

EFICIENCIA ALTERNATIVA

THERMBOIL

SERIE-E

Installation and user guide

Thermboil
Serie E
300 liters



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This manual is intended for the installer and the end user, who will be responsible for installing and using the thermodynamic equipment respectively.

This manual is an integral and essential part of the product. It must be kept with care and must always accompany the appliance even if it is transferred to another owner or user and / or transferred to another installation.

For correct and safe use of the appliance, the professional technician in charge of installing the product and the user must carefully read the instructions and recommendations contained in this manual because they provide important specific instructions for each recipient regarding the safety of the installation. use and maintenance.

In order to improve the quality of its products, Energy Panel reserves the right to modify the data and contents of this manual, without prior notice.

1. General Safety Warnings.

- To avoid material and physical damages, this instructions must be followed. A wrong performance from not following the instructions in this document can cause damages.
- Installation is on purchaser responsibility. Before intallation and usage, read carefully the supplied information. Manufacturer declines any responsibility related to damages caused by a wrong installation and unfollow the instructions detailed in this document.
- This equipment must be installed by a qualified installer that has knowledge in national and international regulations, as experience in this kind of installations. A wrong installation can cause leaks and breakdowns, etc.
- Install the equipment in the following places which may bring about the malfunctioning thereof (even if it is unavoidable, consult the supplier): areas with corrosive gases, factories where the electrical voltage tries out strong fluctuations, places with strong electromagnetic waves, places with inflammable materials or gases, other special environments.
- The electrical connection must be performed in agreement with the specifications in the respective paragraph, according to current regulation.
- Verify that the electrical supply correspond to the units specifications before turning the system on.
- Use electric protection (switch, circuit breaker, ...)
- The unit must be connected to the properly grounded circuit to avoid any risk derived from an isolation failure.
- It is essential to properly install the safety valve that is supplied with the equipment, and check that it works correctly.
- Set aside enough space for installation and maintenance.
- The equipment shall always remain in a vertical position during transport, transfer and installation.
- The support surface shall be flat, bear the weight of the unit and be ready for the installation of the unit without increasing the noise or the vibrations.
- The installation site shall allow the connections of pipes and wiring
- Maintenance repairs and tasks shall be carried out by a professional technical service. An incorrect maintenance task or repair may bring about gas and water leaks, electrical discharges, etc
- Use only original replacement items. The use of another type of components annuls the warrantee.
- Disconnect the mains power supply prior to any maintenance operations or prior to handling any internal part of the unit.
- A filter of mesh shall be set in the hydraulic pump and in the exchanger water inputs.
- The equipment must not be installed outside. Only the thermodynamic panel can be placed outside and always kept protected the accumulator and thermodynamic case.
- Failure to comply with these recommendations will invalidate the warranty or in case the unit has been tampered with by unauthorized personnel.

2. Gas R134a characteristics.

R134a gas is a NON FLAMABLE gas, it has not flashpoint, is not subject to transporting regulation of flammable gases. R134a gas is type HFC, a zeotropic mix.

Compressors that work with this kind of gas must have polyester lubricant oil, the viscosity level is determined by the compressor manufacturer.

Is an "Ecological" gas, because it is chlorine free.

Chemical composition of this gas rules its ozone layer destruction potential. Gas R134a is not aggressive for the skin, eyes, mucous and does not produce skin sensibility.

Has a low toxicity level even in a one and only exposition as in recurrent, is not mutagenic or cancerigen.

R134a is a low toxicity level substance. LCL0 inhalation index is about 4 hours in rats is below 500.000 ppm and NOEL related to heart diseases is near to 75.000 ppm. Being exposed for 104 weeks to a concentration of 10.000 ppm has shown no effect. R134a containers must be kept in fresh and ventilated environments away from hotspots. R134a vapours are heavier than air and accumulates close to the bottom.

Data to keep in mind:

A) Risks identification

- The effects on health are not harmful.
- Possible physical and chemical risks is a thermal decomposition in toxic and corrosive products.

B) First aids

- When an operator inhales this gas, must go to an open space. If its necessary, breath assistance must be provided
- In contact with skin, wash with plenty water.
- In contact with eyes, clear with plenty of water and for a long period, if irritation persists, call your ophthalmologist.
- In case of ingest will require hospitalization.

C) Fire protection

- Specific risks thermal decomposition in fluorinated and chlorine, toxic and corrosive products as Hydrogen chloride gas, Hydrogen fluoride, Phosgene, Carbon oxides...
- Eliminate any source of sparks and ignition. DO NOT SMOKE.

D) Accidental leaks

- Must take cautions against skin, eyes contact and vapour inhalation.
- In a closed place must be ventilation or a air circulation system.

E) Personal protections

- Staff in contact with gas must use security gloves and glasses.

F) Toxicologic information

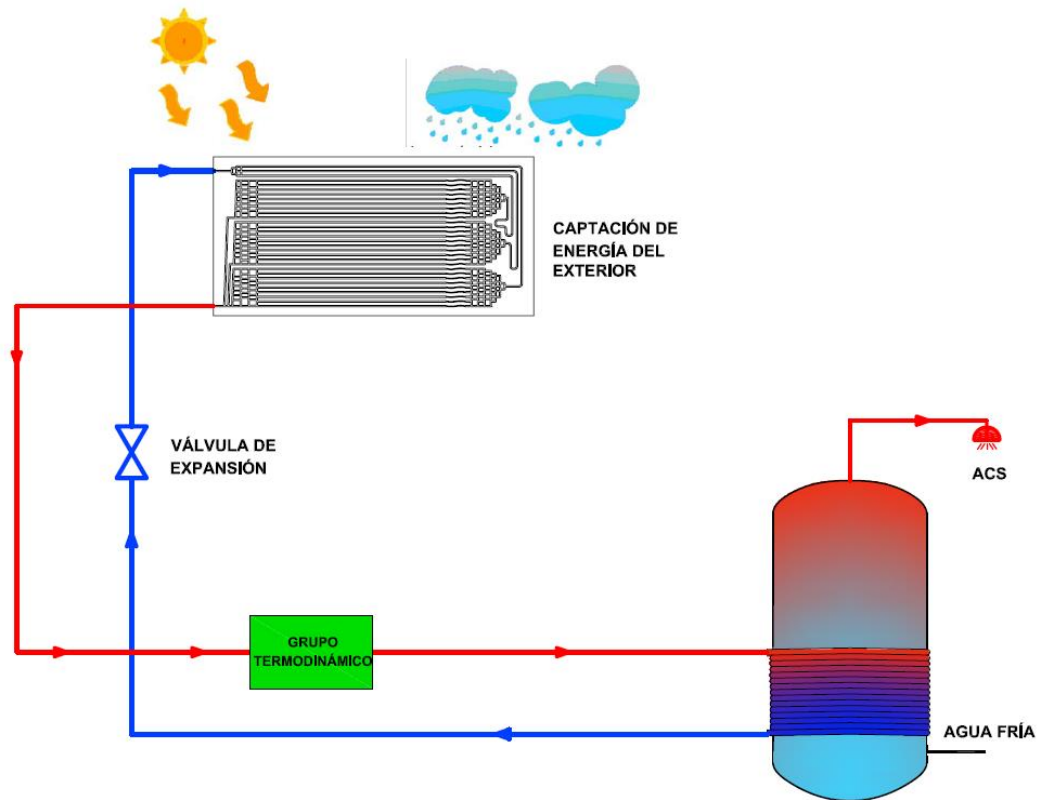
- In case of inhalation poisoning, can exist effects like: headache, somnolence, dizziness. The product can cause by vapour accumulation or inhalation: loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen: mortal risk.

G) Ecological information

- It evaporates easily.
- Its ozone destruction potential is 0,0.
- Global Warming Power or GWP (Green house effect) is 1430.
- The waste can be recycled or incinerated.

3. Operating principle.

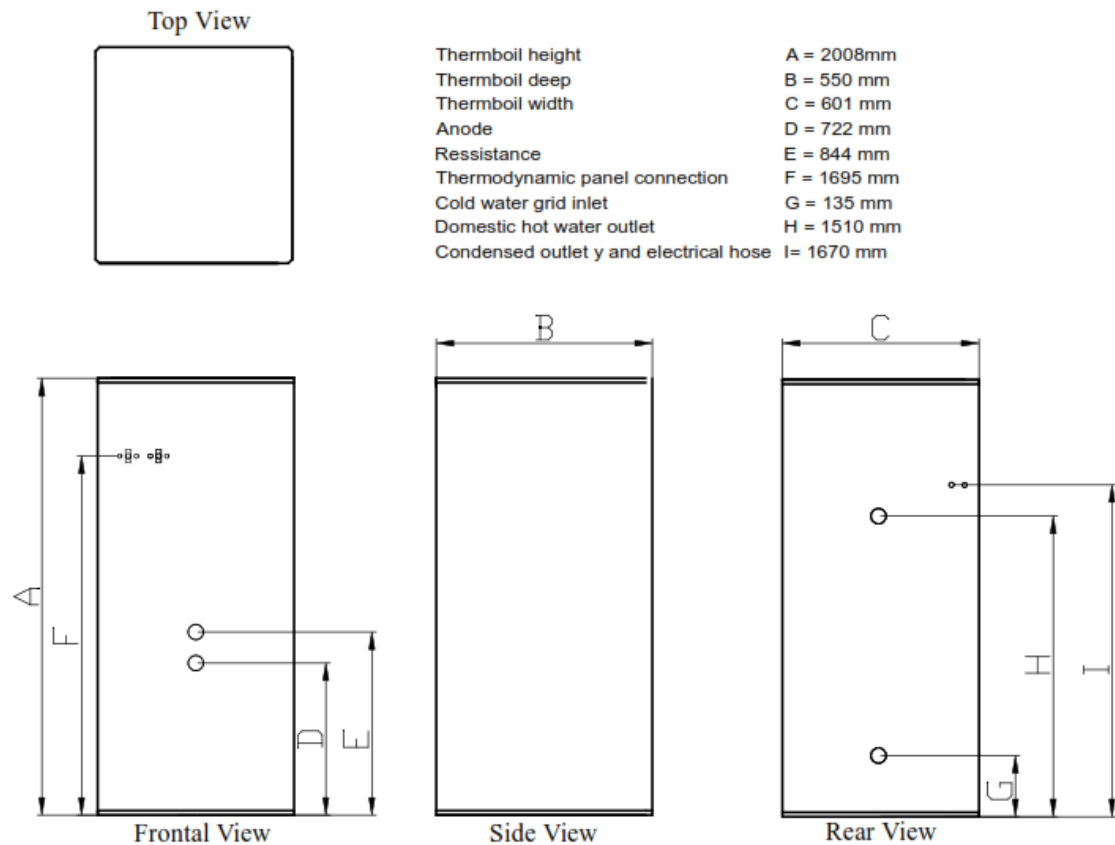
Thermboil is a solar thermodynamic system. We call solar Thermodynamic systems to the mix of heat pump technologies with the solar thermal technology. Consists in solar detectors called thermodynamic panels, formed by a metallic pane exposed directly to the sun and that act as evaporator of the heat pump circuit all the Sun heat and from the environment. At the illustration can be observed a simplified scheme of the thermodynamic systems to obtain domestic hot water.



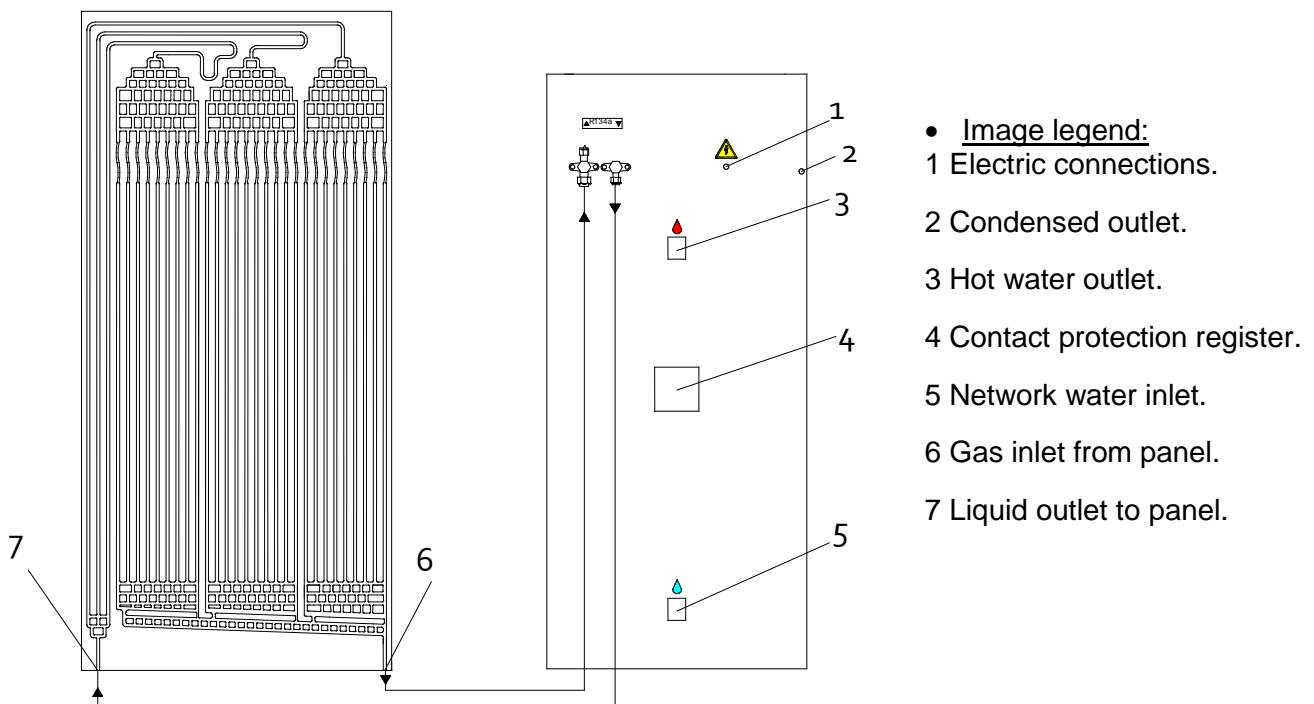
4. Technical Information.

| | | |
|--|---------|-----------------------|
| Model | | Thermboil 300 E |
| Format | | Standing |
| Material | | Stainless Steel |
| Maximum pressure of service | bar | 6 |
| Capacity | l | 300 |
| Maximum temperature heat pump mode | °C | 55 |
| Maximum temperature electrical support | °C | 70 |
| Temperature air min/max | °C | -5/42 |
| Nominal Power DHW | W | 1600-2200 |
| Nominal Consumption | W | 400-600 |
| COP | | 2-5 |
| Thermal power system of support | W | 1500 |
| Thermal maximum power with electrical support | W | 3700 |
| Maximum consumption with electrical support | W | 2100 |
| Electrical power supply | V/ph/Hz | 230/1/50 |
| Hydraulic connections* | “ | M*3/4-3/4 |
| Exit of condensed | “ | 1/2 |
| Sonorous power**** | dBA | <30 |
| Type of isolation | - | Injected polyurethane |
| Medium heat transmission | W/m°C | 0.025 |
| Average thickness of the isolation | mm | 50 |
| Dimensions of the equipment (AxBxC)** | mm | 2008x601x550 |
| Auxiliary dimensions (DxExF) | mm | 844x1695x135 |
| Maximum pressure of the panel | bar | 10 |
| Thermodynamic panel Connections*** | “ | 1/4-3/8 |
| Thermboil Connections*** | “ | 1/4-3/8 |
| Weight of the thermodynamic panel | kg | 6,2 |
| Empty weight of the equipment | kg | 114 |
| Number of panels | | 1 |
| Protection Class | | IP21 |
| Refrigerant | | R134A |
| Cycle of extraction | | XL |
| Energy Class | | A+ |
| M*(Input and output of the hydraulic connection of the equipment in Macho connection) | | |
| H*(Input and output of the hydraulic connection of the equipment in Female connection) | | |
| **Dimensions (A=high B=width C=deep) | | |
| ***Input/Output (roscar SAE) | | |
| ****Sound power measured at 2 meters driven distance | | |

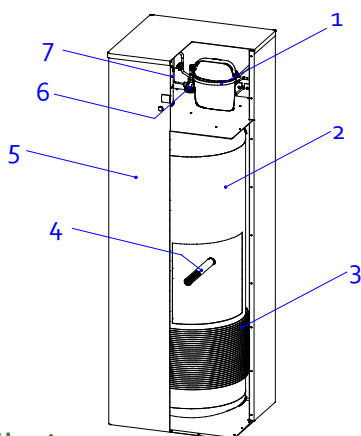
4.1. Cut views of the equipment.



4.2. Cut connections scheme II



4.3. Cut connections scheme IV



Images legend:

1. Compressor
2. DHW accumulator
3. Condenser
4. Backup resistance
5. Exterior case of the equipment
6. Expansion valve
7. Boiler.

5. Installation.

Installation is carried out according to the steps detailed below:

5.1. Place of installation

Before proceeding to unload the unit, we must check that the place where the Thermoboil will be placed has:

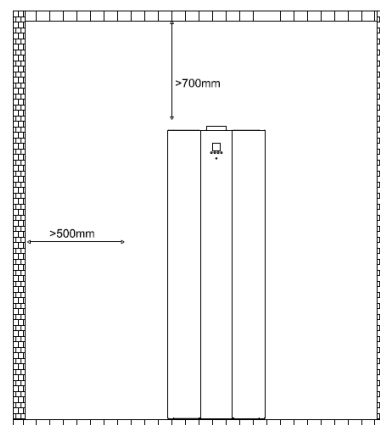
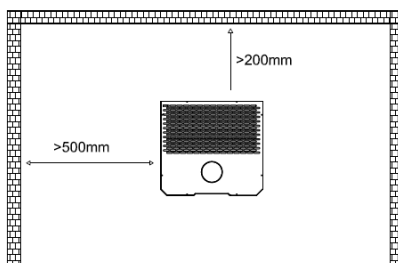
- Sufficient space for both electrical and hydraulic connections (see Figure)
- It must be verified that the place where the Thermoboil is to be positioned has bearing capacity.
- This appliance is designed to be mounted in a vertical position.
- The place of installation must not be an environment: outdoors, with corrosive gases, factories where the electrical voltage experiences strong fluctuations, places with sources of electromagnetic waves, with flammable gases or materials or other special environments.

Before starting the handling of the unit, we have to check its weight (in the section “Equipment technical data sheet” of this manual).

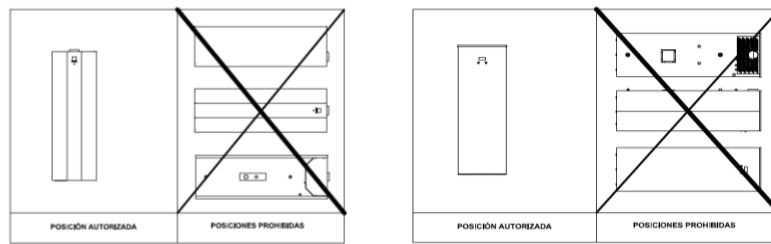
5.2. Minimum dimensions of the equipment site

The location of the equipment must respect distances for correct operation and easy maintenance.

In wall-mounted equipment, as long as the equipment is not hung (Mural), minimum distances must be respected, so that in case of manipulation it is possible to access the equipment from all parts.

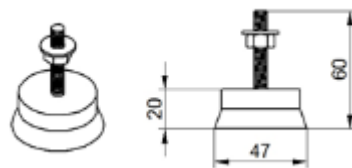


5.3. Handling



5.4. Installation in the ground; legs installation

The equipment includes a game of 4 legs, 4 washers and 4 nuts to be installed at the base if applies. Those legs are adjustable in height, according to the following image.

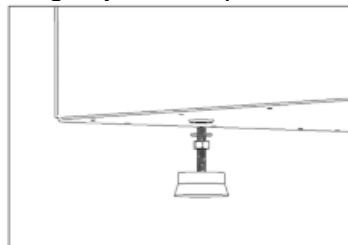


Ensure that the equipment is leveled once the legs are installed. The system development can reduce the unit is not right leveled.

To adjust the legs follow these steps:

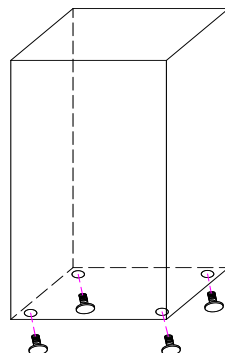
1. Introduce the legs by corresponding holes in the base of Thermboil. To do this, tilt the equipment without actually turns it over.
2. Screw each leg to the desired height.
3. Tighten the nut against the washer to ensure the fixation

Leg adjustment procedure



If the equipment is going to be installed at ground, fi the 4 legs to the bottom as shown in the figure.

You must mantain the following distances to get the best performance of your equipment:



5.5. Transport

Review the received equipment to verify there is no damage from transportation.

All units has been completely verified during manufacturing, packaging and before shipping. If any damage is found, claim immediately to transportist and your seller.

Warnings



Fragile



Do not wet



Do Not Hit

The equipment must be transported and moved in vertical position and should never be turned over. If for any reason, the equipment is handled in a wrong position, it must be put in a vertical position for at least 1 hour without being started. During the discharge and transportation to its emplacement site, the following instructions must be followed strictly to guarantee the safety of the unit and the staff. Otherwise we run the risk that injuries or material damages may occur. Before starting to handle the unit, we must check its weight (rating plate of the unit and in the section "General technical data" of this manual). During its handling it shall not be submitted to sudden movements or blows, with a view to avoid damages to the functional part

5.6. Packaging

Elements used to the packaging are recyclables. Respect the environment recycling in the best way this wastes.

- **Order of assembly**

1. Thermodynamic solar panel
2. Refrigerant connections (liquid line and aspiration)
3. Hydraulic connections
4. Electric connections
5. Welds
6. Nitrogen pressure testing maximum 10 bars.
7. Vacuum test at installation
8. Liquid circuit load
9. Accumulator load
10. System start up

5.7. Thermodynamic solar panel installation.

- Anchor the evaporation panel in a vertical position (recommended) with the inlet pipes below. It can be also installed horizontally, always with the inlet pipe placed at the upper side. You must be carefully to do not pierce or strangle the pipe when bending just in necessary cases.
- Between the thermodynamic unit and the panels the distance shall be less than 8 m, it is recommended the least possible distance between the thermodynamic block and the panels in order to improve system performance. For bigger distances consult with Energy Panel. Also is recommended to avoid as many as possible the number of elbows in the circuit, and make the curves with the greatest possible radius.
- 6 "L" supports are supplied for the anchorage, 105x55x5 mm each, those have 2 holes M8 (8 mm diameter).
- The evaporation panels must be oriented to the SOUTH, SOUTHEAST or SOUTHWEST, as other orientations slightly reduce their performance. The ideal inclination horizontally is more or less equal to the latitude of the place, so that they collect the greatest solar radiation; however, they may be positioned at a wide range of angles which stretch from 10° to 90°.
- For greater performance, the panels must be in contact with the wind to favor the heat exchange between the coolant and the atmosphere. For this reason, it is recommended to situate the panels in a parallel direction with prevailing wind of the area, allowing the air to pass freely between them.

- Panel connection. Equipment liquid outlet is connected with the panel liquid inlet (“liquid inlet” figure 5); Equipment gas inlet is connected with panel gas outlet (“Gas outlet” figure 5).

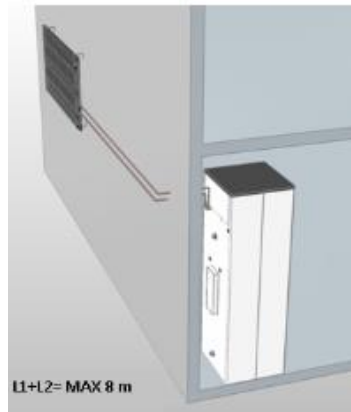
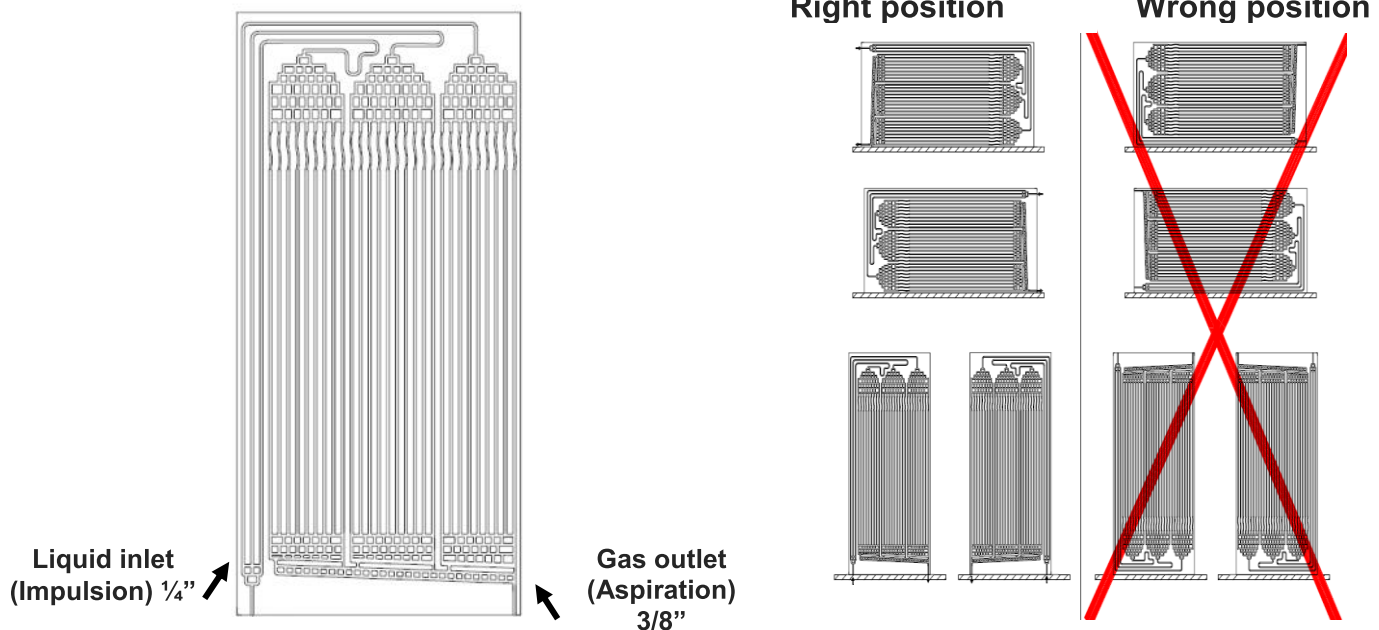


Plate may be supplied as shown in figure 5 or in its symetric version.

Figure 5. Thermodynamic panel Figure 6. Right and wrong panel position

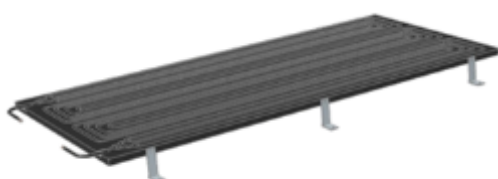


If the paneeles are placed in an altitude below the equipment level, it is recommended to make a siphon or “oil trap” at the suction line (gas line). It is recommended a siphon installation every 2.5 meters high at the suction line.

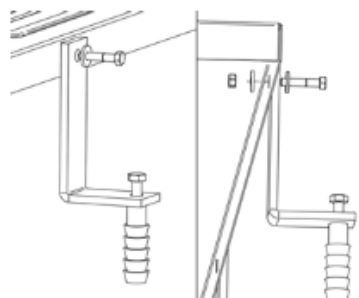
5.8. Panels anchorage

The equipment is supplied with wall fix anchorages. For other surfaces it is recommended to installa support structure.

Thermodynamic panel with anchorage



Panel anchorages fixation



Fixed the panel and locations site chosen, you must install the tubes and do refrigerant connections. Take on count the liquid outlet must be connected with the panel liquid inlet. Equipment gas inlet must be connected to the panel gas outlet.

5.9. Refrigerant connections.

Refrigerant connections must be done by a qualified profesional that accomplish the skills according to the current law.

Pipelines used to joint the thermodynamic panel to the equipment, must be of refrigerant quality cooper (dehidrated cooper pipe), see technical specifications.

For indoors, these pipes must be right isolated with flexible anticondensation. In case this water condensations do not represent any issue, those do not have to be isolated.



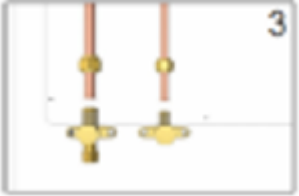
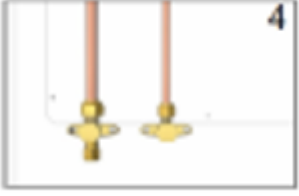
Before welding, you must verify the system is free of humidity and particles.

Gas pipelines must be drawn with the minimum of curves, to reduce the probabilities of load loses and must be well anchored in order to do not transfer efforts or vibrations.

Before isolate pipelines and load your installation, do a preliminar checkup to verify there exist no leak.

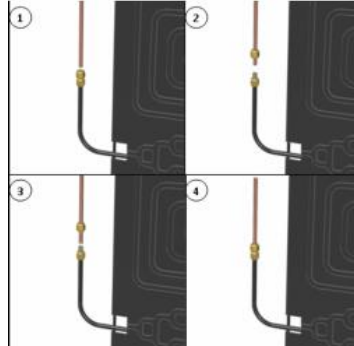
It is necessary to trumpet-shape the pipes at the refrigerant tube terminations to ensure the perfect joint with the equipment service valves with the panel connections. You must follow this procedure.

- Joint refrigerant pipelines. Equipment side.

| | |
|---|--|
|  | <p>1º Remove the service valves connection nuts.</p> |
|  | <p>2º Insert (Validate the right position) refrigeration tubes nuts.</p> |
|  | <p>3º Gross the tube with the right tool (expander) in order to leave it trumpet-shaped. It is necessary to verify the nut inserted, supports regularly on the expanded pipe, to prevent any leak.</p> |
|  | <p>4º Thight the nuts to the service valves.</p> |

- Refrigeration pipes joint. Panel side.

At the panel side you must follow the same procedure than the equipment side. Remove the connection nuts from the inlet and outlet pipes. Trumpet-shape the pipes (liquid and gas). After this, tight again the nuts to complete the joint between the pipes and the thermodynamic panel.



We recommend lubrication with oil at the rare part of the trumpet-shaped pipes for a good nut rolling over the pipe.

Before isolate the pipelines and continue with the installation do a preliminar review to ensure there are no leaks.

5.10. Hydraulic connections.

Thermboil equipment has a network water inlet at its low rare location. Hot water outlet is placed at the upper rare part of the equipment. This must be connected to the domestic hot water pipeline. Anti-electrolysis manifolds must be used to avoid the contact between the inlet and outlet and domestic pipelines, in case those are metallic.

Water network inlet must be done as shown at figure 7.



This equipment is not prepared to support above 0,6 MPa (6 bar) of mandatory pressure. With this equipment it is not supplied with a security valve tared to 6 bar for its safety, being vital its placement. In the same, it is recomendable to include at the installation an expansion glass for domestic hot water.



In case the home pressure goes over the 4 bar a pressure reduction valve must be installed before the security valve.

Figure 7. Water network scheme

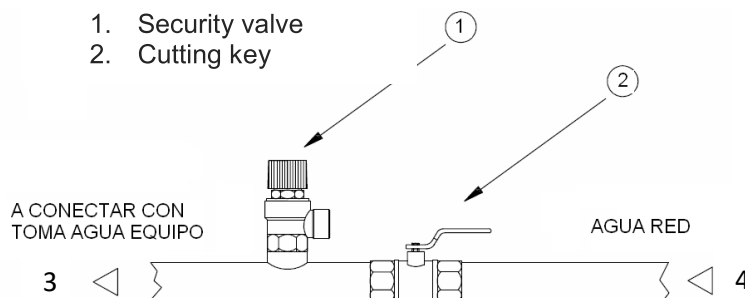


Image legend:

1. Security valve
2. Cutting key
3. Network water inlet
4. Connect with equipment water inlet

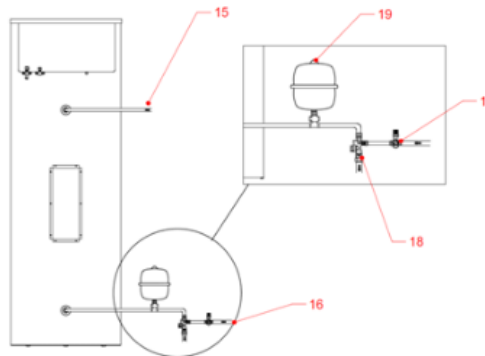
ATTENTION! In the countries where European regulation EN 1487:2000 has been adopted, the device to avoid overpressure that is supplied with the equipment, is not enough according to additional normativity. The device must have a maximum pressure of 0,6 Mpa (6 bar) and include at least: an interception tap, a retention valve and a control device for it, a security valve and a hydraulic load interrupting device.

Must take into account the network water installation pressure.

- If house pressure is up to 4 bar, you must install:
 - Security valve tared to 6 bar.
 - Pressure reduction valve placed at the entrance of the house to let cold and hot water network be protected of pressure excess. Try to intall pressure reduction valve the furthest away from the device
 - An expansion glass that picks up the excess volume and pressure produced by water heating inside the tank.
- If pressure is below 4 bar, you must install:
 - Expansion glass that picks up the excess volume and pressure produced by water heating inside the tank.
 - Security vane tared at 6 bar.

Image legends:

- 15. DHW outlet
- 16. DHW inlet
- 17. Cutting key
- 18. Security valve
- 19. Expansion glass



• **Condensed outlet.**

Instal a drain tube to evacuate the water from the posible condensed that can appear inside the unit at its normal functioning. If the installation is not right done, some waterleaks can be produced and can cause damages to the equipment and other furniture.

For a right installation of the drain tube take on count the following considerations:

- Procure the pipes to be as short as posible and lay them down with a inclination of at least 1/100, to do not leave air traped inside.
- Procure the size to be the same as the connection pipe (condensed pipes) (vinyl tube with a inner diameter of 10 mm and exterior of 15 mm).
- It is forbbiden to do siphones or choke the drain tube
- Introduce the condensed outlet connection as much as posible at the drain tube.
- Instal a metalic handle around the condensed outlet connection with the pipe in order to avoid the tube drops out.

5.11. Electric connections.

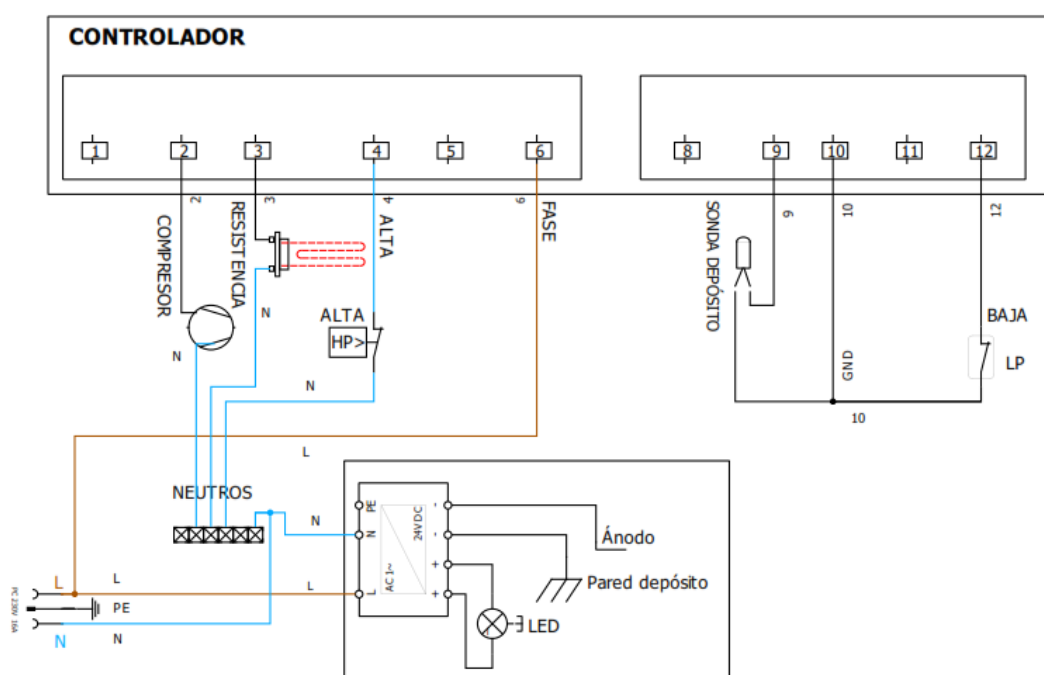
The equipment will be connected to electric network once all hydraulic connections has been done and the tanks has been fullud of water.

The power is monophasic: 230V / 50Hz and ground connection


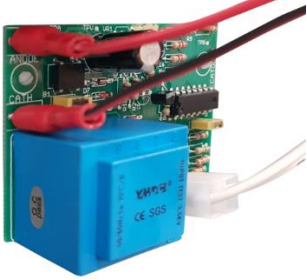
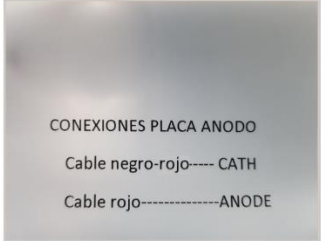
Power line has to be protected by a thermic magnet of 16A.

Electric scheme is shown in the following figure:

Figure 7. General electric scheme.



5.12. Anode connection

| | |
|---|---|
|  | <p>At the first image you can see two connection plugs for the anode.</p> <p>Anode: Corresponds to the anode.</p> <p>Cath: Corresponds to the cath.</p> |
|  | <p>In this second image we see how to connect the threads in order to:</p> <p>In the plug that appears ANODE, the thread to connect is completely red.</p> <p>In the CATH thread, the bicolored thread will be connected (Red-Black).</p> |
|  | <p>In this third image appears a sticker where is shown the connections guide of the threads for the anode.</p> <p>This sticker is placed at the front bottom face of the equipment.</p> |

Anode and tank polarity modification produce damages to the equipment. At this procedure, a continue waste of the tank is done because it results the opposite to the expectation. In this order, the tank Steel (acting now as anode) gets dissolved in the water as metallic ions to settle on the titanium dipstick involved of metallic oxide (acting as cathode).

5.13. Welds.



Welds must be done by qualified personnel and according to the current regulations. Damages produced by a wrong procedure of welding are not included in the warranty, and has to be assumed by the installer in charge.

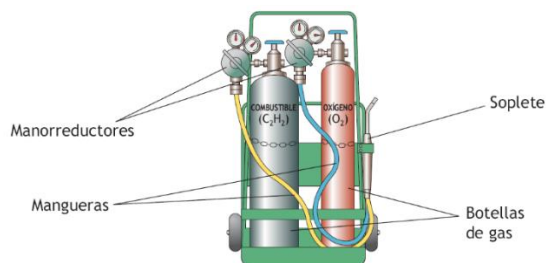
The type of welding recommended for the joints in the gas pipes is the oxyacetylene welding (you also use propane).

For the welding 40% silver rods shall be deployed.

The panels have a thermo-retractile case at the connection pipes. Where necessary, a section thereof shall be cut to prevent it from being burned during the welding.

Once the refrigerant installation has been welded, the sealing thereof shall be checked. In addition to the two mobile bottles which contain the fuel and the oxidizing agent, the main elements which are involved in the oxyacetylene welding process are the pressure reducers, the blowpipe and the hoses. (See fig. 9)

Figure 9. Main elements of a welding gas mobile installation



5.14. Refrigerant circuit load.



In case of pre installations, verify the cleaning of the pipelines do a Nitrogen test if its necessary.

The equipment contains a pre load of refrigerant (R134a), prepared to flood of refrigerant a 8 m long installation.

Before open the service keys it is necessary to empty the circuit and to the panel, to get rid of the air. For this use a vacuum equipment through the tire valve. Once done the vacuum, open the service keys for the circuit load.

You must verify the circuit Welds thickness, for example with soap water.

In case there are leaks, ask for Technical service, an intervention of qualified staff.

5.15. Tank load.

To fill the tank the cold water inlet must be opened.

Once opened, a hot water sink will be opened to allow the vacuum of the air content in the tank. Once loaded close the sink.

Verify possible water leaks at the installation.

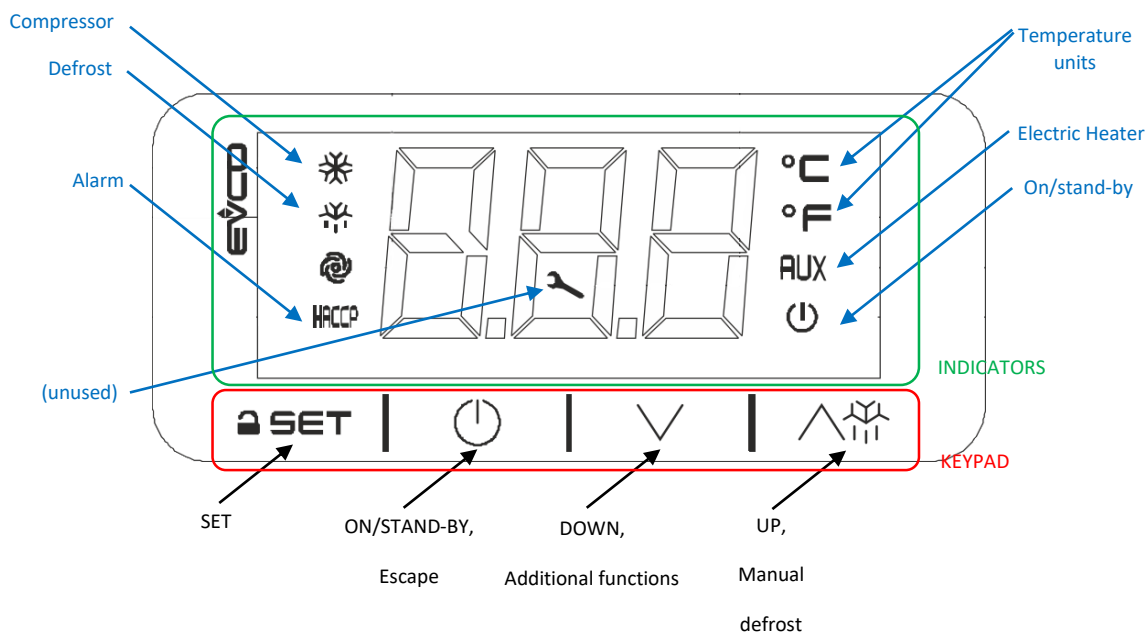
6. Operating Instructions

6.1. User interface, basic settings, alarms codes and operation.

6.1.1. User Interface

Digital thermostat shows the water temperature inside the tank every time.

The following picture shows the user interface and the buttons and icons reference.



6.1.2. Basic Settings

The default settings are:

| Parameter | Meaning | Default Value |
|-----------|----------------------------------|---------------|
| SP1 | Setpoint in Economy mode | 50°C |
| - | Differential in Economy mode | 3°C |
| SP2 | Setpoint in Comfort mode | 55°C |
| SP3 | Overboost threshold | 10°C |
| - | Antilegionella Period | 7 days |
| - | Antilegionella Setpoint | 70°C |
| - | Antifreeze setpoint | 5°C |
| - | Low temperature alarm threshold | 0°C |
| - | High temperature alarm threshold | 80°C |

6.1.3. Alarm codes

The shown messages meaning is:

| CODE | MEANING | REACTION | RESET* |
|------|---------------------------------|---|--|
| Pr1 | DHW tank probe alarm | Check electrical connection and probe integrity | Automatic |
| Pr3 | Low pressure switch input alarm | Check electrical connection and sensor integrity. Reach a technician to check the controller settings. | Automatic |
| AL | Low temperature alarm | Check DHW tank probe | Automatic |
| AH | High temperature alarm | Check DHW tank probe and electrical heater connection. | Automatic |
| LHP | Low pressure alarm | Check Low pressure switch integrity and connection, Reach a technician to check the Low-pressure cooling circuit. | Automatic, Manual after the 3 rd time |
| HP | Unused | Check the electrical connection of the controller and wiring. | Manual |
| FiL | Unused | Reach the unit supplier. | Automatic |
| Utl | Evaporator input failure alarm | Check electrical connection and sensor integrity. Reach a technician to check the controller settings. | Automatic |

*Automatic reset: The alarm reset on its own when alarm situation disappears.

*Manual reset: The alarm is enables even when alarm situation disappears. Switch the device off and on to reset.

6.1.4. Operation Modes.

The unit has these main operation modes:

- Economy
 - Compressor on if “DHW tank temperature” < “SP1 setpoint – 3°C” and off if “DHW tank temperature” > “SP1 setpoint”
 - Electric heater is switched off in normal operation (on if needed during defrost)
- Comfort
 - Compressor is on if “DHW tank temperature” < “SP2 setpoint – 3°C” and off if DHW tank lower temperature > “SP2 setpoint”. Compressor is always off when “DHW tank temperature” is more than 55°C.
 - Electric heater is on, if “DHW tank temperature” < “SP2 – 20°C” and off if “DHW tank temperature” > “SP2 – 10°C”.

The unit has these other operation modes:

- OVERBOOST
 - Normally unused. It activates if “DHW tank temperature” < “SP3 threshold” during economy mode.
 - Compressor, fan and electric heater are on until “DHW tank temperature” > “SP1 setpoint”.
- ANTI-LEGIONELLA
 - It activates at 30 days intervals.
 - Compressor switched off
 - Electric Heater switched on until “DHW tank temperature” > 70°C
- DEFROSTING
 - Evaporator manual defrost. It is normally unused.
 - It activates if the manual Defrost key is push for 4 seconds.
 - Compressor is off.
 - Electric heater is on.
 - Duration: 30 minutes.
- ANTIFREEZE
 - Prevent tank water freezing.
 - It is activated when “DHW tank temperature” < “Antifreeze Setpoint” – 3°C and stops when “DHW tank temperature” > “Antifreeze Setpoint”

6.2. Handling the controller

6.2.1. Unlocking the Keypad.

The Keypad automatically locks. When 30s have elapsed without the keys being pressed, the display will show the "Loc" label and the keypad will lock automatically.

Touch a key for 1 s: the display will show the label “UnL”

6.2.2. Switching the device On/Off.

- Touch the ON/STAND-BY key for 4 s.
- If the device is switched on, the display will show the tank temperature; if the display shows an alarm code, see the section ALARMS.

6.2.3. Checking current operation mode.

- Check that the keypad is not locked or unlock if it is.
- Touch the DOWN key for 1 s: the display will show a code. This code shows the current operation mode:
 - ECO: Economy
 - Auto: Comfort
 - ObS: Overboost
 - Anti: Antilegionella. If flashing DHW tank is higher than SP1 and SP2 setpoints.
 - dEFr: Defrost
 - in2: Unused. Reach the unit supplier.
- Touch the ON/STAND-BY key (or take no action for 60s) to exit.

6.2.4. Changing the operation mode.

- Check that the keypad is not locked or unlock if it is.
- Touch the DOWN key for 1 s: the display will show a code.
- Touch the UP or DOWN key within 15s to select a label.
 - ECO: Economy
 - Auto: Comfort
- Touch the SET key to accept.
- Touch the ON/STAND-BY key (or take no action for 60s) to exit.

6.2.5. Changing the Setpoints.

- Check that the keypad is not locked or unlock if it is.
- Touch the SET key. The display will show the label of the current operations mode setpoint:
 - "SP1" for the Economy (ECO) mode.
 - "SP2" for the Comfort (AUTO) mode.
- Touch the SET key to accept.
- Touch the UP or DOWN keys within 15s to set the desired value.
- Touch the SET key to accept. (or take no action for 15s).
- Touch the ON/STAND-BY key to exit.

6.3. Antilegionella System

The system has an automatic timer in order to prevent the user from legionella bacteria. It acts elevating automatically the temperature (by a heating element called calostat) once a month to reach 70°C and kill the bacteria. If you want to change the antilegionella system behaviour, please, reach the unit supplier.

7. Maintenance, Repairing and Cleaning.



ATTENTION. Follow carefully the general warnings and security advices listed at the beginning of this text, attaching strictly to the indicated.



All interventions and maintenance operations must be done by specialized personnel (that accomplish all the conditions requested by current regulations), authorized by Energy Panel.

Before request the Technical Service intervention because of a possible damage, verify the failure does not depend from other causes, for example, temporal lack of water or electrical supply.

- The emplacement of the unit must be dry, clean and well ventilated.
 - Normally, it is not necessary to clean the thermodynamic solar panels, giving its auto cleaning power with the rain. When those are too dirty (dust, leaves or bird wastes), those can be cleaned with water and non abrasive soap. This operation can't be done when installation is strong.
 - An annual review is mandatory by the authorized installers, to verify:
 - The right performance of the installation, the regulator and safety devices.
 - The components of this installation exposed to the environment (anchorage, panel,).
 - Electric resistance status, and change this if needed.
 - Also it is recommended a visual inspection each 6 months and in every case, every time any disfunction occurs.
 - It is necessary to empty the equipment if it will remain without usage for a while. When it is necessary proceed to the vacuum as follows:
 - disconnect the equipment from the power supply;
 - Close the sink of the domestic installation;
 - open the hot water sink (basin or bathtub);
 - **Periodical maintenance**
To get an optimal performance it is recommended to substitute the resistance every 2 to 3 years.
 - **Overpressure device**
 - Avoid top up below the therm any object and/or device that can be damaged by a possible waterleak.
 - In the case of a prolonged period of no inactivity it is necessary to:
 - Disconnect the device from the power supply.
 - Close the sink from the hydraulic circuit.
 - If the hot water that comes out of the sink is a temperature over 50°C, it can cause immediately burns
- It is forbidden to do the ordinary maintenance and extraordinary of the device.
If you change the power supply cable, call the specialized Technical service



The device against overpressure must operate normally to verify it is not blocked and get rid of the limestone deposits.

7.1. Maintenance program for the aerothermal equipment installation.

At the date of the drafting of the project, the company with which said maintenance contract will be carried out is unknown.

The provisions of "IT.3 on Maintenance and Use of the RITE and in the installation, start-up and maintenance manuals of the equipment will be followed.

Controls carried out regularly, on a quarterly basis, contribute to guaranteeing the operational safety of the installation. This should be done:

- Check the water supply device and its frequent discharge. The entry of water or air into the equipment must be avoided as this can affect the performance of the system and its reliability.
- The location of the unit must be dry, clean and well ventilated. Clean the heat exchanger regularly to maintain proper preservation of the exchanger.
- The operating pressure of the refrigeration system should only be checked by qualified personnel.
- Check the connection cable frequently. If the unit starts to operate abnormally, disconnect it from the network and contact the technical service.
- A mandatory annual review must be carried out by authorized installers, checking:
 - The correct operation of the installation, the regulator, the safety devices and the accumulator, if any.
 - The state of the components of the installation exposed to the elements (fixings, thermal insulation, panels, etc.).
 - Check that the temperatures indicated by the control unit correspond to the real temperatures.

8. Diagnosis and failure solution.

In case of bad performance consult this chapter to identify the failure cause and its possible solution.

All the interventions and operations of repairing that affects the internal handling of the equipment or the installation, must be done by specialized that accomplish all the conditions requested by current regulations). It is forbidden to the user to make any repair.

User is just authorized to solve issues generated from the wrong usage of the equipment (for example, power source cable disconnected, turned off screen, temperature setpoint change)

- The screen is permanently turned off (Does not show information).

| Causes | Solutions |
|--|---|
| Source absence | <ul style="list-style-type: none">• Review electricity source• Revisar el interruptor paro marcha del equipo |
| High pressure switch | <ul style="list-style-type: none">• Review refrigerant load• Review switches optimal operation• Review switch cables connection |
| No water in the tank (High pressure switch opened) | <ul style="list-style-type: none">• Review keys/valves are opened |
| Screen error | <ul style="list-style-type: none">• Review screen performance• Review control cables connection |

- The equipment turns on and stops, screen turns off

| Cause | Solution |
|--|---|
| High pressure switch opened | <ul style="list-style-type: none"> • Review refrigerant load • Review switches optimal operation • Review switch cables connection. |
| Wrong refrigerant load | <ul style="list-style-type: none"> • Review refrigerant load. • Look for leaks at the installation. |
| No water in the tank | <ul style="list-style-type: none"> • Review keys/valves are opened. |
| Dehydrator filter obstruction (Only equipments with fan and battery) | <ul style="list-style-type: none"> • Substitute filter (Only equipments with fan and battery) and do cleaning, tightness test, and refrigerant circuit empty. • Substitute the boiler/filter (only models with thermodynamic panel) do cleaning, tightness test, and refrigerant circuit empty. |
| Non condensable gases in the refrigeration circuit | <ul style="list-style-type: none"> • Look for leaks at the installation (tightness test) and refrigerant circuit empty. |

- Screen shows E1 error

| Cause | Solution |
|--|---|
| Temperature blowpipe (in open circuit, in shortcircuit or out of range) | <ul style="list-style-type: none"> • Review temperature blowpipe emplacement. • Review the temperature blowpipe cable. • Review the electrical resistance of the blowpipe by disconnecting from the controller and using a polymer as ohmmeter (depending on the temperature it can show values between 2.4K and 20K, at 25°C must show 10K) |

- Screen shows AE error (Low pressure switch)

| Cause | Solution |
|-----------------------------|--|
| Low pressure switch opened | <ul style="list-style-type: none"> • Review refrigerant load and posible leaks. • Review the good performance of pressure switches. • Review the cables pressure switches. • Environmental temeperature extremely low. • Evaporator excessively frozen. Stop the equipment and stop for many hours to defrost. Start up again to discard this cause if the error remains. |
| Wrong refrigerant load | <ul style="list-style-type: none"> • Review refrigerant load. |
| Circuit partial obstruction | <ul style="list-style-type: none"> • Review cleaning and circuit review |

- Screen shows AE error (Low pressure switch)

| Cause | Solution |
|--------------------------|---|
| Water leak | <ul style="list-style-type: none"> • Controll tightness of hydraulic circuit |
| Wrong refrigerant load | <ul style="list-style-type: none"> • Review refrigerant load. |
| Adjust water temperature | <ul style="list-style-type: none"> • Review the temperature adjustment at the screen |
| Compressor | <ul style="list-style-type: none"> • Review pressure are right with manometers |

- Compressor make short cycles

| Cause | Solution |
|---|---|
| Refrigerant circuit failure (screen shows AE error or screen turns off) | <ul style="list-style-type: none"> • Read issues: - Screen shows AE error - The equipment turns on and stops, screen turns off |
| Extreme performance conditions during a long period of time (compressor stops but does not shows error and neither screen turns off) | <ul style="list-style-type: none"> • Compressor thermal protection opened. Reduce the temperature setpoint and wait for the environment temperature to rise. Stop the equipment and leave 30 minutes without working. Start up again to discard this cause if the problema remains. In this case do a verification for other cause of the issue. |
| Wrong electrical power supply for the compressor | <ul style="list-style-type: none"> • Revisew power supply tension • Reviw the connections for compressor. • Review the status of the compressor condenser. |

- Water comes out from the tank

| Cause | Solution |
|------------------|---|
| Water leak | <ul style="list-style-type: none"> • Review the tightness at the junctions of the hydraulic circuit |
| Condensed fluids | <ul style="list-style-type: none"> • Review the water flows right throught the condensed pipe (Fan and battery model) or review condensed plate. |

9. Sinister prevention.

| Sinister | Consequences |
|---|---|
| Forget safety vale at installation | Leaky tank and leaks at hydraulic connections |
| Open valve to let gas flow without verify tightness test | Equipment stops working in a few hours |
| Start-up equipment without loaded water into the tank | Spoil risk at refrigeration circuit |
| Excesive distance between thermodynamic group pipeline and panels | Compressor reheating decreasing its useful lifetime |
| Wrong panel placemen | Equipments jump into low pressure constantly and oli loss from the compressor |
| Instal an equipment in a Wall without the right sujection | Equipment fells down |
| Wrong fixtures of panels at the roof | Brokerage and falling risks beacuse of a rude wind conditions |
| Dielectric splice absence | Risks of hot and cold water connections corrosion, even tank spoil |
| Output connection anchorage and anti vibration habdles absence | Gradual Coolant loss, bad performance and equipment stops |



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