



CETHEO



EN

Installation manual and comissioning



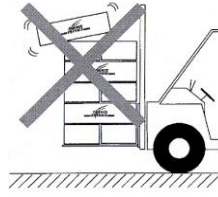
Transport and storage



NE PAS MOUILLER.



NE PAS MONTER DESSUS.



NE PAS LAISSER LES
EMBALLAGES LIBRES
DURANT LE TRANSPORT.



NE PAS TRANSPORTER TOUT
SEUL L'APPAREIL SI SON POIDS
DÉPASSE 35 KG.

Special feature of CETHEO

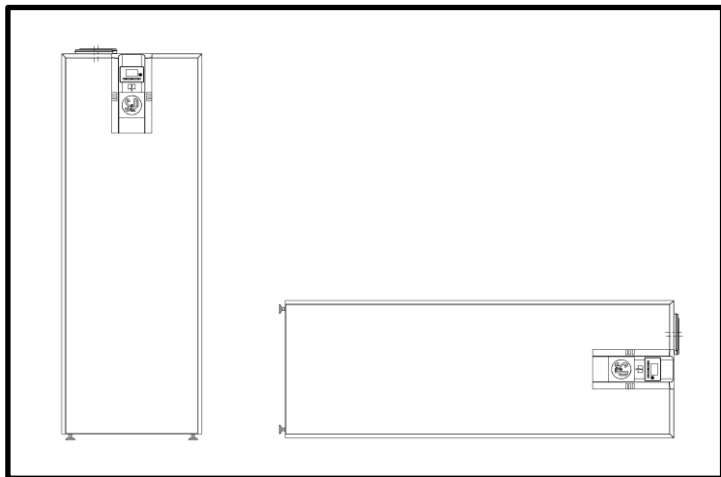
The CETHEO contains a thermodynamic system equipped with a rotary compressor. This technology requires essential rules to be followed during transport and handling of the product.

To ensure that the product functions correctly and is reliable after transporting, CETHEO packaging is equipped with a tilt indicator.

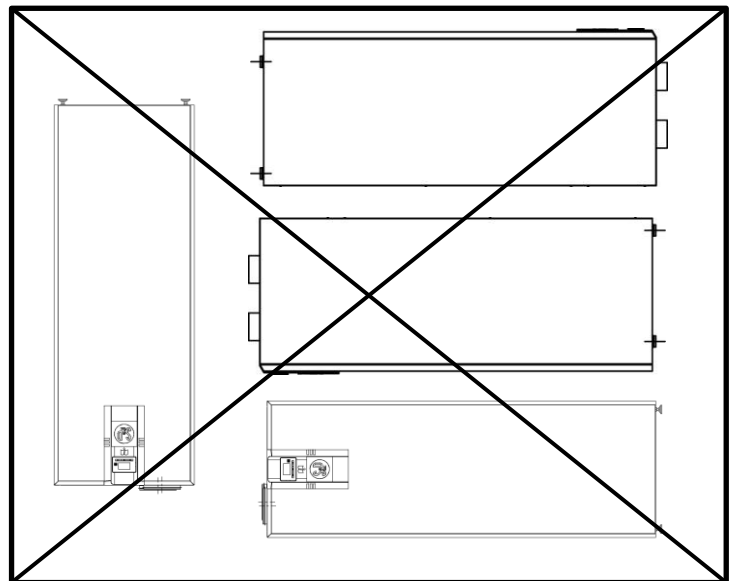
The manufacturer's warranty shall not apply if the tilt indicator result is positive (transport and handling rules not followed).

Transport, storage and maintenance rules

It is preferable to transport or handle the CETHEO in a vertical position. It may, however, be laid horizontally (90° max.) from time to time during handling, while respecting the sense as indicated below. A period of 24 hours must elapse before the CETHEO is started up:



OK



NOK



The CETHEO is equipped with a system for displaying whether the product has been laid in a non-authorized sense. The warranty may under no circumstances be applied if the product proves to have been transported in inappropriate conditions.

The CETHEO must be stored in a place sheltered from the weather, dry and at temperatures between -20°C and +50°C. It is strictly forbidden to stack the CETHEO.

In view of its weight, the CETHEO must be handled by two people.

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Before starting any work, switch your appliance off.
Under normal functioning, never stop the ventilation system.
When the appliance is not used for a long period, it is essential to drain the tank.

1- GENERAL INFORMATION

VMC + Thermodynamic water heater

1.1 - Introduction

This manual is intended for the use of the CETHEO and its peripherals (network, vents, etc.). It is designed to provide maximum clarity and safety for the design, installation and duration of use. The products are constantly evolving and so Soler & Palau reserves the right to modify this manual without prior notice.

1.2 – Warranty and liability

Warranty

The CETHEO warranty is 2 years for the components and 5 years for the tank. This warranty comes into effect from the date of purchase, and includes the free delivery of spare parts.

The warranty does not cover:

Installation and removal costs

Defects that, in the opinion of Soler & Palau, are due to improper installation, handling, neglect or accident.

Defects that arise as a result from operations or repair performed by a third party without permission from Soler & Palau.

To return a defective part, the user should contact their installer.

Liability

The CETHEO is designed for systems providing air renewal and domestic hot water production for individual residences. Soler & Palau is not responsible for damage caused by:

- Improper use,
- Normal wear of components,
- Failure to follow the instructions in this manual concerning safety, use and installation,
- The use of parts not supplied by Soler & Palau.

1.3 - Safety

Normes générales de sécurité

The CETHEO has an electrical thermodynamic system using high pressure refrigerant gas and a ventilation system equipped with an electric motor that may constitute a hazard during installation and starting up. For these reasons, the CETHEO must be handled, installed, started up and maintained by qualified personnel.

Following installation, there should be no risk to safety, health and the environment according to EC directives. This also applies to other products used in the installation.

The following general guidelines are important:

Follow the safety instructions to avoid damaging the motorised fan, the heat pump, the hot water tank and the personnel.

The technical characteristics described in this manual may not be changed

None of the CETHEO components can be modified.

The CETHEO must be supplied with single phase AC 230 V / 50 Hz.

For the installation to comply with EC directives, the CETHEO must be connected to the electricity grid in accordance with current standards.

The device must be installed so that under normal operating conditions, there is no risk of contact with moving parts and power.

The CETHEO meets the legal requirements for electrical equipment.

Before working on the machine, always turn the power off. Use appropriate tools.

Use the appliance only for the purpose for which it is intended.

2 – TECHNICAL INFORMATION

2.1 – General definition

CETHEO provides ventilation and hot water for the house. It extracts the air from utility rooms (Kitchen, Bathroom, Washroom and WC). This hot air at constant temperature throughout the year ($>20^{\circ}\text{C}$) passes through the heat pump (HP) before being ejected to the exterior.

On passing through the HP, the air gives up its energy, resulting in a high and stable coefficient of performance (COP). This is achieved whatever the outside conditions.

2.2 - Description of the CETHEO

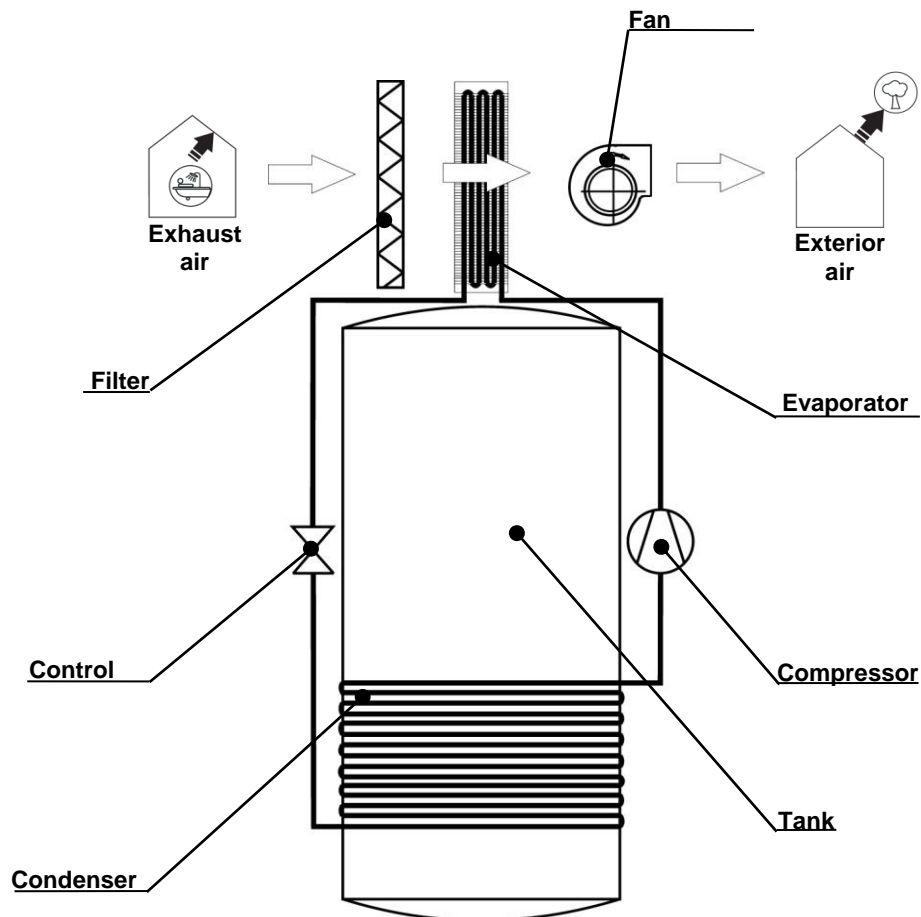


Fig. 1: Operating principle of CETHEO

2.3 - Special feature of the CETHEO:

The CETHEO is equipped with a bypass system providing two functioning modes. Ventilation alone (Figure 2) or Ventilation + HP (Figure 3). In ventilation alone mode, the extracted air bypasses the filter and the heat pump system. With this system, the power consumed by the fan is reduced and the lifetime of the filter is extended by about 60%.

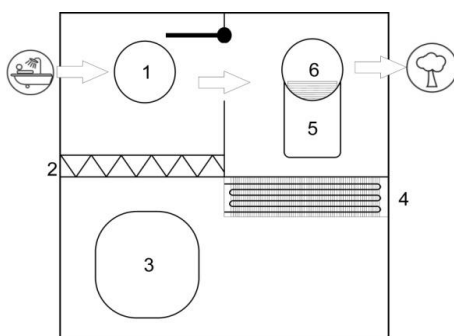


Fig. 2: Operation alone
Ventilation

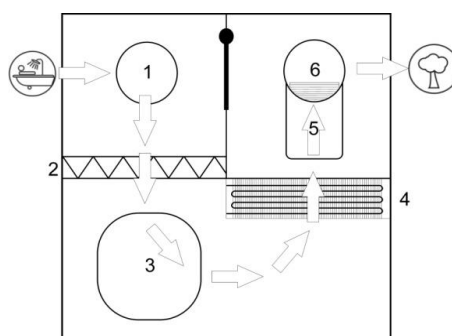


Fig. 3: Operation
Ventilation + PAC

1. Extraction point
2. Filter
3. Compressor
4. Evaporator
5. Fan
6. Expulsion point

2.2 – Description of the CETHEO

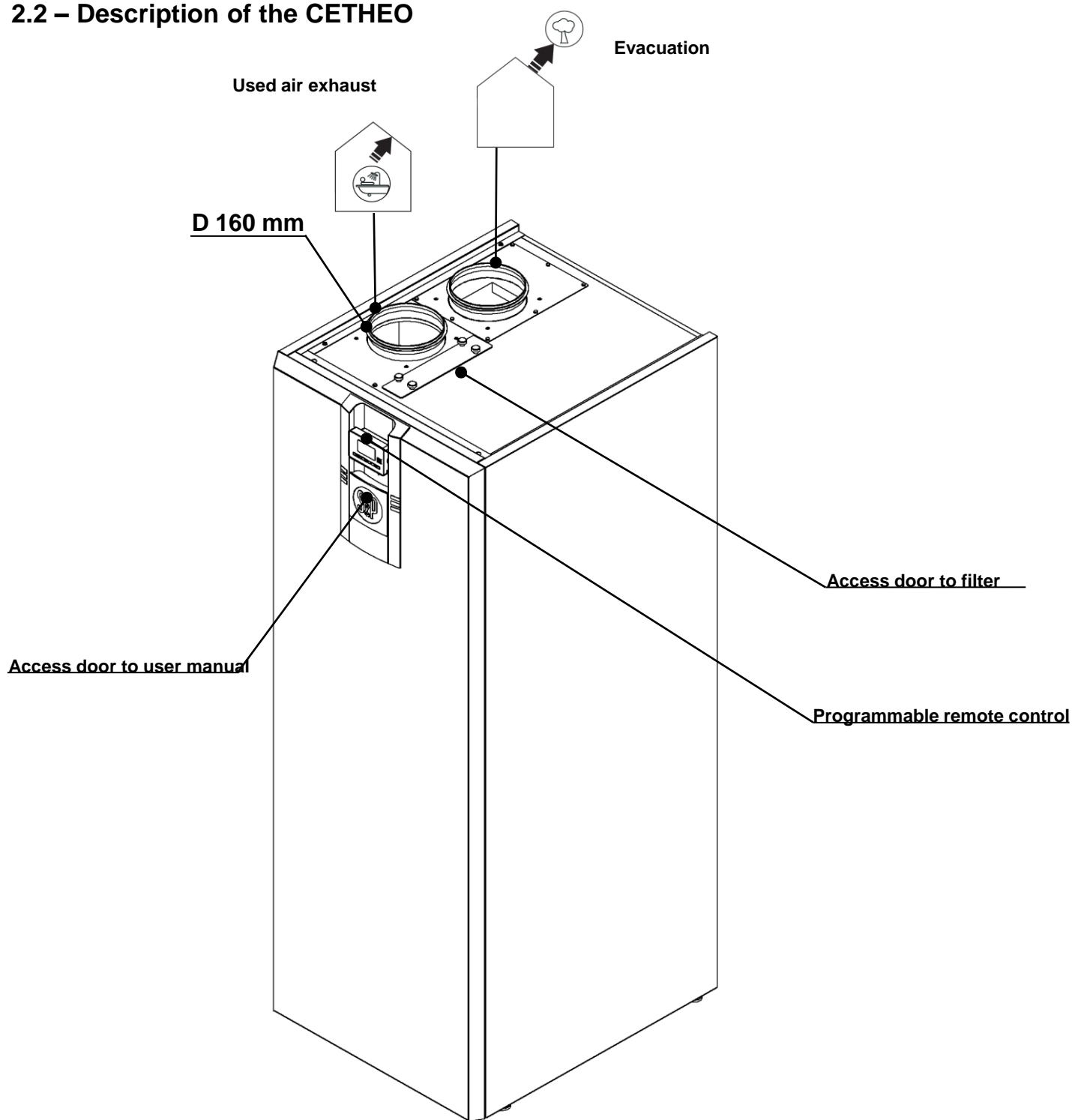
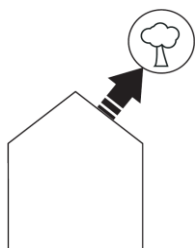


Fig. 4: Description of the main CETHEO components



Exhaust air from the house:

This spigot is to connect the exhaust air duct from the house. To avoid heat loss and to best optimise the performance of your system, ducts should be insulated and pass through the heated area.



Evacuation:

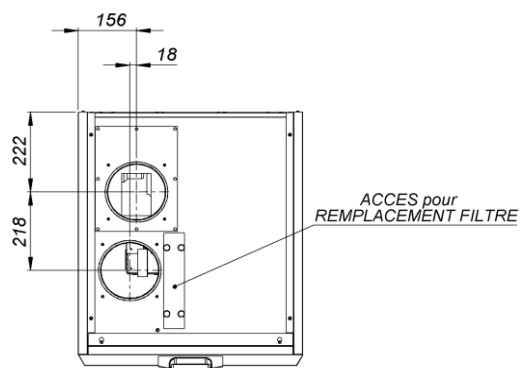
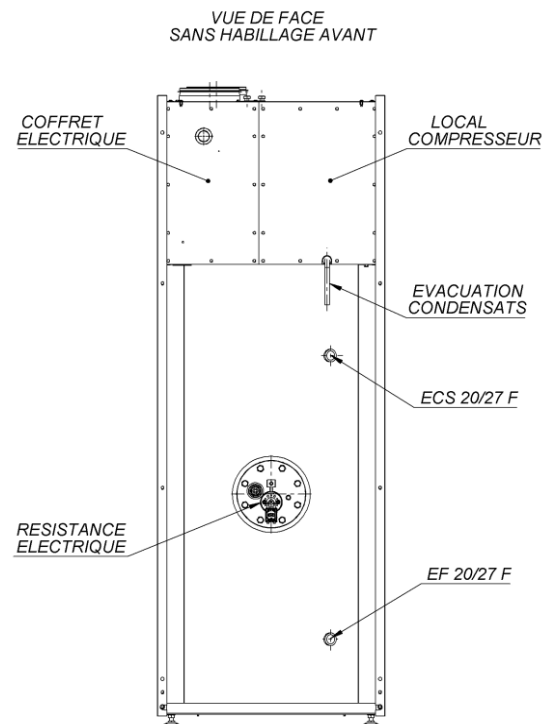
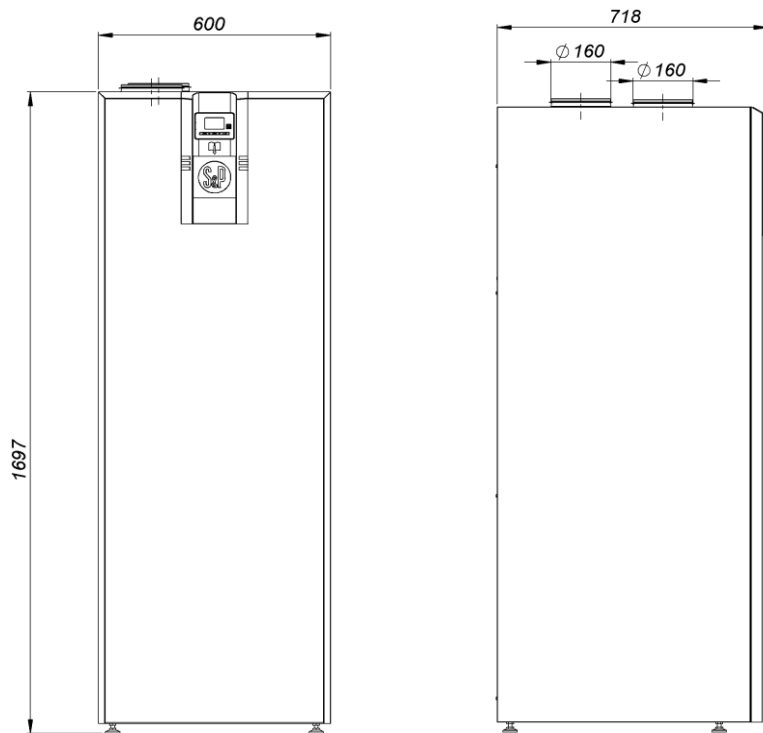
This spigot is to connect the exhaust duct for the exhaust air from inside the house towards the outside.

This duct must be sealed and insulated to prevent condensation on the outside and inside.



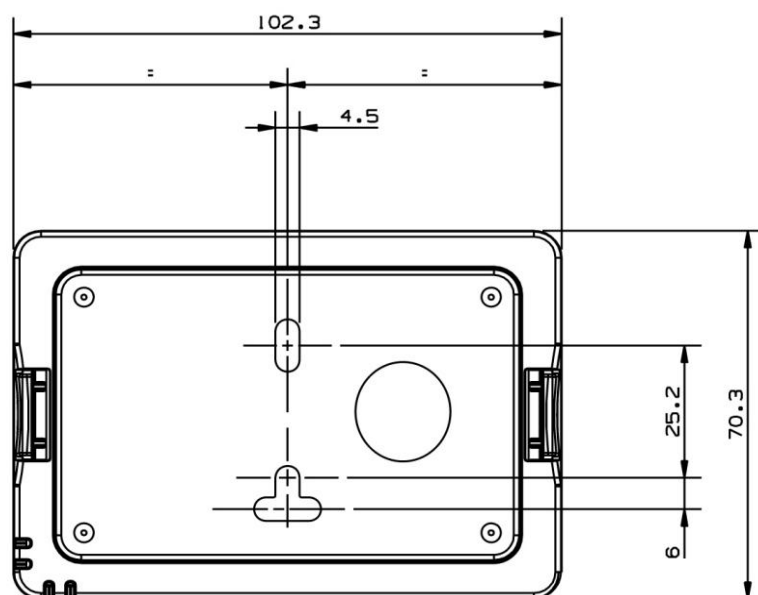
2.3 – Dimensional characteristics:

2.3.a - CETHEO:



Weight: 180 Kg :

2.3.b – Remote control:



3 - INSTALLATION

The CETHEO can be transported or moved about on its pallet using a pallet truck.

The CETHEO must

- be placed on a flat floor (to avoid any problems in evacuating the condensates).
- be placed on an area of at least depth 750 depth x 650 length able to support a load of at least 380 kg.
- be in a room with a ceiling height greater than 2.2 m.
- be placed so that access to the front panel is unobstructed (to allow work on the active parts of the CETHEO).
- be placed as close as possible to the take-off points (to minimise losses).
- be placed as far as possible from the sleeping quarters and in a room with sound insulation on the walls.
- be placed in a frost-free room.

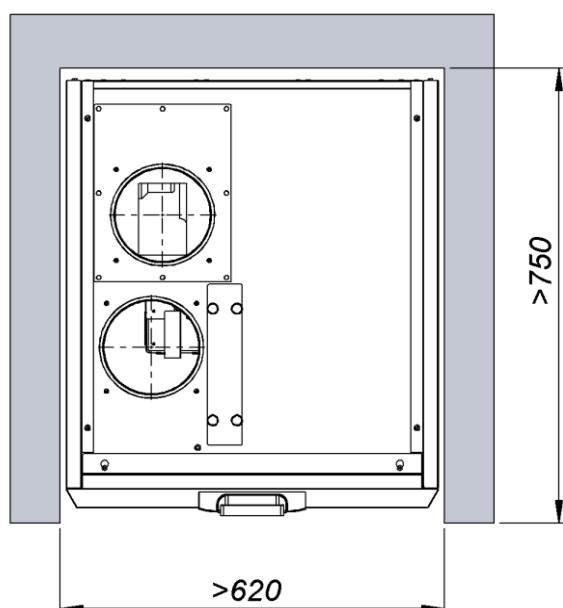


Fig. 5 : Minimum dimensions excluding safety unit, hot and cold water distribution circuit, condensate and safety unit discharge waste pipe.

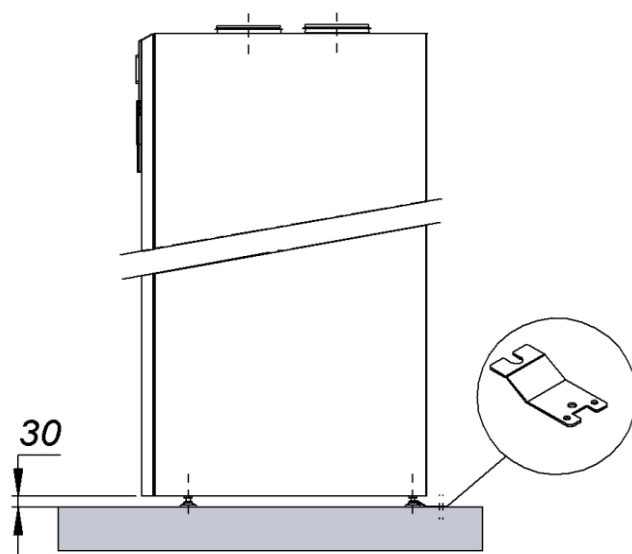


Fig. 6 : Allow for Cold Water supply and Hot Water outlet. Fix the CETHEO to the floor using one of the transport brackets.



The CETHEO must be placed in the heated area of the individual residence meeting The NFC 15-100 criteria.

4 – HYDRAULIC CONNECTIONS:

- To avoid damage to your installation, check at each step that no metal or other particles have got inside the tank.
- Check that the cold water pressure is less than 5 bars. Otherwise, fit a pressure reducer.
- The recommended cold water pressure is 3 to 4 bars.
- Remove the front panel by loosening the two screws (1*) at the upper part of the CETHEO.
- Hot and cold water inlets and outlets can be placed at the rear or on the left or right sides.

• Hot water connection:

- To isolate stray currents and avoid the phenomenon of electrolysis, it is essential to screw on the dielectric connector (2) supplied. The warranty will not apply to corrosion of the screw threads on the take-off points if this component is not



• Cold water connection:

- The connection can be made using a new safety unit, NF, set to 7 bars (not supplied).
- There must be no isolation valve between the safety unit and the tank.
- Place an isolation valve upstream of the safety unit.
- It is forbidden to fit a flexible between the safety unit and the tank.
- Provide an outlet connection (F32) for waste water, connected to the safety unit by a screw-on siphon (water seal 50 mm).



For better protection of the tank of your CETHEO, fit an expansion vessel.

• Condensate connection:

- Passing through the HP evaporator, the air extracted from the house cools, resulting in condensation that has to be led away.
- Use a transparent flexible tube of the "Tubclair" type with internal diameter 12 mm (allows water flow to be visually checked).
- The tube is connected directly to the take-off point provided (F12 mm external diameter) out from the condensate tray.
- Make a siphon loop with the flexible tube as shown in figure 7.
- Pass the flexible tube through one of the two orifices used for transport (F32 mm internal diameter) to the rear part of the CETHEO.
- Connect the other end to the waste water circuit.



The CETHEO must be placed in the heated area of the individual residence meeting the NFC 15-100 criteria.

4- Hydraulic connections (continued):

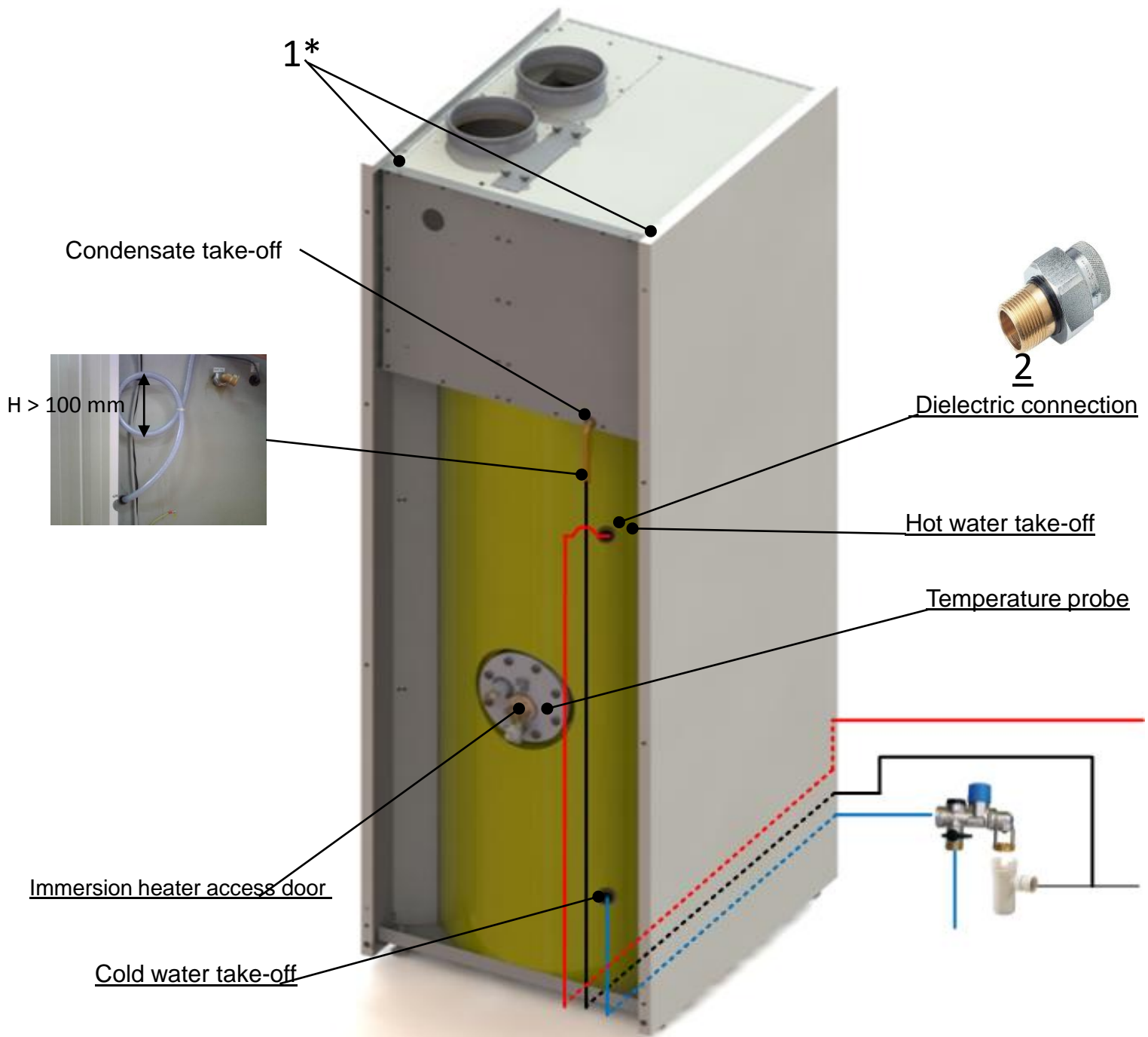


Fig. 7: Hydraulic connection CETHEO

1: Remove the front panel by loosening the two screws (1) at the upper part of the CETHEO*



The CETHEO must be placed in the heated area of the individual residence meeting the NFC 15-100 criteria.

5 – CONNECTION TO VMC CIRCUIT:

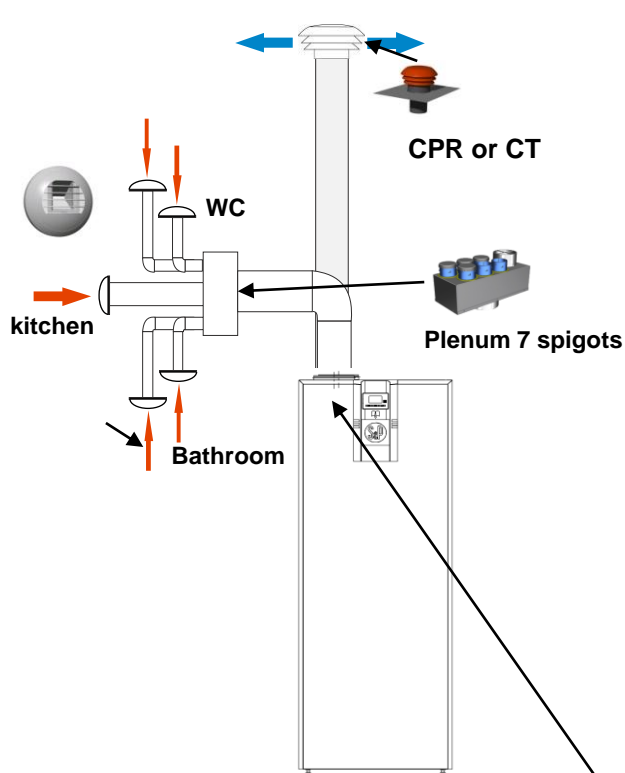


Fig. 8:
Example of "Divided" assembly

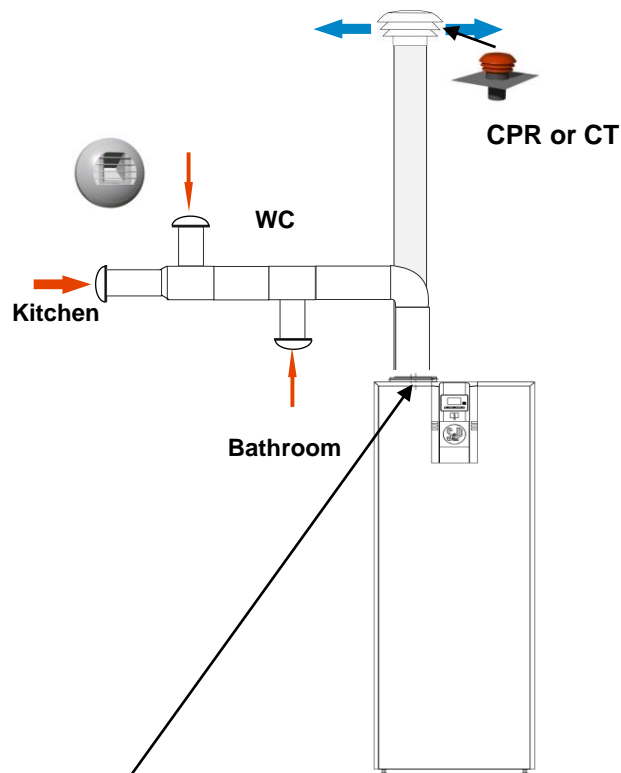
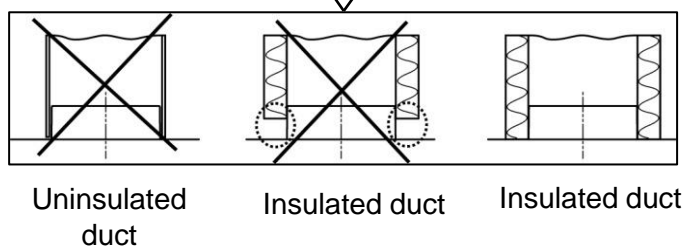
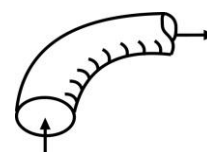
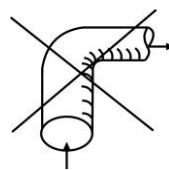


Fig. 9:
Example of "Distribution" assembly



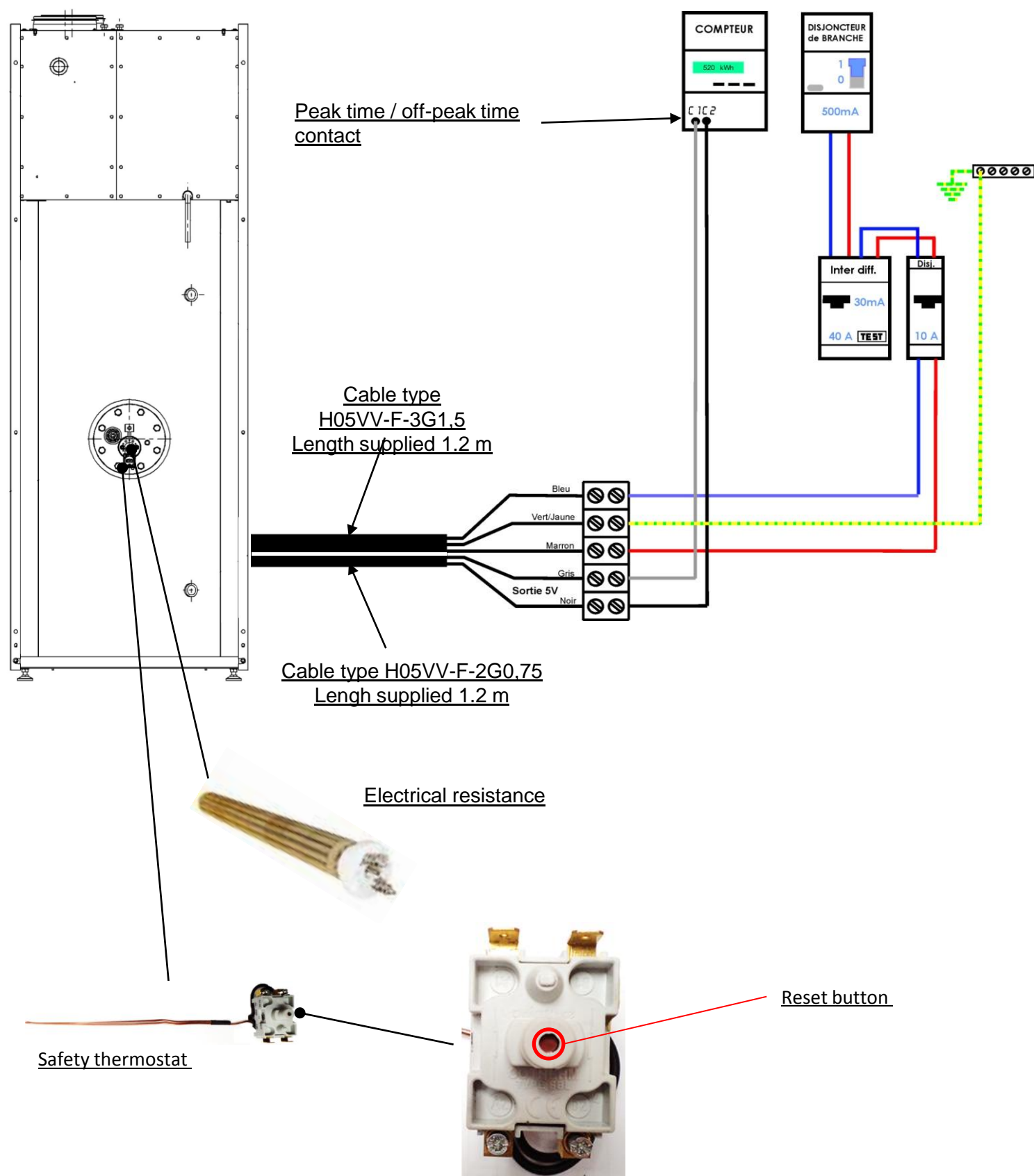
- The ducts must be insulated and perfectly inserted. Otherwise, at each thermal bridge there can be condensation inside the pipe in the extraction part (between the vents and the CETHEO) and in the exterior part in the discharge part (between the CETHEO and the chimney cap or the façade grille).
- For the extraction circuit, it is preferable to use 50 mm or 25 mm insulated ducting placed under the insulation.
- When using insulated flexible duct, it is essential to correctly tense it and to give elbows a large radius. Otherwise, the ventilation flow rates may not be sufficient and will affect first of all the HP functioning and the air quality in the house, and subsequently the appliance frame (with mould).



MAKE SURE THAT FLEXIBLE DUCTING IS WELL TENSED WITH THE PROPER RADII OF CURVATURE

6 –CHARACTERISTICS AND ELECTRICAL CONNECTIONS

Connect the cable supplied to the mains using a sealed connection box.



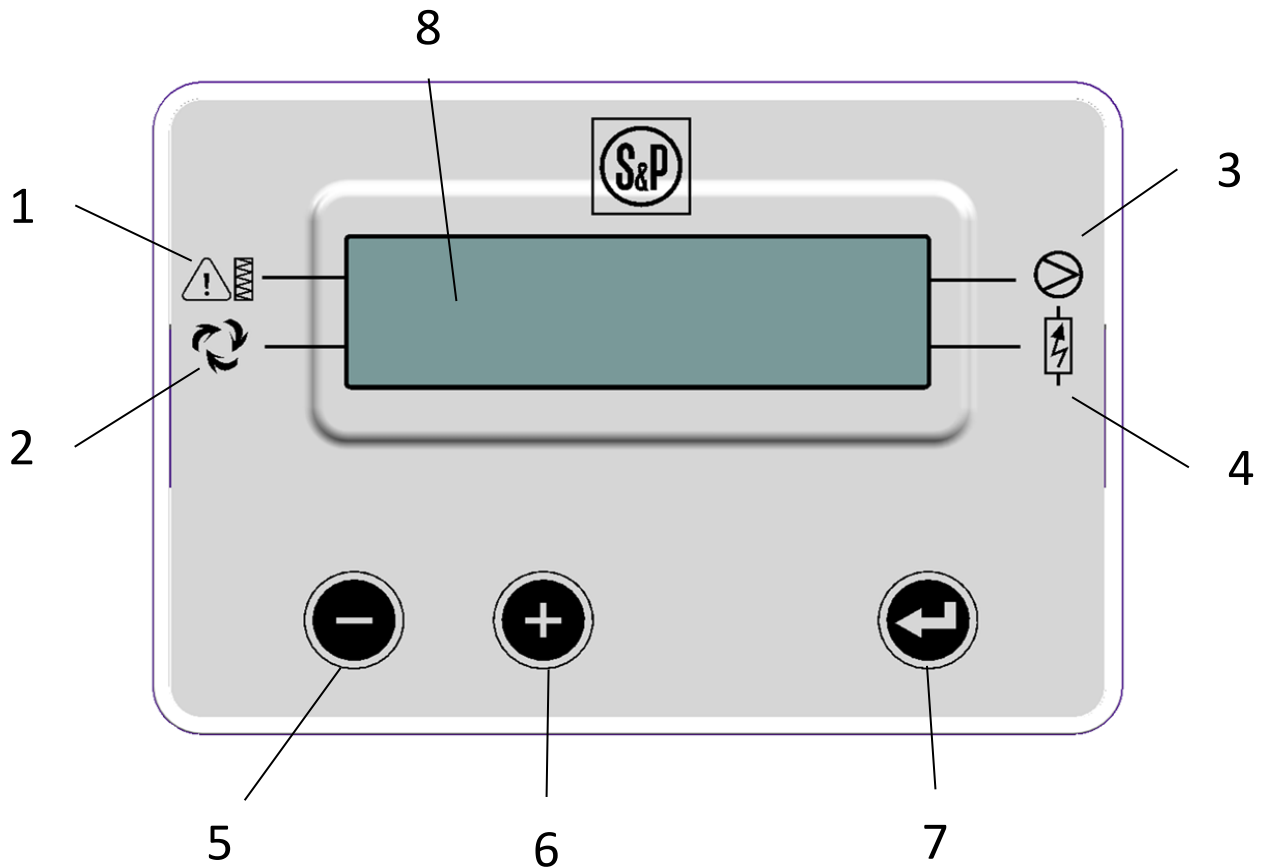
Do not start up the CETHEO until the finalised air circuit (recirculation grille or roof outlet, extraction vents, circuit and filter fitted) and the tank is full.

Characteristic	Unité	Valeur
- Voltage	V	230
- Frequency	Hz	50
- Nominal compressor current	A	1,2
- Nominal fan current	A	0,27
- Start-up current	A	6,4
- Maximum compressor power consumption	W	400
- Power electrical resistance	W	1 500
- Maximum fan power consumption	W	40
- Maximum power consumption	W	1900
- Compressor protection fuse (aM)	A	2
- Resistance protection fuse (gG)	A	8
- Remote control fuse (gG)	A	1
- Protection CETHEO not supplied (gG)	A	10
- maximum ambient temperature	°C	50
- Maximum temperature exhaust air	°C	35
- Minimum temperature exhaust air	°C	12
- Minimum airflow	m ³ /h	31
- Maximum airflow	m ³ /h	265
- Power supply	mm ²	3G1,5



Do not start up the CETHEO until the finalised air circuit (recirculation grille or roof outlet, extraction vents, circuit and filter fitted) and the tank is full.

7 –REMOTE PROGRAMMING CONTROL DESCRIPTION:



- 1 – Filter change alarm
- 2 – Anti-legionellosis mode
- 3 – Compressor functioning mode
- 4 – Immersion heater functioning mode
- 5 – Up/down key
- 6 – Up/down key
- 7 – Validation key
- 8 – Up/down key

7.1 . Programming remote control functions: (1)

7.1 .a- Adjusting settings

Setting the reference time and day:

- Press keys 5 and 6 simultaneously and the year is displayed. To modify it press the validation key 7. The year blinks.
Set the required year with keys 5 or 6. Validate with key 7.
- Press key 6 and the month is displayed. To modify it press the validation key 7. The month blinks.
Set the required month with keys 5 or 6. Validate with key 7.
- Appuyer Press key 6 and the day is displayed. To modify it press the validation key 7. The day blinks.
Set the required day with keys 5 or 6. Validate with key 7.
- Press key 6 and the hour is displayed. To modify it press the validation key 7. The hour blinks.
Set the required hour with keys 5 or 6. Validate with key 7.
- Press key 6 and the minutes are displayed. To modify them press the validation key 7. The minutes blink.
Set the required minutes with keys 5 or 6. Validate with key 7.

Setting the anti-legionellosis cycle timing (Non-obligatory):

- After validating the minutes setting with key 7, press key 6 and "Antilegio timing" is displayed followed by the value 0 corresponding to no cycle running. To activate it press the validation key 7. The value 0 blinks

To modify it press the validation key 6. The selected value corresponds to the number of days between two cycles. Validate with key 7.

Setting the load-shedding function:

- After validating the anti-legionellosis cycle by validating with key 7, press key 6 and "Load shedding" is displayed followed by the message "No" corresponding to the CETHEO not being subjected to the off-peak rate of the electricity supplier. To subject it press the validation key 7. The value "No" blinks

To modify it press the validation key 6. The value "Yes" is displayed. Validate with key 7.

Press key 6 and "Contact sense" is displayed followed by the message "NO" corresponding to Normally Open. To modify it to Normally Closed, press the validation key 7. 'NO' blinks.

To modify it press the validation key 6. The value NC is displayed. Validate with key 7.

Setting installer menu (Code 33):

After validating the load shedding function by pressing key 7, press key 6 and "Installer Menu" is displayed followed by the message "Yes". This sub-menu gives access through a code to the modification of certain CETHEO functioning and regulation settings. It also allows certain values measured by the probes to be read.

- Validate with key 7 and the message "Password" is displayed followed by the value 0 blinking. To enter the password, press key 6 until the code is reached then validate with key 7.

- After pressing key 7, the message "Air temperature" is displayed followed by the corresponding air temperature value measured by the probe (Example 20°C).

- After pressing key 6, the message "Gas temperature" is displayed followed by the corresponding refrigerant fluid temperature at the compressor inlet measured by the probe (Example 16°C).

- After pressing key 6, the message "HyTecs" is displayed, corresponding to the hysteresis applied to the domestic hot water temperature followed by the value "2". To modify it press the validation key 7. '2' blinks.

To modify it, press key 5 or 6 (Settings range from 2 to 10). Validate with key 7.

- After pressing key 6, the message "T Filter" is displayed corresponding to the time of notice for changing the filter before triggering of the alarm, followed by the value "14 days". To modify it press the validation key 7. "14 days" blinks.

To modify it, press key 5 or 6 (Settings range from 1 to 20). Validate with key 7.

- After validating the hysteresis with key 7, press key 6 and "T del" is displayed followed by the message "300 minutes" corresponding to the functioning time of the compressor without the set temperature being reached. To modify it, press validation key 7 and "300 minutes" blinks.

To modify it, press key 5 or 6 (Settings range from 180 to 300 minutes). Validate with key 7.

- After pressing key 6, the message "Quit? " is displayed followed by the option "Yes". To quit the installer menu press the validation key 7.

Manufacturer menu

After validating and displaying the settings in the installer menu by pressing key 6, "Manufacturer Menu" is displayed followed by the message "Yes". This sub-menu can only be accessed by S&P personnel.

7.1 .b – Day to day use of the remote control

Under normal functioning, the remote control displays the date and time alternately, the temperature of the water in the tank and the current functioning mode.

The CETHEO can display four functioning modes:

1. Normal mode:

Ventilation alone mode or Ventilation + hot water production by HP mode.

2. Boost mode:

Ventilation + hot water production by the compressor and / or the immersion heater activated manually by the user.

3. Anti-légionellosis mode:

Ventilation + hot water production by the compressor and / or the immersion heater activated manually by programming.

4. Stop/ Absence mode:

Ventilation alone mode. The user can deactivate hot water production permanently or occasionally with automatic re-starting after a set number of days (from 1 to 180 days).

The remote control also displays:

1. The filter alarm (1):

When the CETHEO detects the need to change the filter, the pictogram changes from green to black and indicates the number of days remaining before the HP is stopped day countdown).

If the filter is not changed before the allotted time and the HP stops, the error message E04 is displayed.



2. Anti-legionellosis Cycle (2):

When the anti-legionellosis cycle is running, the pictogram changes from green to black. This cycle cannot run between 2.00 am and 6.00 am.



3. Compressor Functioning mode (3):

When the compressor is running, the pictogram changes from green to black. It may blink during anti short-cycle periods.



4. Immersion heater Functioning mode (4):

When the immersion heater is on, the pictogram changes from green to black.



Daily remote control settings:

1. Change of set water temperature:

This setting is the temperature at which the CETHEO maintains the water in the tank. The factory value is 50°C.

To change this temperature just press key 5 to reduce it and key 6 to increase it (from 30°C to 62°C).

2. Stop / Absence / Holiday Mode:

To configure this mode, just press validation key 7. The message "Stop?" is displayed, followed by "yes". Validate with key 7. The message "Duration" is displayed, followed by "PERMANENT" blinking. After validating with key 7, the CETHEO will be in ventilation alone mode for an indeterminate period. By pressing key 6 the number of days before automatic restarting can be chosen. Validate with key 7. On restarting (manual or automatic), the CETHEO goes into BOOST mode automatically.

3. Boost mode:

To configure this mode, just press validation key 7. The message "Stop?" is displayed, followed by "yes". Validate with key 6. The message "Stop? " is displayed followed by "No". On validating with key 7 the message "Mode? " is displayed followed by "NORMAL". Validate with key 6. The message "BOOST" is displayed. Validate with key 7.

8 – COMISSIONING OF THE CETHEO

In order to commissioning your installation, it is necessary to follow the following process:

1. Check that all the installation components are in their proper place and connected:

- Air intake make with insulated duct and properly connected (do not use air intake fitted with protection guard),
- Supply discharge and extraction ducts make as insulated ducts and properly connected,
- Supply and extract values connected,
- Air discharge executed in insulated duct and connected to the exterior (use a roof ventilation terminal or a discharge outlet without protection guard),
- Very tight flexible insulated ducts and long-radius bends (if installed),



- Check that the spigots not used on the plenums are properly sealed off (if installed),
- Condensate exhaust properly connected (siphon),
- Check that all the connections are really airtight (on the Cetheo, on plenums and on plugs)
- Check the calibration of the electrical protector (10A)

2. Fill the tank

- Open the hot water taps in the installation,
- Open the isolation valve upstream of the safety unit and on the safety unit,
- Check that the draining valve on the safety unit is closed,
- Wait for water to come out through the hot water tap
- The tank is full.
- Check that all the tank connections are sealed (cold water, hot water, safety unit, etc.).

3. Switch on the CETHEO.

4. Check that the fan has started.

5. Adjust the remote control settings (date, time, anti-legionellosis mode, load shedding),

6. Adjust the set temperature (if necessary),

7. Check that the immersion heater pictogram is displayed and 5 minutes later, the compressor pictogram,

8. If an error message is displayed, see section 9,

9. While the temperature is rising, any flowing heard in the safety unit is normal.

9 –CETHEO ALARM CODES:

Whatever error code is displayed, it is essential to contact your installer.

Alarm code	Cause	Effect	Production ECS	Reset
E01	High pressure switch: - No water in the tank - Température d'eau anormalement élevée - Abnormally high air temperature	PAC off Maintains VMC function	Electric Boost	Manual
E02	Temperature air sensor - Air temperature too low	PAC off Maintains VMC function	Electric Boost	Automatic
E04	Pressure switch filter blocked - Filter blocked	PAC off Maintains VMC function	Electric Boost	Automatic
E05	Défaut ventilateur - Réseau inadapté - Ventilateur défectueux	PAC off Maintains VMC function	Electric Boost	Automatic
E06	Alarme position By-pass - Contact défectueux - Moteur By-pass défectueux	PAC off Maintains VMC function	Electric Boost	Automatic

10 – CETHEO MAINTENANCE:



Before starting any work, switch your appliance off.

1- Maintenance by the user:

The CETHEO does not require any particular periodic maintenance. As for all boilers, it is recommended to work the safety unit once or twice a month to free any scale deposit and make sure it is not blocked. To do this, close the shut-off valve (1) on the safety unit and open the purge with the valve operating button.



-1-



-2-

If your water is hard (Hardness between French 20 and 25°f, UK 14 and 17.5 °e, US 11.7 and 14.6 gr/gal) you are recommended to install a water softener. With a water softener, the hardness must remain higher than French 15°f, UK 10.5 °e, US 8.8 gr/gal . Use of a water softener carries no modification of our warranty, provided that it is:

- NF certified
- installed and adjusted according to good practice,
- checked and maintained regularly

Criteria for aggressive water must fall within those set by French plumbing standard DTU 60.1.

When not in use for an extended period (> 180 days), it is recommended to drain the tank:

- Turn off the electricity supply at the switchboard,
- Turn off the water at the mains or on the specific supply to the CETHEO,
- Open the hot water tap,
- Open the safety group drain tap.

1- Maintenance by a professional:

The CETHEO does not require any particular periodic maintenance. As for all boilers, it is recommended to work the safety unit once or twice a month to free any scale deposit and make sure it is not blocked. To do this, close the shut-off valve (1) on the safety unit and open the purge with the valve operating button.

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