52	DHW - Energy consumed this year	... MWh
53	DHW - Energy consumed last year	... MWh

☞ Status list

i No.	Value...	HP status
13	0	Pending.
	1	Heating.
	2	Cooling.
	3	Error.
	4	Assist mode.
	5	Locked.
	6	Defrost activated.
	7	Test mode.
i No.	**Value...**	**Heating circuit 1 and 2 status**
14 & 15	0	Pending.
	1	Comfort heating mode.
	2	Reduced heating mode.
	3	Comfort cooling mode.
	4	Reduced cooling mode.
	5	Absence mode.
	6	Controlled by the room thermostat.
	7	Frost protection activated.
	8	Floor drying mode.
	9	Rate input activated.
i No.	**Value...**	**DHW status**
16	0	Pending.
	1	Comfort mode, charge activated.
	2	Reduced mode, charge activated
	3	Legionella charge.
	4	Frost protection activated.
	5	Forced operation. (boost)

8.2 Hydraulic unit errors

The faults or breakdowns of the hydraulic unit are reported on the display unit of the user interface. The display shows the "Erxxx" error code. **A minor error** does not result in switching the appliance to safety mode. **A major error** results in switching the appliance to safety mode. After solving the problem, press OK (reset and cancel the error message).

☞ Visible faults on the digital display.				
Error codes		**Description**	**Switched to safety mode**	**Probable causes**
Minor error	**Major error**			
3	**-**	Hydraulic flow rate too low.	-	Circulation pump speed settings too low. Clogged filter valve.
-	**131**		(Appliance shutdown if the error **3** occurs 3 times in 1 hour)	
5	**-**	Initial temperature (T5) or return temperature (T6) < 2°C	-	Frost protection function defective. Back-up disconnected.
6	**-**	Communication error between the interface board and the HP regulator board.	-	Check the wiring.
19	**-**	Test mode activated.	-	-
35	**-**	HP outgoing flow sensor error (T5).	-	Short circuit, sensor disconnected or cut off. Defective sensor. Other error.
36		HP return flow sensor error (T6).	-	Short circuit, sensor disconnected or cut off. Defective sensor. Other error.
-	**132**	Initial temperature > 70°C (T5)	-	
46	**-**	Circuit 2 sensor error (T12)	-	Short circuit, sensor disconnected or cut off. Defective sensor. Other error.
48	**-**	Outdoor temperature sensor error (T7)	-	Short circuit, sensor disconnected or cut off. Defective sensor. Other error.
47	**-**	DHW tank sensor error (T8)	-	Short circuit, sensor disconnected or cut off. Defective sensor. Other error.
-	**148**	Legionella cycle error	This error appears if 3 consecutive tests fail.	DHW back-up disconnected.
52	**-**	Frost detected on the return circuit when defrosting the outdoor unit (temperature < 2°C).	-	Circulating water volume too low (see table §*1.3, page 4*).
-	**180**		Appliance shutdown if the error **52** occurs 3 times in 1 hour.	
53	**-**	Frost detected on the outgoing circuit when defrosting the outdoor unit (temperature < 3°C).	-	
-	**181**		Appliance shutdown if the error **53** occurs 3 times in 1 hour.	
55	**-**	Frost protection of the HP circuit activated (with electrical back-up)	-	-
56	**-**	Frost protection of the DHW tank activated (with electrical back-up)	-	-
62	**-**	Load shedding - peak shaving or rate input activated	-	-
66	**-**	Outdoor unit error (external cause)	-	See *"8.3 Outdoor unit errors", page 51*

• Always check that the electric power supply is switched off before maintaining the boiler.

☞ **Visible faults on the digital display.**					
Error codes		**Description**	**Switched to safety mode**		**Probable causes**
Minor error	**Major error**				
67	-	DHW cycle too long (> 6 hours).	-		Too much draw-off during the same cycle. DHW back-up disconnected.
-	**195**		Appliance shutdown if the error **67** occurs 3 consecutive times.		
68	-	Room temperature in area 1 missing when the "room T° influence" function (No. **33**) is activated.	-		Parameter **33** used without room unit. Room unit disconnected or absent.
69	-	Room temperature in area 2 missing when the "room T° influence" function (No. **53**) is activated.	-		Parameter **53** used without room unit. Room unit disconnected or absent.
70	-	Assist mode activated.	-		-
71	-	Circuit temperature 2 > 55°C	-		Defective mixing valve.
73	-	External error linked to input EX3.	Parameter **75** set to ...	**1 ->** HP locked	Outdoor component error.
				2 -> Area 1 shut down	
				3 -> Area 2 shut down	
76	-	Low hydraulic flow rate.	-		Circulation pump speed settings too low. Clogged filter valve.

8.3 Outdoor unit errors

In the event of an error occurring within the outdoor unit, the user interface displays the "Er 66" error code. View the information menu i ⮌ : Information " i No. 18" specifies the error code for the outdoor unit " i xx" (list provided below).

Outdoor unit error code	*Interface board*		*Outdoor unit board*	*Error contents*
	LED 2 (green)	*LED 1 (red)*	*LED*	
0	**1 Flash**	**1 Flash**	**Off**	Communication error between the interface board and the outdoor unit: transfer error (Serial reverse).
1			**1 Flash**	Communication error between the interface board and the outdoor unit: transfer error (Serial forward).
2	**4 Flashes**	**2 Flashes**	**22 Flashes**	Hydraulic unit exchanger temperature sensor error.
3	**6 Flashes**	**3 Flashes**	**18 Flashes**	Inverter error.
4	**6 Flashes**	**4 Flashes**	**19 Flashes**	Active filter error / PFC error
5	**7 Flashes**	**1 Flash**	**2 Flashes**	Discharge temperature sensor error.
6	**7 Flashes**	**2 Flashes**	**8 Flashes**	Compressor temperature sensor error.
7	**7 Flashes**	**3 Flashes**	**5 Flashes**	Exchanger temperature sensor (centre) error.
8			**4 Flashes**	Exchanger temperature sensor (output) error.
9	**7 Flashes**	**4 Flashes**	**7 Flashes**	Outdoor temperature sensor error.
10	**7 Flashes**	**7 Flashes**	**9 Flashes**	Radiator temperature sensor (Inverter) error.
11			**10 Flashes**	Radiator temperature sensor (P.F.C.) error.
12	**7 Flashes**	**8 Flashes**	**6 Flashes**	Pressure regulator temperature sensor error.
13	**8 Flashes**	**4 Flashes**	**-**	Current current error.
14	**8 Flashes**	**6 Flashes**	**3 Flashes**	Pressure sensor error / pressure switch error.
15	**9 Flashes**	**4 Flashes**	**13 Flashes**	Current sensor error (permanent shutdown).
16	**9 Flashes**	**5 Flashes**	**14 Flashes**	Detection error for the position of the compressor rotor (permanent shutdown).
			15 Flashes	Compressor start-up error (permanent shutdown).
17	**9 Flashes**	**7 Flashes**	**16 Flashes**	Outdoor unit fan motor 1 error.
			17 Flashes	Outdoor unit fan motor 2 error.
18	**10 Flashes**	**1 Flash**	**11 Flashes**	Discharge temperature protection (permanent shutdown).
19	**10 Flashes**	**3 Flashes**	**12 Flashes**	Compressor temperature protection (permanent shutdown).
20	**10 Flashes**	**5 Flashes**	**20 Flashes**	Abnormal low pressure.
21	**Depending on the outdoor unit error**			Error originating from the outdoor unit.
22	**3 Flashes**	**2 Flashes**	**-**	Communication error between the interface board and the HP regulator board.

• Always check that the electric power supply is switched off before maintaining the boiler.

8.4 Safety thermostat

When the temperature in the electrical back-up exceeds 90°C, the HP is stopped by its overheating safety device.

Always check that the electric power supply is switched off before works.

☞ ⚠ **Stored energy: after disconnecting the power supplies, wait 1 minute before accessing the internal parts of the equipment.**

Remove the front panel (*figure 29, page 33*) and reset when the water temperature has returned to normal.

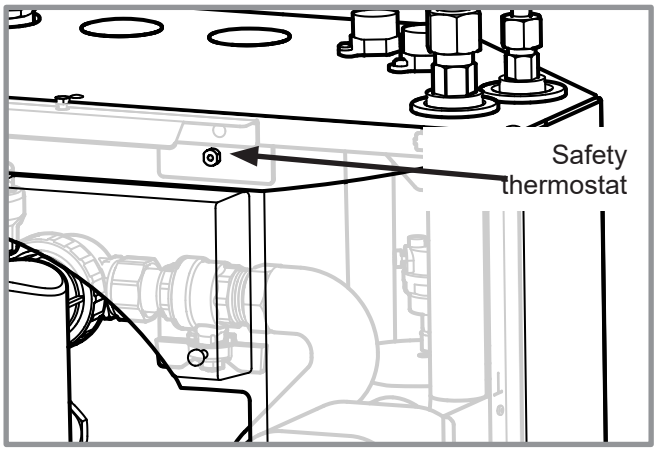


figure 41 - Reset button (overheating safety device)

9 Maintaining the installation

☞ **Ensure that <u>all electrical power supplies</u> have been cut off before starting work.**

☞ ⚠ **Stored energy: after disconnecting the power supplies, <u>wait 1 minute</u> before accessing the internal parts of the equipment.**

9.1 Accessing the components of the appliance

- Rotate the electric box (2 screws).

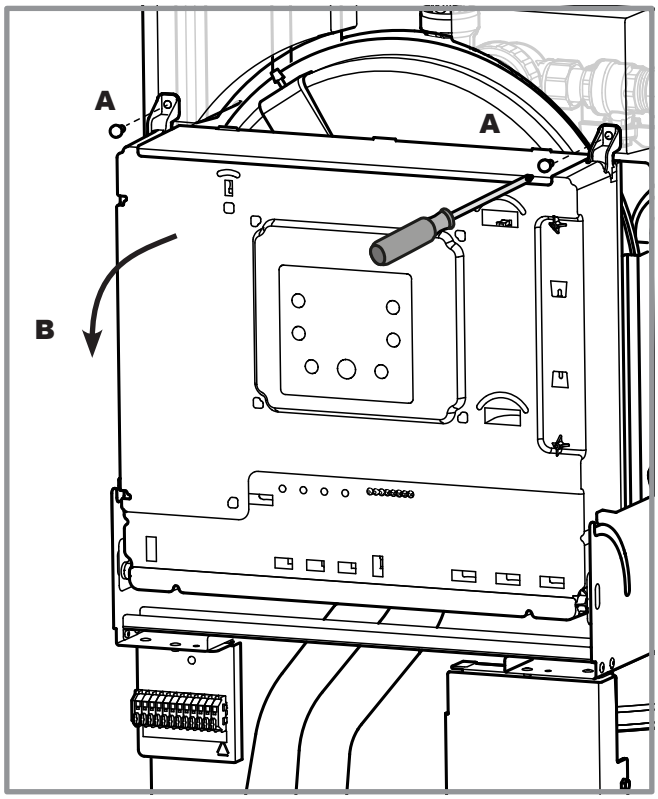


figure 42 - Reset button (overheating safety device)

9.2 Hydraulic checks

Regular maintenance is required to protect the HP.

Note: Protection via the detection of the minimum flow rate stops the HP under poor operating conditions (clogged filter, water shortage, etc.).

Depending on the frequency described below, clean the sediment trap and check the pressure.

- Immediately after commissioning (remove waste generated by the installation: seals, oakum, filings, etc.),
- Then during each maintenance operation (remove particulate matter and sediment contained in the heating water).

9.2.1 Cleaning the sediment trap

For detailed information, see § *6.3, page 39*.

9.2.2 Annual inspection

Check the heat output: assessment with the temperature deviation (outgoing - return) and flow rate.

☞ **Warning :If frequent refills are required it is essential that you look for any leaks.**

If you need to fill up and reset the pressure, check the type of fluid originally used.

Recommended filling pressure: between 1 and 2 bar (the exact filling pressure is determined according to the installation's manometric head).

Every year.

- Check the expansion vessel pressure (pre-inflation of 1 bar) and the correct operation of the safety valve.
- Verify the safety unit on the cold water supply inlet.
- Run it according to the manufacturer's instructions.
- Check the disconnector.

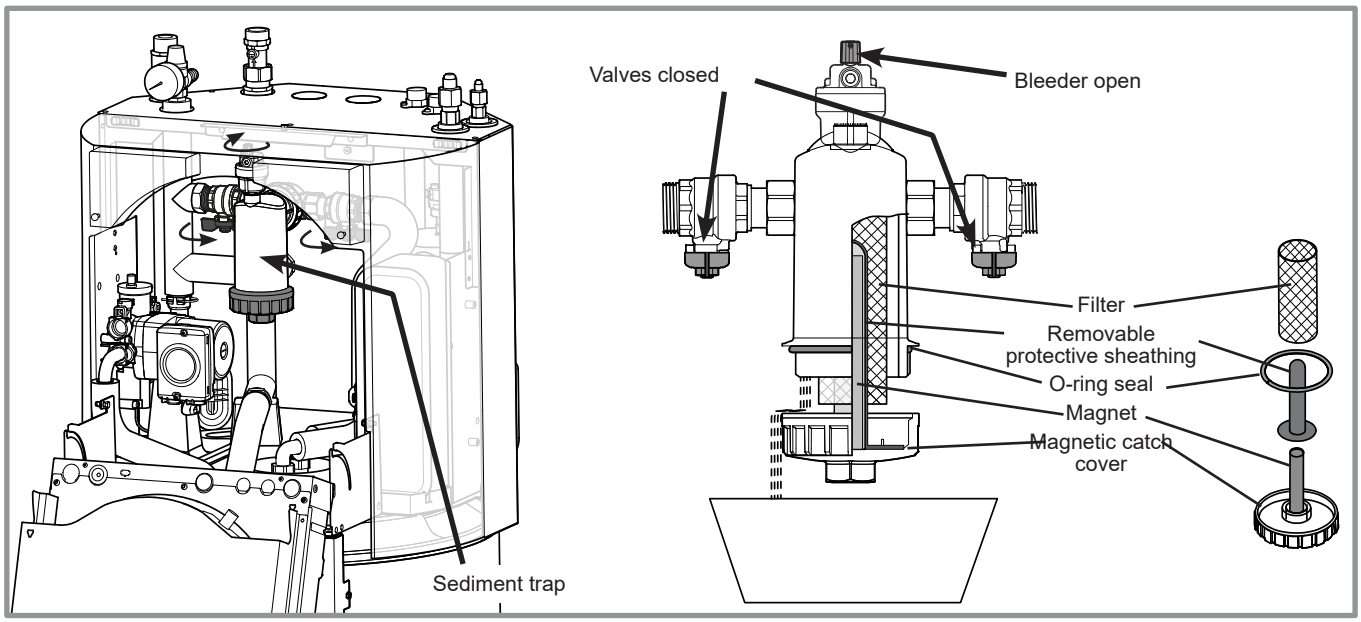


figure 43 - Cleaning the sediment trap

9.3 Maintenance of the domestic hot water tank

The tank must be serviced once a year (the frequency may vary according to the hardness of the water).

9.3.1 Draining the hot water tank

- Remove the front panel of the heat pump.
- Close the cold water inlet on the hot water tank.

Open a hot water tap and open the hot water tank drainage valve (item **1**).

9.3.2 Descaling

- Drain the hot water tank.
- Remove the insulation (ref. **2**).
- Disconnect the electrical back-up.
- Remove the inspection hatch (ref. **3**).
- Descale the exchanger to preserve its performance levels.
- Remove any scale deposits that may have accumulated in the tank. Preferably leave the scale that has become attached to the sides of the tank: it forms a protective layer.
- Carefully remove any scale deposits on the thimble. Do not use metal objects, chemicals or abrasive products.
- Check the wear on the anode; the anode gradually dissolves depending on the quality of the supply water, thus preventing tank corrosion. Replace the anode if its diameter is less than 13 mm.
- Replace the seal around the inspection trap (ref. **4**) every time the inspection trap is dismantled.
- Reinstall the inspection trap and tighten the bolts in the "criss-cross" pattern.
- Reconnect the electrical back-up.
- Reassemble all parts correctly.

9.4 Checking the outdoor unit

- Remove any dust from the exchanger making sure you do not damage the blades.
- Correct the blades using a comb.
- Check that there is nothing hindering the air flow.
- Check the fan.
- Check that the condensate discharge is not blocked.

• Checking the refrigeration circuit

- Check that there are no leaks (connectors, valves, etc.).

9.5 Electrical checks

- Check connections and tighten where necessary.
- Check the condition of the cabling and plates.

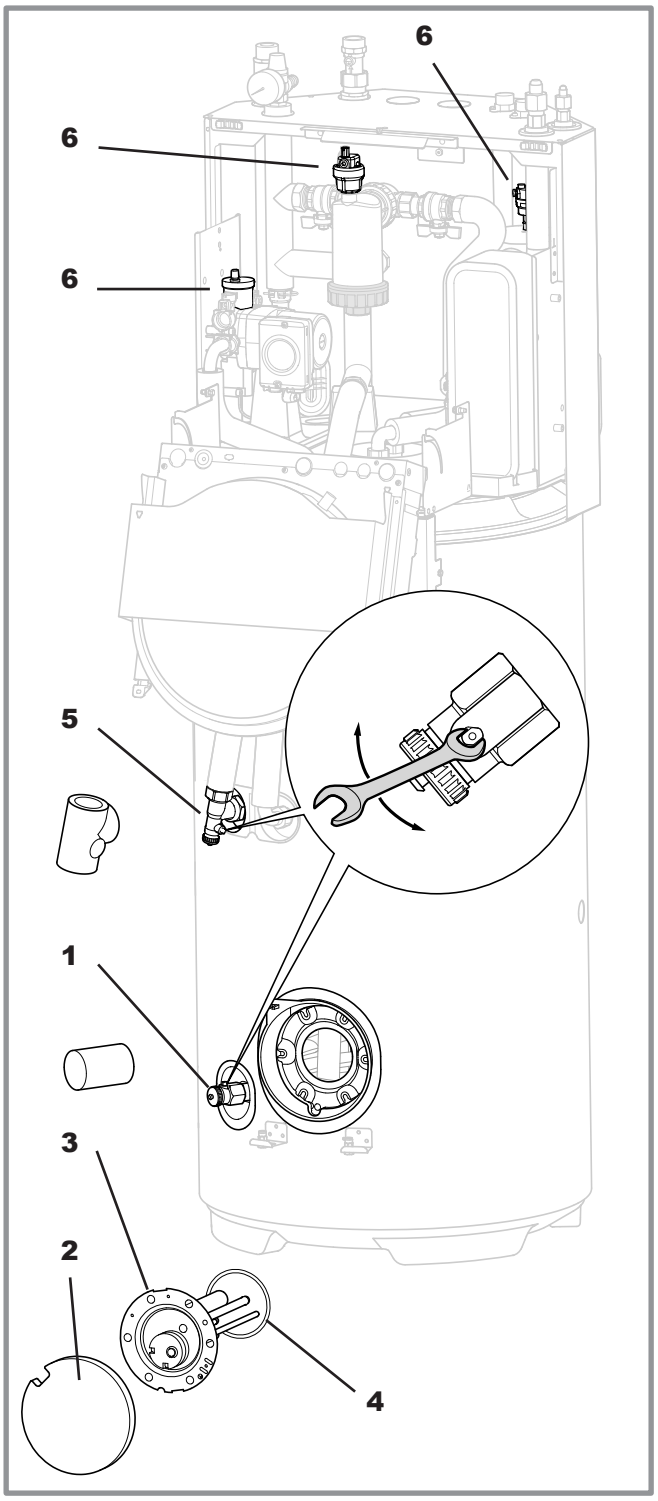
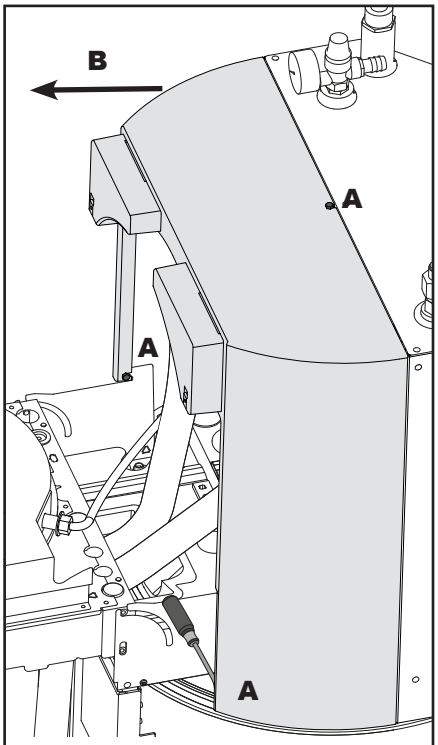


figure 44 - Draining of the hydraulic unit and/or hot water tank

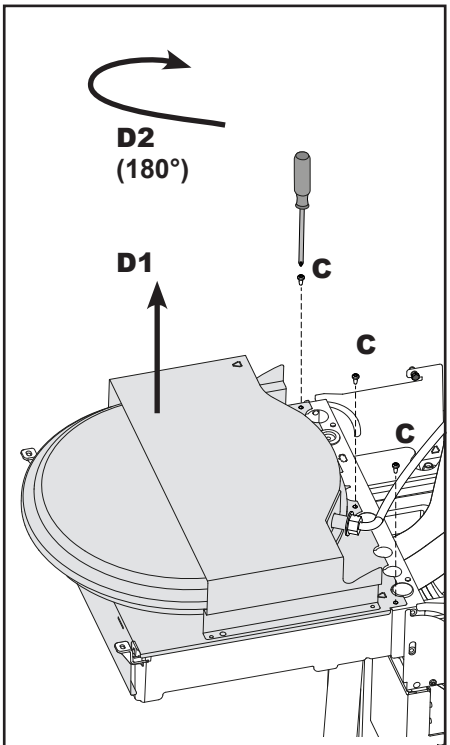
10 Maintenance

☞ **Ensure that <u>all electrical power supplies</u> have been cut off before starting work.**

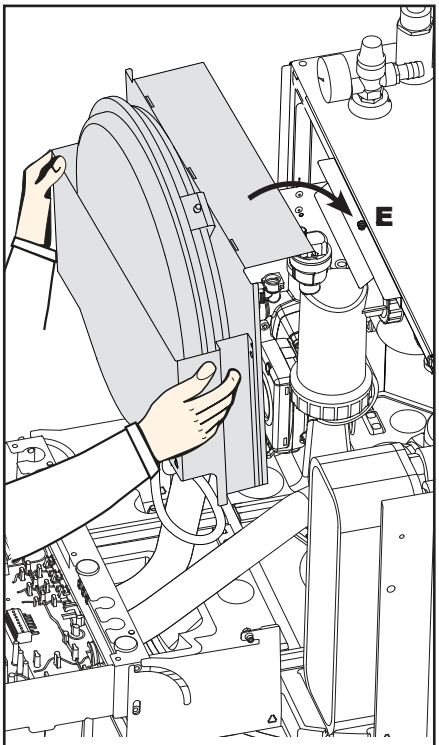
☞ ⚠ **Stored energy: after disconnecting the power supplies, <u>wait 1 minute</u> before accessing the internal parts of the equipment.**



- **A** - Unscrew the 3 screws.
- **B** - Remove the cap.



- **C** - Unscrew the 3 screws at the rear of the lid.
- **D1** - Lift the lid-vessel assembly.
  D2 - Rotate the assembly by 180°.



- **E** - Hand the assembly on the screw of the upper guard.

figure 45 - Accessing the electric box

10.1 Accessing the electric box.

- Remove the front panel (2 screws) *figure 29, page 33*.
- Rotate the electric box (2 screws) *figure 30, page 33*.
- Remove the cap. Open the power control box (*figure 45*).

10.2 Replacing fuses

The fuses are located on the printed circuit boards and the supply bundle (see *figure 46 or* § *11.2, page 60*).

☞ **Fuse properties:**

- T3.15AH250V, 5x20 mm, IEC 60127-1,
- T6.3AH250V, 5x20 mm, IEC 60127-1.

10.3 Draining the hydraulic unit

- Set the distribution valve to the intermediary position (set parameter **96** (Appliance test) to **10)**.
- Open the drainage valve (ref. **5**).
- Open the hydraulic unit's automatic bleeders (ref. **6**).
- Open the installation's air bleeder.

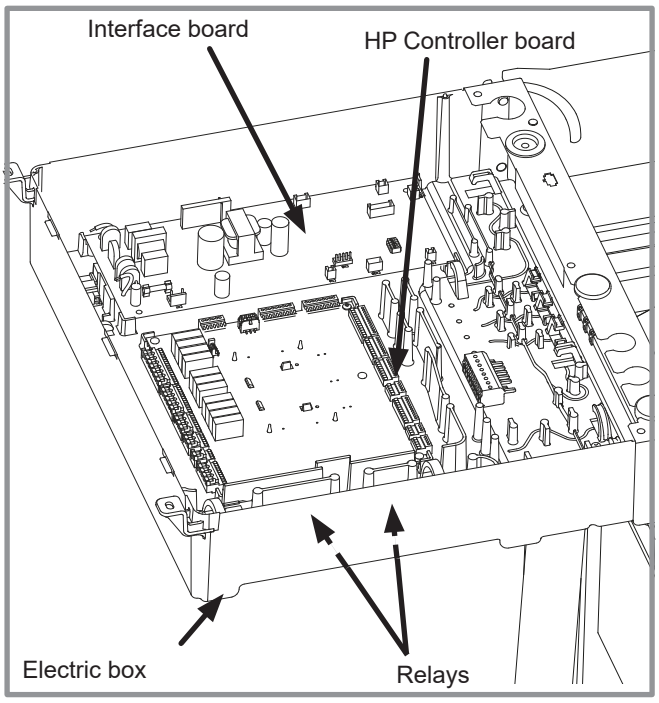


figure 46 - Electric box: Description

11 Electrical wiring diagrams

11.1 Electrical wiring (outdoor unit)

Electrical connections on the outdoor unit:
see *§ 5.1.5, page 32.*

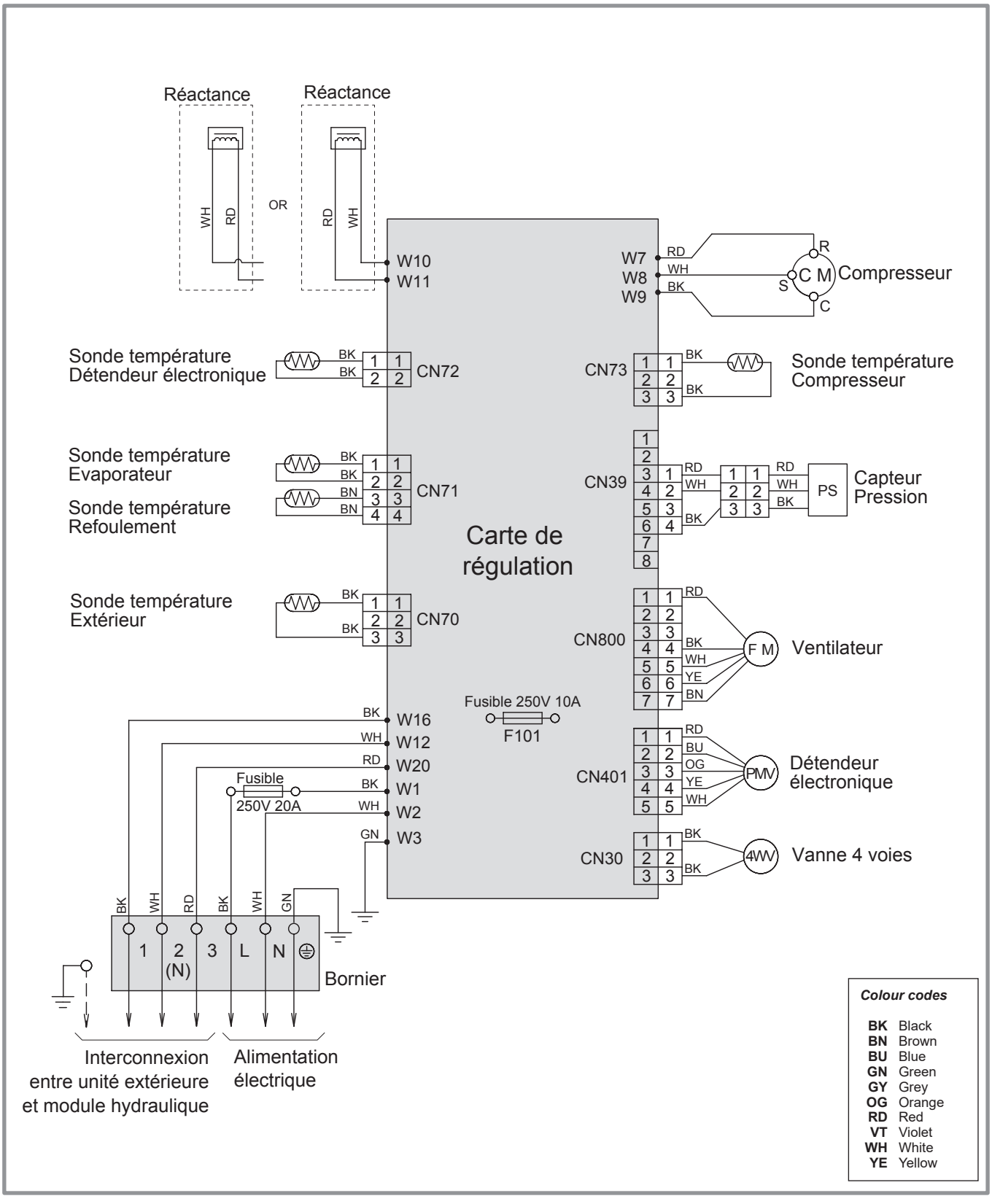


figure 47 - Electrical wiring of the outdoor unit for Loria duo 6004 & 6006 models

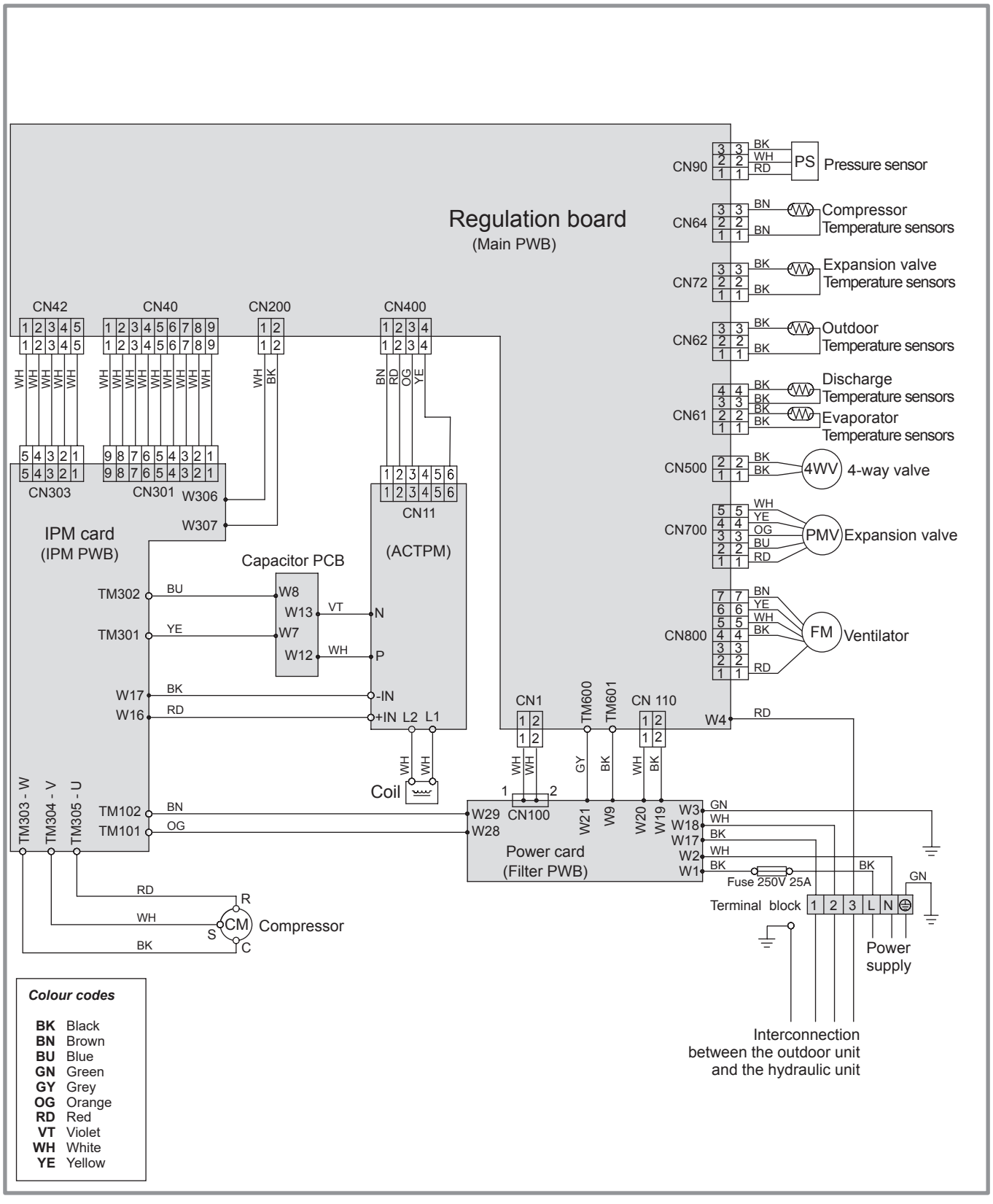


figure 48 - Electrical wiring of the outdoor unit for the Loria duo 6008 model

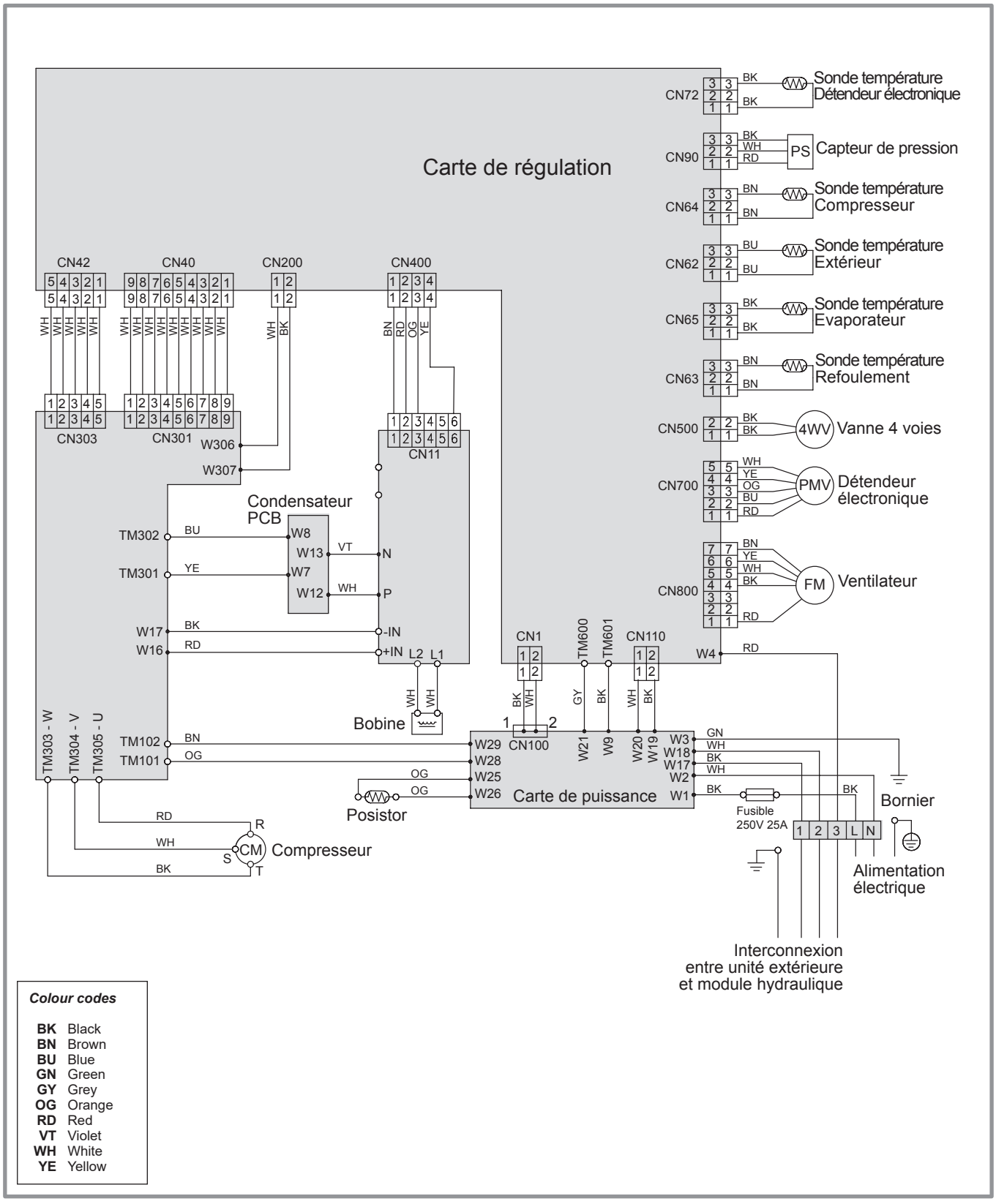
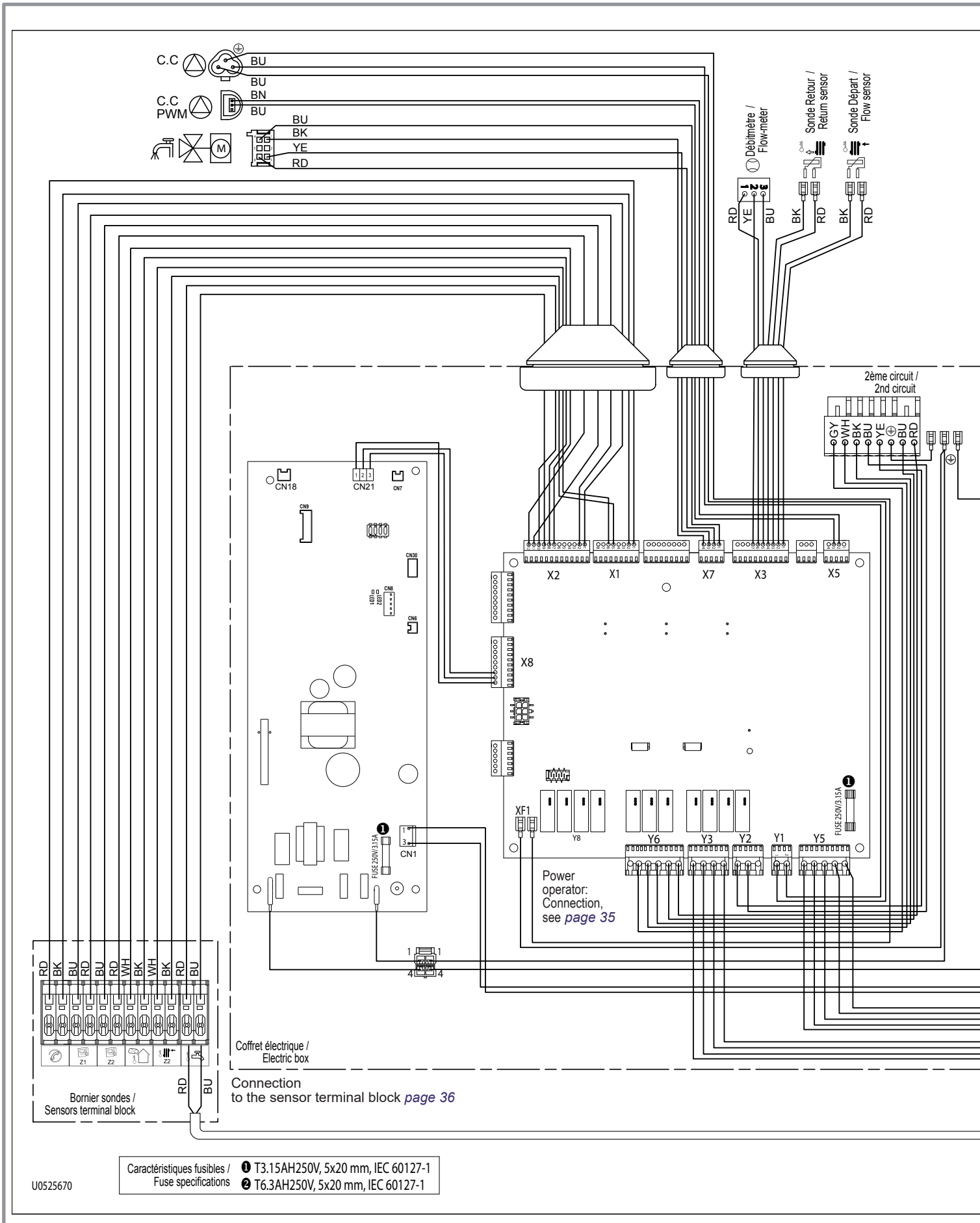
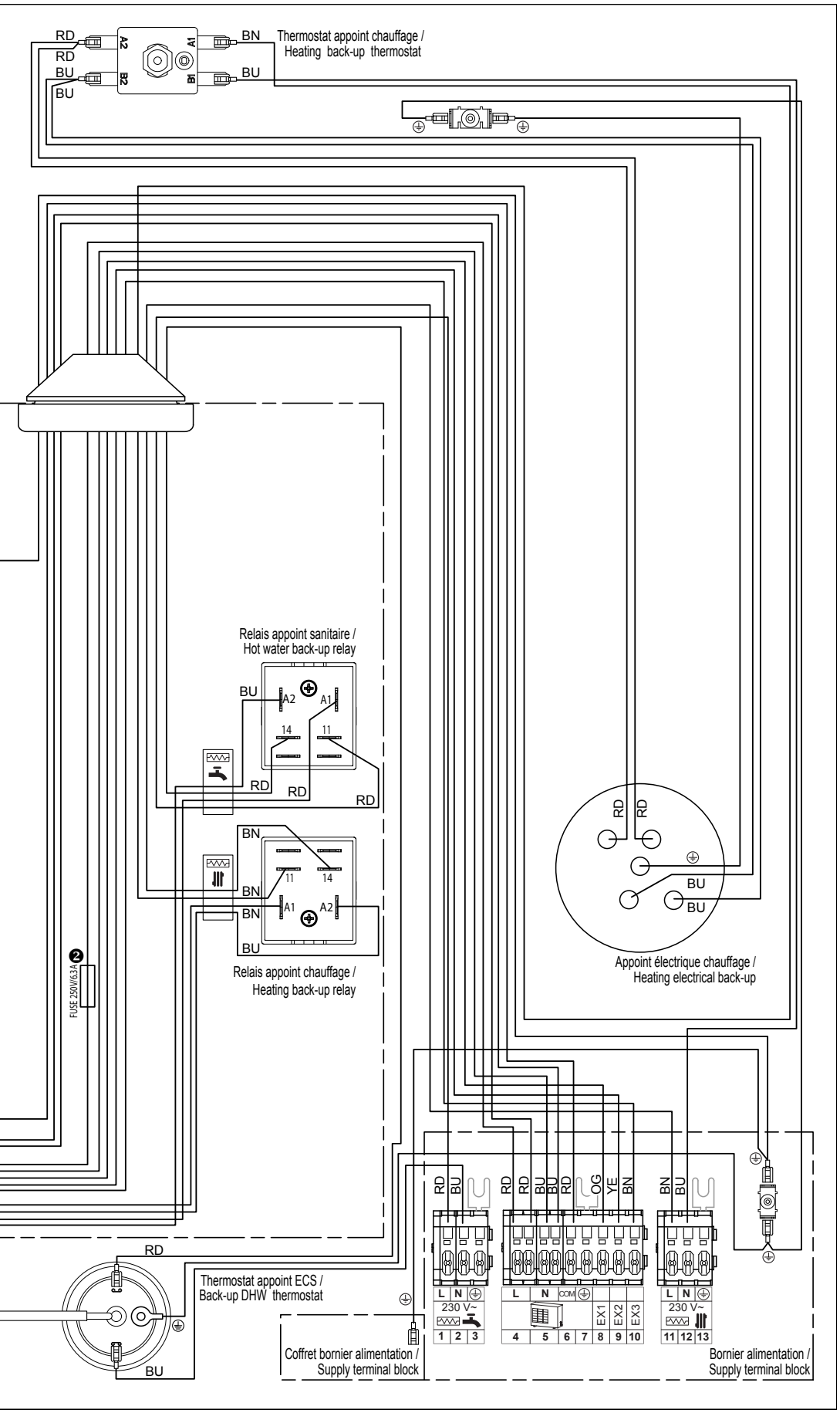


figure 49 - Electrical wiring of the outdoor unit for the Loria duo 6010 model

11.2 Electrical wiring (hydraulic unit - excluding connections made by the installer)

Electrical connections on the hydraulic unit: see *§ 5.1.6, page 33*





Colour codes

BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

Connections to
the main terminal block
page 34

12 Quick-start procedure

Before switching on the hydraulic unit :

- Check the electrical cabling.
- Check that the refrigeration circuit is filled with gas.
- Check the hydraulic circuit's pressure (1 to 2 bars), check that the heat pump is drained, along with the rest of the installation.

12.1 Commissioning check-list

12.1.1 Before start-up

• Visual inspections

Outdoor unit (see section *"2.4 Installing the outdoor unit", page 16*).	OK	Non-compliant	
Position and attachments, condensate evacuation.			
Compliance with distances from obstacles.			

• Hydraulic checks

Hydraulic unit (see sections *"2.5 Installing the hydraulic unit", page 18* & *, page 26)*.	OK	Non-compliant	Value
Connections of pipes, valves and pumps (heating circuit, DHW). Filter valve, pressure gauge valve, sediment trap (optional).			
Comply with the minimum circulating water volume, see table, § *1.3, page 4* . Correct piping diameter. (expansion vessel of adequate capacity).			
No leaks.			
Primary and gas release network pressure.			

• Refrigeration connections and checks

(see section *"3 Refrigerant connection and filling the installation with gas", page 19* & *"3.4 Filling the installation with gas", page 22*).	OK	Non-compliant	
Refrigerant circuit check (plugged, no dust or moisture)			
Connections between units (pipe length, flare tightening torque...).			
HP pressure gauge installation and vacuo on fluid line (small tube).			
Pump down mandatory.			
Leak test with nitrogen (~ 10 bar).			
Opening of refrigeration valves to outdoor unit.			
Filling of the hydraulic unit and pipes with refrigerant.			

• Electrical checks

Outdoor unit (see section *"5.1.5 Electrical connections on the outdoor unit side", page 32*).	OK	Non-compliant	Value
230 V mains power supply			
Protection by calibrated circuit breaker.			
Cable section.			
Earth connection.			

Hydraulic unit (see section *"5.1.6 Electrical connections on the hydraulic unit side", page 33*).	OK	Non-compliant	
Connection with outdoor unit (L, N, Earth, COM).			
Sensor connections (positioning and connections).			
Connection of distribution valves (DHW) and circulation pump.			
Power supply and protection of electrical back-ups.			

12.1.2 Start-up

• Quick start-up

(see section *"6.2 Commissioning", page 38*) & § *"List of parameters", page 44)*.	OK	Non-compliant	
Push in the installation's circuit breakers (outdoor unit power supply) **2 hours before the tests** => Compressor preheating.			
Operation of the circulation pump.			
The outdoor unit starts after 3 min.			
Configure the hydraulic circuit (parameter **4** - Pre-setting **1** or **2**).			
Configure the Time, Date and Heating Circuit, hourly programmes if different from the default values.			
Set the heating slope HC1/HC2 (1) (**30** / **50**). Slope of the cooling curve (1) HC1/HC2 (**41** / **61**).			
Set the max. initial setpoint HC1/HC2 (1) (**32** / **52**). Min. initial cooling setpoint (1) HC1/HC2 (**43** / **63**).			

• Outdoor unit checks

	OK	Non-compliant	Value
Operation of the fan(s), compressor.			
Current measurement.			
After a few minutes, measure the difference in air T°.			
Condensation and evaporation pressure / temperature check.			

• Hydraulic unit checks

	OK	Non-compliant	Value
After 15 minutes of operation.			
Difference in primary water T°.			
Operation of heating, mixing valve, electrical back-up, …			

• Controller

(see section *"7 Controller", page 40*).	OK	Non-compliant	
Settings, manipulations, checks.			
Set the scheduled periods for heating HC1/HC2 (1) (**11** to **17** (2) / **18** to **24** (2)).			
Set the scheduled periods for DHW heating (**25** to **29** (2)).			
Set the heating circuit setpoints if different to the default values.			
Setpoint display.			
Usage explanations.			

The heat pump is ready for operation!

(1) These parameters (or menus) may not appear. They depend on the appliance's configuration (on the options selected).
(2) With a room thermostat, these menus are not shown on the user interface. The time programme is only managed using the room thermostat in the area considered.

12.2 Settings sheet

Parameter	*Name*	*Settings*
Preliminary settings		
1	hour / minutes	
2	Month - Day	
3	Year	
4	Two heating circuits option	
6	general cooling authorisation	
7	Heating back-up prohibited (1)	
8	DHW back-up prohibited (1)	
35 - 55	Type of emitter	
36	Zone 1 accelerated lowering (only if no room thermostat)	
37 - 57	Mid-season economy	
Heating circuit (HC1 / HC2 (1))		
30 - 50	weather-dependent setpoint slope	
31 - 51	heating curve displacement	
32 - 52	max. initial setpoint	
33 - 53	room T° influence	
11 => 17 & 18 => 23	time programmes (circuit 1 - direct) & (circuit 2 - combined)	
Cooling circuit (1) (HC1 / HC2 (1))		
40 - 60	cooling authorisation	
41 - 61	weather-dependent setpoint slope	
42 - 62	heating curve displacement	
43 - 63	min. initial value	
Circulation pump		
70	circulation pump speed	

Parameter	*Name*	*Settings*
Domestic hot water		
73	Legionella cycle	
95	DHW forced operation (boost)	
25 => 29	time programmes	
Energy counting		
80	EU reference power (see *page 47*)	
Miscellaneous		
10	Absence mode setpoint	
72	switch between winter/summer	
74	correct outdoor temperature sensor	
75	behaviour of the appliance when suffering from an external error	
76	rates mode	
77	direction of action input 8 (Load shedding - EX1)	
78	direction of action input 9 (Rates - EX2)	
79	compressor load shedding authorisation	
94	floor drying	
96	relay test	
97	assist mode	
Errors (see *page 49*)		
Outdoor unit errors (see *page 51*)		

(1) These parameters (or menus) may not appear. They depend on the appliance's configuration (on the options selected).
(2) With a room thermostat, these menus are not shown on the user interface. The time programme is only managed using the room thermostat in the area considered.

12.3 Start-up data sheet

Worksite		**Installer**	

Outdoor unit	Serial No.		**Hydraulic unit**	Serial No.	
	Model			Model	

Type of refrigerant			Refrigerant charge	kg

Checks				**Voltages and currents in operation on the outdoor unit**			
Compliance with positioning distances				L/N	V		
Correct condensate discharge							
Electric connections / connections tightened				L/T	V		
No GAS leaks (unit ID No.:)							
Correct installation of refrigerant connection (length m)				N/T	V		
Reading in HOT operation							
Compressor discharge temperature		°C		Icomp	A		
Fluid line T°		°C					
Condensation T°	HP = bar	°C	}	Sub-cooling		°C	
Tank water output T°		°C	}	Condensation ΔT°		°C	
Tank water inlet T°		°C	}	Secondary ΔT°		°C	
Evaporation T°	BP = bar	°C					
Aspiration T°		°C	}	Overheating		°C	
Battery air inlet T°		°C	}	Evaporation ΔT°		°C	
Battery air output T°		°C	}	Battery ΔT°		°C	

Hydraulic network on hydraulic unit					
Secondary network	Underfloor heating			Circulation pump brand	Type
	LT radiators				
	Fan-coil heaters				
Domestic hot water; tank type					
Secondary network water volume estimate			L		

Options & accessories:					
Power supply for electrical back-up			Room thermostat		
Location of room sensor correct					
dual-circuit kit					
DHW kit					
Cooling kit					
			Details		
Control settings					
Type of configuration					
Key parameters					

13 Instructions for the user

Explain to the user how the installation operates, in particular the functions of the room thermostat and the programmes accessible via the user interface.

Emphasise that a heated floor has significant inertia and that therefore any adjustments must be made progressively.

Also explain to the user how to check the filling of the heating circuit.

☞ **End of life of the device**

The apparatus must be dismantled and recycled by a specialised service provider.

The apparatus must never be disposed of with household waste, large objects or in a landfill.

When the apparatus reaches its end of life, please contact you installer or the local representative in order to proceed with the dismantling and recycling of this apparatus.

14 ERP performance values

14.1 ERP definition

"ERP" includes two European directives that are part of the programme for the global reduction of greenhouse gas emissions:

- The eco-design directive sets efficiency thresholds and prohibits the sale of any product with an efficiency lower than the set thresholds.
- According to the labelling directive, energetic efficiency shall be displayed to encourage end users to purchase energy-efficient products.

14.2 ERP Specifications

Trade name / Product name:	**atlantic / ...**		**Loria duo 6004**		**Loria duo 6006**		**Loria duo 6008**		**Loria duo 6010**	
Reference			**522 963**		**522 964**		**522 965**		**522 966**	
Heating ranges			35°C	55°C	35°C	55°C	35°C	55°C	35°C	55°C
Air/water heat pump			Yes							
Equipped with a supplementary heater			Yes							
Heat pump combination heater			Yes							
Average climate - Space heating characteristics										
Energy class Product [a]	-	-	A++	A++	A++	A++	A++	A++	A++	A++
Energy class Package	-	-	A+++	A++	A+++	A++	A++	A++	A++	A++
Rated heat output [2]	P_{rated}	kW	4	4	6	5	7	6	9	7
Seasonal heating energy efficiency	η_s	%	181	127	186	128	166	124	154	116
Seasonal efficiency for package with outdoor temperature sensor [1]	η_s	%	183	129	188	130	168	126	156	118
Seasonal efficiency with room unit [1]	η_s	%	185	131	190	132	170	128	158	120
Annual energy consumption	Q_{he}	kWh	1884	2708	2588	2933	3226	4197	4481	5256
Average climate - domestic hot water production										
Declared load profile	-	-	L		L		L		L	
Energy class	-	-	A+		A+		A+		A+	
Energy efficiency	η_{wh}	%	130		130		130		130	
Annual energy consumption	AEC	kWh	966		966		966		966	
Daily electricity consumption	Q_{elec}	kWh	4		4		4		4	
Colder climate - Space heating characteristics										
Rated heat output [2]	P_{rated}	kW	NA							
Seasonal heating energy efficiency	η_s	%								
Annual energy consumption	Q_{he}	kWh								
Colder climate - domestic hot water production										
Declared load profile	-	-	NA							
Energy efficiency	η_{wh}	%								
Annual energy consumption	AEC	kWh								
Daily electricity consumption	Q_{elec}	kWh								
Warmer climate - Space heating characteristics										
Rated heat output [2]	P_{rated}	kW	5	5	6	6	7	7	12	8
Seasonal heating energy efficiency	η_s	%	221	160	242	153	211	154	201	130
Annual energy consumption	Q_{he}	kWh	1270	1793	1201	1936	1866	2349	3040	2990
Warmer climate - domestic hot water production										
Declared load profile	-	-	L		L		L		L	
Energy efficiency	η_{wh}	%	130		130		130		130	
Annual energy consumption	AEC	kWh	966		966		966		966	
Daily electricity consumption	Q_{elec}	kWh	4		4		4		4	
Acoustic values										
Sound power level of hydraulic unit	L_{WA}	dBa	44		44		44		44	
Sound power level of outdoor unit	L_{WA}	dBa	62		62		69		68	

Trade name / Product name: atlantic / ...			Loria duo 6004		Loria duo 6006		Loria duo 6008		Loria duo 6010	
Reference			**522 963**		**522 964**		**522 965**		**522 966**	
Heating ranges			35°C	55°C	35°C	55°C	35°C	55°C	35°C	55°C
Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature Tj										
Tj = -7°C	Pdh	kW	3.7	3.8	5.2	4.1	5.8	5.6	7.5	6.6
Tj = +2°C	Pdh	kW	2.4	2.5	3.5	2.7	3.7	3.4	4.6	4.0
Tj = +7°C	Pdh	kW	2.0	1.4	1.9	1.8	2.5	2.0	3.2	3.2
Tj = +12°C	Pdh	kW	2.3	2.1	2.4	2.1	2.1	2.0	3.8	3.5
Tj = bivalent temperature	Pdh	kW	3.7	3.8	5.2	4.1	5.8	5.6	7.5	6.6
Tj = operation limit temperature	Pdh	kW	3.4	3.2	4.8	3.9	6.0	4.7	6.9	6.1
Bivalent temperature	T_{biv}	°C	-7	-7	-7	-7	-7	-7	-7	-7
Degradation coefficient (3) [3]	Cdh	-	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Declared coefficients of performance for part load at indoor temperature 20°C and outdoor temperature Tj										
Tj = -7°C	COP_d	-	2.96	1.95	2.90	1.94	2.56	1.78	2.40	1.80
Tj = +2°C	COP_d	-	4.48	3.21	4.64	3.23	4.20	3.22	3.90	2.80
Tj = +7°C	COP_d	-	6.37	4.41	6.13	4.40	5.69	4.20	5.30	4.40
Tj = +12°C	COP_d	-	8.69	6.50	9.26	6.46	7.20	5.90	7.30	4.90
Tj = bivalent temperature	COP_d	-	2.96	2.00	2.81	1.94	2.56	1.83	2.40	1.80
Tj = operation limit temperature	COP_d	-	2.65	1.62	2.90	1.78	2.37	1.54	2.20	1.60
For air-to-water heat pumps: temperature operating limit	TOL	°C	-10	-10	-10	-10	-10	-10	-10	-10
Water temperature operating limit	WTOL	°C	55	55	55	55	55	55	55	55
Supplementary heater										
Rated heat output [2]	P_{sup}	kW	0.8	1.1	1.1	0.7	0.6	1.8	1.6	1.3
Type of energy input	-	-	Electricity							
Power consumption in modes other than active mode										
Off mode	P_{OFF}	kW	0.009		0.009		0.009		0.007	
Thermostat-off mode	P_{TO}	kW	0.014		0.014		0.015		0.054	
Standby mode	P_{SB}	kW	0.009		0.009		0.009		0.007	
Crankcase heater mode	P_{CK}	kW	0		0		0		0	
Other properties										
Capacity control	-	-	Inverter							
For air-to-water heat pumps, rated air flow rate, outdoors	-	m^3/h	2070		2340		3600		6200	

(a) The energy class is that of the product. The energy class scale for products is limited to class A++ until 2019.

(1) The detailed calculations are available on the package sheet. The room appliance refers to: the sensors, room thermostats and offset controllers included or not included in the kits.

(2) For room heating devices implementing heat pumps and combined heating devices implementing heat pumps, the rated heat output P_{rated} is equal to the nominal heating load $P_{designh}$ and the rated heat output of a supplementary heater P_{sup} is equal to the supplementary heating capacity sup(Tj).

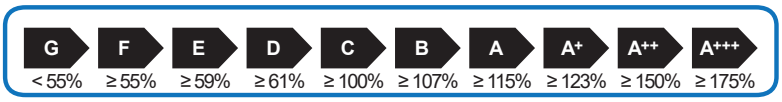
(3) If the Cdh is not determined by measurements, the default degradation coefficient is Cdh = 0.9.

14.3 Package sheet

Outdoor sensor included in the combined package	
Controller class	II
Contribution to seasonal efficiency	2%

Modulating room thermostat references (outdoor sensor included in the package)	076310 (Room thermostat UA55)
Controller class	VI
Contribution to seasonal efficiency	4%

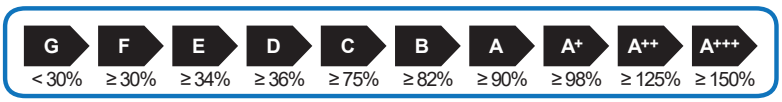
☞ **Range 35°C**



Product name	**Loria duo 6004**		**Loria duo 6006**		**Loria duo 6008**		**Loria duo 6010**	
Reference	**522 963**		**522 964**		**522 965**		**522 966**	
Seasonal space heating energy efficiency of heat pump	181%		186%		166%		154%	
Type of temperature control : - Outdoor sensor (included in the package) - Modulating room thermostat (outdoor sensor included in the package)	class II -	- class VI	class II -	- class VI	class II -	- class VI	class II -	- class VI
Bonus	2%	4%	2%	4%	2%	4%	2%	4%
Seasonal space heating energy efficiency of package **under average climates**	183%	185%	188%	190%	168%	170%	156%	158%
Package energy class	A+++	A+++	A+++	A+++	A++	A++	A++	A++
Seasonal space heating energy efficiency of package **under warmer climates**	238%	240%	236%	238%	234%	236%	203%	205%
Seasonal space heating energy efficiency of package **under colder climates**	NA							

The energy efficiency of the combined product described herein may not correspond to its actual energy efficiency once installed in a building, as this efficiency is influenced by other factors such as heat loss in the distribution system and the dimensioning of the products in relation to the size and characteristics of the building.

☞ **Range 55°C**



Product name	**Loria duo 6004**		**Loria duo 6006**		**Loria duo 6008**		**Loria duo 6010**	
Reference	**522 963**		**522 964**		**522 965**		**522 966**	
Seasonal space heating energy efficiency of heat pump	127%		128%		124%		114%	
Type of temperature control : - Outdoor sensor (included in the package) - Modulating room thermostat (outdoor sensor included in the package)	class II -	- class VI	class II -	- class VI	class II -	- class VI	class II -	- class VI
Bonus	2%	4%	2%	4%	2%	4%	2%	4%
Seasonal space heating energy efficiency of package **under average climates**	129%	131%	130%	132%	126%	128%	116%	118%
Package energy class	A++	A++	A++	A++	A++	A++	A+	A+
Seasonal space heating energy efficiency of package **under warmer climates**	157%	159%	155%	157%	163%	165%	132%	134%
Seasonal space heating energy efficiency of package **under colder climates**	NA							

The energy efficiency of the combined product described herein may not correspond to its actual energy efficiency once installed in a building, as this efficiency is influenced by other factors such as heat loss in the distribution system and the dimensioning of the products in relation to the size and characteristics of the building.

This appliance conforms to:

- the low voltage directive 2014/35/UE, under standard EN 60335-1, EN 60335-2-40, EN 60529 and EN 60529/A2 (IP),
- the electromagnetic compatibility directive 2014/30/UE,
- the machinery directive 2006/42/EC,
- the directive for pressurised equipment 2014/68/UE,
- the eco-design directive 2009/125/EC,
- the energy labelling directive 2010/30/EC,

This appliance also complies with:

- decree No. 92-1271 (and its modifications) relating to certain refrigeration fluids used in refrigeration and air conditioning equipment.
- regulation 842/2006 of the European parliament on certain fluorinated greenhouse gases.
- the standards relating to the product and the testing methods used: Air-conditioners, refrigeration units and heat pumps with compressor driven by electric motor for heating and refrigeration EN 14511-1, 14511-2, 14511-3, and 14511-4.
- standard EN 12102: Air-conditioners, heat pumps and dehumidifiers with compressor driven by electric motor. Measurement of airborne noise. Determination of acoustic power level.

012

Keymark Certification :
012-013 - Loria duo 6004 / 012-014 - Loria duo 6006 / 012-015 - Loria duo 6008

This unit is identified by this symbol. It means that all electrical and electronic products must not be included in household waste.
A specific recycling system for this type of product has been set up in European Union countries (*), Norway, Iceland and Liechtenstein.
Do not try to dismantle this product yourself. It may have damaging effects on your health or on the environment.
Reprocessing of the refrigerant, lubricant and other parts may be performed by a qualified installer in compliance with the local and national legislation in force.
This unit must be recycled by a specialised service and in no case may it be thrown away with household waste, rubble or in a landfill.
Please contact your installer or local representative for more information.

* Depending on the national regulations of each member state.

Date of commissioning:

Address of your heating installer or customer service.

atlantic-comfort.com
Société Industrielle de Chauffage
SATC - BP 64 - 59660 MERVILLE - FRANCE

RC Dunkirk - Siren 440 555 886
Equipment subject to modifications without notice - Document not binding.