	EF-4	EF-6	EF-8	EF-10	EF-15	EF-17
ALASKA Modbus	32535-MOB	32536-MOB	32537-MOB	32538-MOB	32540-MOB	32541-MOB
SIBERIA Modbus	33301-MOB	33302-MOB	33303-MOB	33304-MOB	33306-MOB	33307-MOB
BERING Modbus	66306	66307	66308	66309	66311	66312

ALASKA / SIBERIA / BERING SERIES HEAT PUMP

TECHNICAL MANUAL. START-UP AND OPERATION · MANUAL TÉCNICO. ARRANQUE Y FUNCIONAMENTO · **MANUEL TECHNIQUE. MISE EN ROUTE ET FONCTIONNEMENT** · TECHNISCHES HANDBUCH. INBETRIEBNAHME UND BETRIEBSWEISE · **MANUALE TECNICO. AVVIAMENTO E FUNZIONAMENTO** · MANUAL TÉCNICO. ARRANQUE E FUNCIONAMENTO

ALASKA

SIBERIA

BERING

EDITION: 15

07/2024

TABLE OF CONTENTS

1. INTRODUCTION

Thank you for acquiring your new ALASKA / SIBERIA / BERING. The experience that this company has gained during more than 25 years in the world of air and water conditioning has been put to your service in this product, in which we also incorporate the technical breakthroughs that turn this unit into the equipment that can solve your water conditioning needs offering you the best possible performance.

The information symbol indicates useful information for correct installation and proper performance.

The warning symbol indicates important information to bear in mind to prevent risk of injuries and / or damage for the user and / or the equipment.

The forbidden symbol indicates an operation / procedure that is forbidden and will cancel the warranty.

Please read this manual carefully to ensure proper installation and start-up, become familiar with the full potential of the equipment and to take into account all the circumstances required for proper equipment performance and long-lasting operation.

This equipment must be installed and serviced by certified professionals in the electrical, hydraulic and refrigeration fields.

WE RECOMMEND THAT YOU TAKE A NOTE OF THE FOLLOWING	
INSTALLER	
DATE	
TELEPHONE	
MODEL	
SERIAL NO.	
DISTRIBUTOR'S STAMP	INSTALLER'S STAMP

2. SECURITY

2.1 RESPONSIBILITY OF HOLDER

The owner is the person, people or entity that operates the Chiller machine for a commercial or private use, therefore assumes the legal liability to protect the final user of the instalations, the operator/s of the machine and any third parties involved in the operation of this machine.

In conjunction with the security measures included in this manual, the owner must respect the following:

- The owner must ensure that all the people in charge of the installation, operation, technical servicing, maintenance and cleaning staff have been instructed concerning the unit security measures, thus interacting with the machine in a safe way and understanding the hazards involved.
- The owner must ensure that all the people that interact with this equipment have read and understood these instructions. In addition, the owner must train and inform the staff periodically.
- The owner must provide the staff adecuate protection gear to interact with the unit.

The owner is also responsible for ensuring that the machine is always in perfect condition. Therefore, the following will apply:

- The owner must ensure that maintenance intervals described in these instructions are met.
- The owner must regularly inspect all safety devices in terms of their operational capability and integrity.

2.2 REFRIGERANT CIRCUIT

This machine contains a mechanical refrigeration system. The owner must ensure that the people in charge of the operation, management and maintenance of the unit are subject matter experts. Additionally, the owner must ensure that these people comply with the regulations of the European Union, as well as the technical and legal requirements of the region or country.

REGULATION (EU) No 517/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.

http://eur-lex.europa.eu/legal-content/ES/TXT/HTML/?uri=CELEX:32014R0517&from=EN

REGLAMENTO (UE)
No 517/2014

2.3 PERSONAL PROTECTION EQUIPMENT (PPE)

Personal protective equipment serves to protect personnel against hazards that have an adverse effect on occupational health and safety. To carry out the various labor on and with the equipment, personnel must wear personal protective equipment:

SAFETY WORK CLOTHES
They are tight work clothes of low tear resistance, with narrow sleeves and without protruding elements. It is intended for not being trapped by moving parts of the machine. Do not wear rings, necklaces or other adornment objects.

SAFETY SHOES
Safety shoes protect against heavy falling parts and avoid sliding on slippery surfaces.

GLASSES AND EARPLUGS.
They serve to protect the eyes from projections of small-medium materials and to protect the ears against high noise levels.

HEAT AND COLD PROTECTIVE GLOVES.
This gloves help protect hands against heat and cold burns in case of touching very hot or cold surfaces.

2.4 HAZARDS

This section identifies the residual risks identified through a risk assessment.

To reduce health hazards and avoid dangerous situations, pay attention to the safety instructions listed below:

DANGER OF INJURY BY LIQUID ACCUMULATIONS:
Danger of slippage by liquid accumulation.

- Collect liquids accumulation by proper means.
- Wear non-slip safety footwear.
- Place warning and signaling signs in the area where liquid accumulation may occur.

DANGER OF INJURY OR DEATH BY ELECTRICAL SHOCK:
In the event of direct contact with live parts, there is a risk of death from electric shock. Damage to the insulation or damage to various components can lead to death.

- Only qualified people may work on the electrical installation.
- If you notice any damage to the insulation, disconnect power supply and proceed to repair any damage.
- Before starting any work on the electrical installation, follow the following rules:
  - ✓ Remove power supply.
  - ✓ Safeguard against reconnection.
  - ✓ Check voltage absence.
  - ✓ Grounding and short-circuiting
  - ✓ Protect the work area.

DANGER OF INJURY BY MOVING PARTS: FANS
Rotating parts of the fans can cause serious injuries.

- Do not put your hands into the fan rotor or service it during operation.
- Do not open the machine's panels during operation.
- Make sure that the fan's rotor is not accessible during operation.
- Pay attention to the fan stop interval before opening the machine's panels.
- Before opening the fan, check that it is stationary.

DANGER OF INJURY BY SHARP EDGES AND SHARP CORNERS:
Danger of injury with sharp edges and sharp corners.
Sharp edges and sharp corners on components housing parts can cause cuts on the skin.

- When working in the vicinity of sharp edges or sharp corners, proceed with coution.
- Wear protective gloves.

DANGER OF INJURY BY REFRIGERANT GAS:
Refrigerant gases may cause disorders in heart rate and frostbite in case of body contact, ingestion or inhalation.

- Avoid contact with refrigerant gases.
- Works on refrigeration systems must be carried out by qualified personnel.
- When working with refrigerants, do not eat, drink or smoke. Wash your hands after finishing work.
- Wear all necessary protection gear: clothing, gloves, glasses ...
- Work in a ventilated place.

DANGER OF INJURY BY HOT SURFACES:
The surfaces of some components may become hot during operation of the equipment. Contact with skin can cause severe burns.

- When working in the vicinity of hot surfaces, wear protection gear: clothing and safety gloves.

DANGER OF INJURY BY COLD SURFACES:
The surfaces of some components may become cold during operation of the equipment. Contact with skin can cause severe freeze-burns.

- When working in the vicinity of cold surfaces, wear protection gear: clothing and safety gloves.

DANGER OF INJURY BY PRESSURIZED GASES:
Pressurized components of the equipment can leak fluids under high pressure if they are handled incorrectly or in case of defect and cause serious injuries.

- Before working with the pressurized elements, remove the pressure.

DANGER OF INJURY BY FIRE:
If the fire extinguishing media is not ready for use or is inadequate, serious injury or death may occur as well as serious material damages.

- Make sure that there is adequate extinguishing media in the site.
- Check extinguishing media periodically.
- Replace or replenish the extinguishing media after each use.
- When using extinguishers, pay attention to the instructions for use.

DANGER OF INJURY OR DEATH BY FAULTY SECURITY SYSTEMS:
If safety devices are not working correctly or have been tampered with or manipulated, there is risk of serious injury, even death.

- Before starting any work on the equipment, check that all safety devices are in working order and correctly installed.
- Do not override or short circuit any safety device.
- Make sure that all safety devices are accessible at all times.

3. PACKAGING INSPECTION

This equipment comes with RECYCLABLE packaging that can withstand rough transport conditions. However, you should examine the device during installation to ensure there is no damage, thus avoiding any subsequent malfunction. The MANUFACTURER will not be held responsible in this case

If the unit/package is damaged upon delivery, or the delivery itself is incomplete, make a note on the carrier's bill and immediately place a claim to the carrier company.

Is very important to keep the packaged equipment upright, the packaging has been specifically designed for this. Always maintain it in a vertical position.

If the unit is damaged, or the delivery is incomplete, make a note of it on the carrier's bill and immediately make a claim to the company in charge of delivery.

4. EQUIPMENT DESCRIPTION

These chiller units are used for cooling the pool's water, cold water basins, etc…

4.1. COMPONENTS

These chiller machines include the following features:

1. Robust and lightweight design in an aluminium-magnesium alloy that is resistant to solar radiation and aluminium frame. Color does not deteriorate.
2. High performance condensator coil (gas-air heat exchanger), manufactured in copper tube with lacquered aluminium fins that are specially designed for corrosive environments.
3. Fan(s):
   Axial (ALASKA).
   Centrífugal (SIBERIA).
   No fan (BERING).
4. Scroll Compressor.
5. G2 titanium water condensers. Guaranteed corrosion resistance.
6. Refrigerant gas R-407-C.
7. High- and Low-pressure switches (HP/LP).
8. Expansion by thermostatic expansion valve with external balancer.
9. By-flow dehydrator filter.
10. Hydraulic circuit with waterflow switch in the water intake, manufactured in PVC pipe.
11. Flow switch for flow control.
12. Electronics that can control the filtration pump system.
13. Electrical protections for switchgear and power.
14. User-friendly control panel with current temperature, setpoint and alarm messages display.

4.2. TECHINICAL CHARACTERISTICS

Main technical data of the machines:

- ALASKA:**TABLE 1: TECHNICAL DATA [ALASKA], page 44.**
- SIBERIA:**TABLE 2: TECHNICAL DATA [SIBERIA], page 44.**
- BERING:**TABLE 3: TECHNICAL DATA [BERING], page 45.**

4.3. ELECTRICAL CHARACTERISTICS

Electrical control panel for complete process control and to guarantee optimum performance with minimum power consumption at all times. Containing the following components:

- Circuit breakers.
- Contactors and thermal relay
- Interconnection and ground terminals.
- Card controller and Display.
- Power Supply.

To consult electrical data of the different machines, please check:

- **TABLE 4: MAXIMAL ELECTRICAL DATA [ALASKA], page 46.**
- **TABLE 5: MAXIMAL ELECTRICAL DATA [SIBERIA], page 46.**
- **TABLE 6: MAXIMAL ELECTRICAL DATA [BERING], page 46.**

A general rule for the power cable is: section of 1 mm^2 for every 5 amps for cable lengths of up to 20 meters, although this rule has to be verified and adapted for each installation and for lengths of more than 20 meters and always in accordance with local requirements / regulations.

4.4. ELECTRICAL DIAGRAMS

To consult electrical diagrams of the different machines, please check:

- **IMAGE 1: ELECTRICAL SCHEME [ALASKA / SIBERIA / BERING], page 47.**
- **IMAGE 2: CONNECTIONS [ALASKA / SIBERIA / BERING], page 49.**
- **IMAGE 3: POWER DIAGRAM [ALASKA / SIBERIA / BERING], page 50.**

4.5. DIMENSIONS

To consult dimensional data of the products, please check:

- ALASKA: IMAGE 5: ALASKA DIMENSIONS, page 53.
- SIBERIA: IMAGE 6: SIBERIA DIMENSIONS, page 54.
- BERING: IMAGE 7: BERING DIMENSIONS, page 567.

5. EQUIPMENT INSTALLATION

These appliances must be installed and serviced by certified professionals, approved in electrical, hydraulic and air conditioning domains.

These units are supplied fully assembled, with complete electrical wiring and its definitive charge of refrigerant gas R407-C. Furthermore, every assembled machine has been put to the test inside a test laboratory inside the manufacturing factory before shipping to clients.

The compressor contains its own oil charge (depending on the model) and no more should be added.

The hydraulic circuit of the unit has been carefully drained to avoid residual water in the casing of the evaporator and prevent any risk of corrosion in case of prolonged storage of the machine.

For any questions regarding unit installation, please, take note the machine model, serial number, manufacture year, and contact us.

5.1. SAFETY INSTRUCTIONS

Always ensure that Personal protective equipment is used to protect personnel against hazards that have an adverse effect on occupational health safety. Refer to paragraph 2.3, page 7.

All the people in charge of the installation of the unit must have been instructed concerning the unit security measures, thus interacting with the machine in a safe way and understanding the hazards involved. Refer to paragraph 2.4 page 8.

5.2. REQUIREMENTS AND PREVIOUS OPERATIONS

Applicable to all chiller references:

- Check that the location, where the appliance is to be located, is strong enough to support the weight of the unit.
- To improve the distribution of weights, the unit should be placed on a bench according to the designer's criteria.
- Always place the appliance in a vertical and level position
- The equipment is designed to work:
    - ALASKA / BERING models: Outdoor installation.
    - SIBERIA / BERING models: Indoor installation.

- Clearance must be maintained around the equipment for its maintenance and operation, and servicing, in addition to the required clearance if the machine includes a air coil (Alaska and Siberia units).
- It is not advisable to place the machine 1.5 meters above the sheet of water, or 3 meters below.
- During operation, condensation water produced by the appliance may appear, for which the appliance includes a condensation water drain, identified on one side.
- To avoid any corrosive process in the condenser coil, the unit can not be installed in an acidic or alkaline environment.

In addition, SIBERIA models must take into account the following:

- The arrangement of the air ducts must be of an adequate size and the head loss must not exceed the available pressure of the installed fans.
- The design of the air inlet and outlet ducts will be such that no air feedback can take place.
- It is also desirable to provide a removable door or plate in the outdoor air intake duct to be able to check its condition and proceed to clean any dirt that may be trapped in the air inlet of the unit.
- Leave at least 1 meter of clearance around the appliance to facilitate personnel access and servicing operations.

The hydraulic circuit, used to chill the pool's water, must not be made out of galvanized steel or aluminum. Corrosion issues may appear due to galvanic corrosion.

- ALASKA models have been designed for outdoor installation (never indoors).
- SIBERIA have been designed for indoors installation (never outdoors).

WARRANTY VOID IF THIS CONDITION IS NOT FULFILLED

5.3. OPERATING CONDITIONS

Water physical and chemical parameters thresholds:

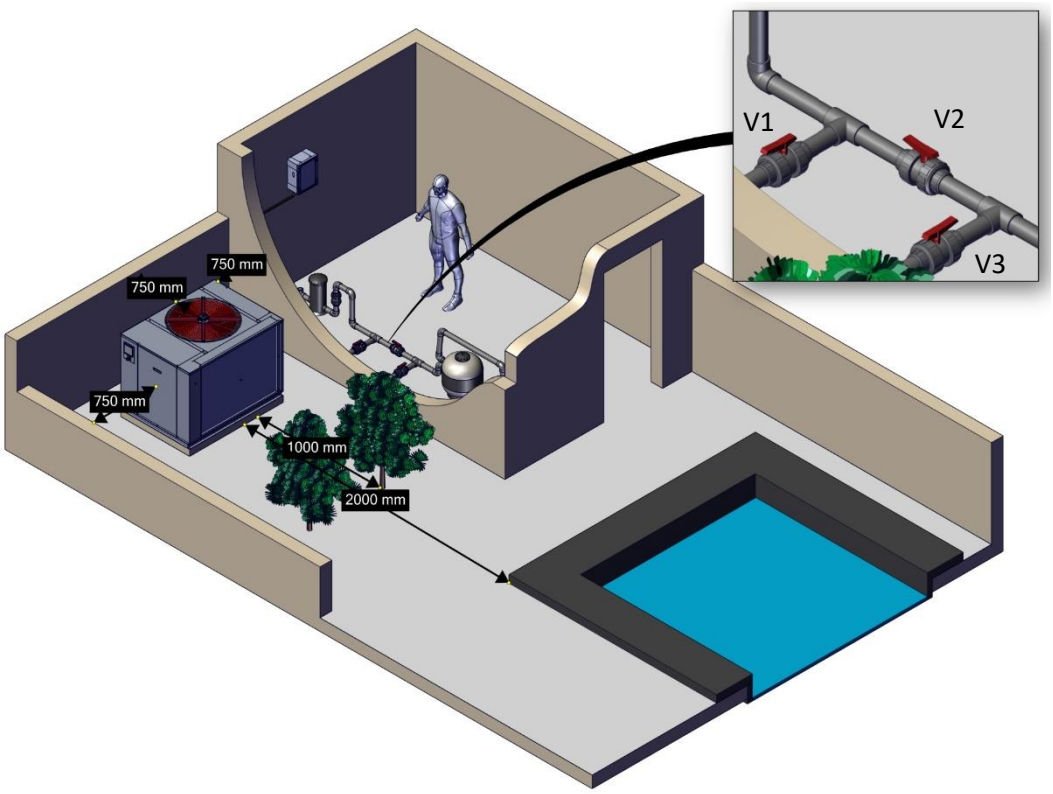
- PH ..... 7,2 a 7,8
- Residual chlorine ..... 1 a 2 ppm
- Alkalinity ..... 80-125 ppm
- Total dissolved solids ..... <=3000 mg/l
- Hardness ..... 200-300 ppm

The operational limits established for these appliances in order to guarantee a long-lasting service life are as follow:

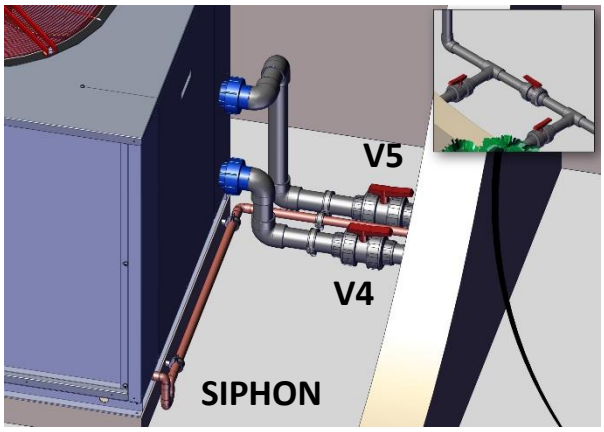
- Maximum inlet water temperature: .....35 °C.
- Maximum input air temperature: .....40 °C.
- Maximum input water pressure:.....3,5 bar.

These operating conditions will influence the performance of the appliance and thus, the power provided. It is extremely important that the minimum water flow indicated in the technical data sheet is respected. If this water flow is below such threshold, the machine's performance will decrease, and thus energy consumption will be higher.

Installation example for ALASKA unit (axial fan), for outdoor installation only:



V1-V2-V3: By-pass valves. (Required for all models)



V4-V5: Adjustment valves.

Installation example of SIBERIA units (centrifugal fan), for indoor installation only:

It is of the utmost importance to design the duct system in such a way that the air outlet is never re-supplied to the air intake of the appliance.

Remember aswell that the Siberia units are designed for an indoors installation only.

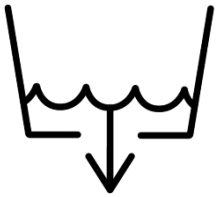
In this installation example it can be seen that the technical room is perfectly ventilated through a grid of sufficient size to guarantee the correct flow of air through the appliance air inlet (condenser coil). And that the air outlet is conducted outdoors by a duct.

If the distance between the appliance and the outside air is too large, a duct can be connected directly to the air inlet, as long as the nominal air flow of the equipment is guaranteed. The limit of air ducts head loss for the indoors models is **120 Pa**; if this value is not respected, the heat pump can be damaged. For greater head load losses, consult Fluidra Comercial branch in your country.

5.4 CONDENSATION DRAIN

These machines can naturally generate condensation water due to the cold surfaces located on the low-pressure side of the frigorific circuit. This water will be gathered inside the machine and will come out through a condensation drain located on the frame of the equipment. The installation of these appliances must take this into account and include a drain to evacuate such condensation water.

The condensation drain is identified by this decal on the machine:



It is advised to install a siphon in the condensation drainage to prevent liquid and odours reflows.

6. CONTROLLER

6.1 MAIN FUNCTIONS

The NA8981 controller is ideal to control air-water chiller units. It is equipped with temperature probes (water input and output, evaporator defrost, compressor discharge and ambient temperature). It also has safety sensors (high- and low-pressure switches, a flow switch to control water flow through the equipment, compressor consumption meter and internal fan thermal switch).

Its main functions are shown below:

- **TEMPERATURE DISPLAY AND MONITORING:** The display shows the water temperature at all times and the user can choose the setpoint between the operating limits. The readings of the temperature probes can also be displayed at will.
- **AUTO DEFROST CONTROLLING**: It has an optimized design of defrost procedure and can defrost effectively in order to ensure the machine can run normally at low temperature.
- **EXHAUST TEMPERATURE PROTECTION:** If the discharge temperature of the compressor is too high, the machine will stop and an alarm will appear on the display (A24 o 25).
- **HIGH- AND LOW-PRESSURE PROTECTION:** The machine is equipped with high- and low-pressure switches that stop the machine and displays an alarm if pressure limits are reached (A11, A12, A13, A14).
- **DIFFERENT PERIOD OF OPERATION**: The regulator has two operating modes: "Cooling" and "Schedule programming". In the "Cooling" mode, the machine will operate until the water temperature reaches the desired water temperature set by the user. In the "Schedule programming" mode, as many as three operating periods can be scheduled (See STARTING BASIC OPERATION).
- **PHASE MISSING PROTECTION AND SEQUENCE PROTECTION:** In three-phases models, a phase controller is included in the controller. If any of the 3 phases has been connected incorrectly, the machine will stop and an alarm will appear on the display (A91).
- **DISPLAY OF COMPRESSOR CONSUMPTION AND PROTECTION AGAINST EXCESSIVE CONSUMPTION**: The controller can show compressor consumption (A) on the screen. If consumption is excessive, the machine will stop and an alarm will appear on the display (A93, A94).
- **WINTER ANTI-FREEZE PROTECTION**: This protection allows the controller to recirculate the water by starting up the water treatment pump so the water does not remain in the frozen pipes (See PROTECTION SYSTEMS).
- **TRIP CIRCUIT**: The regulator uses this function to protect the machine in the event of faults affecting the electrical contactors or an error in the supply line.
- **EMERGENCY OPERATION FUNCTION**: If communication with the LCD display fails, the machine can operate with the most recently saved settings.
- **EMERGENCY STOP**: The equipment is prepared with an emergency push-button with a manual interlock and reset that cuts off the general power to the machine if pressed.

- **MINIMUM VOLTAGE STOP**: The machine is protected against severe voltage drops in the line by an automatic cut-off device in the main circuit breaker; this device triggers when voltage drops to a certain level below the nominal voltage.

6.2 MAIN TECHNICAL CHARACTERISTICS.

- **Power supply**: 230V±10% or AC 400V±10% (See circuit diagram).
- **Maximum output capacity**:
  - Water pump ..... 30A/220VAC (Connecting the water treatment pump to a contactor is recommended)
  - Fan:..... 10A/220VAC
  - Compressor 1: 5A/220VAC
  - 4-way valve:..... 5A/220VAC
- **Temperature probes**: NTC R25=5kΩ, B(25/50)=3470K

6.3 PARAMETER SETTINGS

Press "S" for 3 seconds to enter the parameter settings menu.

You can modify the following parameters: F11, F16, F50~F54, F58, F61, F62, F85. Then, press ▲ or ▼ to select the parameter you want to adjust.

Complete description of all parameters can be seen in the next page.

Use ▲ or ▼ to select the parameter, then press “S” to show the parameter value and use ▲ or ▼ to adjust it (holding the key down can change the value quickly). Press “S” again to save the updated value and return to the parameter settings menu. Press “M” to exit parameters menu at any time without saving the changes.

Press “S” for 10 seconds, If a password has been programmed (F19 o F20), the display will show “PAS” to enter the password, use ▲ ▼ to indroduce each digit, and press “S” to select the next digit, If the password is correct, you can change any parameter from F11 to F99.

Press “M” means cancel and the parameter will not be changed.

The internal list of parameters is as follows:

Concept	Code	Parameter name	Range	Factory setting	Unit	Comments
Temperature	F11	Temperature setting point	F14 – F13	28	°C	
	F12	Temperature difference	1 – 10	1	°C	
	F13	Max setting temperature	30 – 100	40	°C	
	F14	Min setting temperature	1 – 29	10	°C	
	F15	Auto mode temperature difference	0 – 20	1	°C	
	F16	Temperature units	0 – 1	0	-	0: °C 1: °F
	F17	ID	1 – 255	9	-	
	F19	Password (Installer)	0 – 999	-	-	0: Without password (Consult your salesman)
	F20	Password (Manufacturer)	0 – 999	-	-	0: Without password (Consult your salesman)
Compressor	F21	Compressor delay time	1 – 10	8	min	
	F22	Compressor Phase protection	0 – 1	0 ONE PHASE 1 THREE PHASE		0: no protection 1 : have protection
	F24	Compressor number	1 – 2	1		1 : 1 Compressor 2 : 2 Compressors
	F25	Water fiow switch delay time	0 - 100	1	min	
	F26	Low limit temperature	-20 - 10	0	min	Not enabled select -20
	F27	The lower limit temperature of Low speed operation	-10 - 30	-10	°C	1. Temperature differential ±1°C. 2. Always working at low speed (-10ºC).
	F28	The upper limit temperature of Low speed operation	35 - 100	44	°C	Temperature differential ±1°C
	F29	OPERATING MODES ENABLED	2	2		2: Cool mode (Cool)
	F30	Fan during defrost	0 – 1	1		0: Fan off 1: Fan on
Defrost	F31	Defrost start temperature	-10 – 0	-3	°C	
	F32	Defrost end temperature	5 – 35	15	°C	
	F33	Defrost start time	1– 120	25	min	
	F34	Max defrost time	3 – 20	10	min	
	F35	Pipe1(2) fault, Defrost start temperature	-10 - 20	5	°C	Ambient Temp. Defrost according to F33/34.
	F36	Alarm Delay Time after Defrost	0 – 120	3	min	
	F37	4-way valve mode	0 - 1	1		1: heating 4-way valve has electricity 0: heating 4-way valve has not electricity
Remote mode	F38	Remote Cooling MODE	0 – 1	1		0: Always cooling, and the set point is not taken into account 1 The set point is taken intoaccount
	F39	Remote Heating MODE	0 – 1	1		0: Always cooling, and the set point is not taken into account 1 The set point is taken into account
Voltage & consumption	F40	Maximum consumption protection	2 - 40	Depends on the model of the machine	A	0 : not enabled TABLE 4 TABLE 5 TABLE 6
	F42	Alarm delay time due to excessive consumption	0 – 30	3	S	

	F44	Percentage phase curremt unbalance	5 – 50	**20**	%	
	F45	Alarm delay time phase curremt unbalance	0 – 60	**3**	S	
	F46	Alarm delay time phase protection failure	0 – 30	**2**	S	
	F47	Phase failure alarm delay time	0 – 30	**2**	S	
	F49	If there is a power failure, when the power is restored, it is reset in the same condition. This mode is only possible if the undervoltage coil is disconnected from the panel and the Emergency button is canceled (NOT RECOMMENDED)	0 – 1	**1**		0=Not enable 1= Enable
Water pump & Fan	**F50**	Water Pump Select	0 – 1	**1**		0: water pump is not enable 1: water pump is enable Contact Voltage = 220v
	F51	Water pump starts time before compressor starts	1 – 10	**3**	min	
	F52	Water pump stops time after compressor stops	0 -10	**3**	min	
	F53	Water pump start time	0 – 99	**60**	min	Check water temperature
	F54	Water pump run time	0 – 99	**5**	min	
	F55	Exhaust Temp.protection	90–135	**115**	°C	Compressor Exhaust Temp.
	F56	Water flow switch	0 - 1	**1**		1 : Enable 0 : Not enable
	F57	Fan overload	0 - 1	**1**		1 : Enable 0 : Not enable
Alarm and probe calibration	**F58**	Buzzer alarm sound duration	0.1 – 10.0	**0**		ON: Alarm sound always on until pressing a key OFF: No alarm sound 0.1 – 10.0: Alarm sound time until pressing a key
	F59	Min. Ambient Temp. of starting the Electrical heater	-10 – 20	**12**	°C	If electrical heater is available
	F60	Over high temperature difference between water inlet and water outlet failure	0 – 20	**3**	°C	
	F61	Water inlet Temp sensor adjustment.	-20 – 20	**0**	°C	Adjust the temperature sensor (calíbrate)
	F62	Water outlet Temp sensor adjustment	-20 – 20	**0**	°C	Adjust the temperature sensor (calíbrate)
	F63	1 # Calibration temperature defrost probe 1	-20 – 20	**0**	°C	Adjust the temperature sensor (calíbrate)
	F64	2 # Calibration temperature defrost probe 2	-20 – 20	**0**	°C	Adjust the temperature sensor (calíbrate)
	F65	Ambient Temp sensor adjustment	-20 – 20	**0**	°C	Adjust the temperature sensor (calíbrate)
	F66	Compressor 1 exhaust Temp sensor adjustment	-20 – 20	**0**	°C	Adjust the temperature sensor (calíbrate)
	F67	Compressor 2 exhaust Temp sensor adjustment	-20 – 20	**0**	°C	Adjust the temperature sensor (calíbrate)
	F68	Calibration temperature probe suction compressor 1	-20 – 20	**0**	ºC	Adjust the temperature sensor (calíbrate)
	F69	Calibration temperature probe suction compressor 2	-20 – 20	**0**	ºC	Adjust the temperature sensor (calíbrate)
Electronic expansion valve (NA)	**F70**	Electronic expansion valve	0 – 1	**0**	-	1 : enable, 0 : disabled
	F71	Refrigerant	0 – 1	**0**	-	0 : R-410-A 1 : R-407-C
	F72	Maximum output voltage (Pressure Sensor)	0.5 – 5.0	**4.5**	V	Maximum pressure sensor output voltage for scaling.
	F73	Max. Sensor pressure	0 – 5	**4.6**	MPa	Max. Sensor pressure for scaling
	F74	Initial valve position cool mode	100 – 480	**240**	pasos	

	F75	Initial valve position heat mode	100 – 480	240	pasos	
	F76	Overheating setting time	0 – 120	30	S	
	F77	Fine tuning steps	0 – 10	1	Pasos	EEV adjust steps
	F78	Middle tuning steps	0 – 10	3	Pasos	EEV adjust steps
	F79	Coarse tuning steps	0 – 10	6	Pasos	EEV adjust steps
	F80	Target overheating in heat mode	3 – 20	6	ºC	
	F81	Objective overheati in cold mode	3 – 25	10	ºC	
	F82	Maximum evaporation temperature (MOP	10 – 100	20	ºC	Maximum evaporation temperature (MOP)
	F83	M.O.P.	1 – 5	2	ºC	High evaporation temperature protection
	F84	Time M.O.P.	1 – 3	2	min	Time of High evaporation temperature protection
System settings	F85	Visualización tiempo en marcha acumulado	–	-	Day	
	F86	Probation time	0 -- 999	OFF	Hora	The controller will stop if the accumulative time is over probation time, and show the alarm code “A99”.OFF means no probation time
	F87	Reset tiempo en marcha acumulado	no/yes	no	-	
	F88	Reset factory parameters	no/yes	no	-	Reset of all parameters. Reset if the card software is updated.
Test	F90	Show the card model				
	F91	Show the card software version	180			
	F92	Show the model of the display				
	F93	Display the main board software version number	180			
	F96	Time setting				
	F97	Reserved for the manufacturer	This function is only for tests. It is forbidden to use it online. Press "S" to exit.			
	F98	Reserved for the manufacturer	Press “S” to exit. After entering this function, it shows the “AdF”.			
	F99	Test output signals	After entering this function, it will show "CCC". The relays will be activated one by one. This function is only for tests. It is forbidden to use it online. Press "S" to exit.			
END	F00	Exit				

*Observation1 : When F24=1, this means there is only one circuit. Therefore, none of the System 2 inputs/outputs can be used. And no error codes will be displayed. Also, the error codes A13, A14, A23, A25, A27 will not be shown.

6.4 STARTING BASIC OPERATION

6.4.1 OPERATING MODE

The regulator has 4 operating modes. The available operating mode is controlled by parameter F29. These chiller appliance can only operate in the cool mode, so F29 is always set to a value of 2.

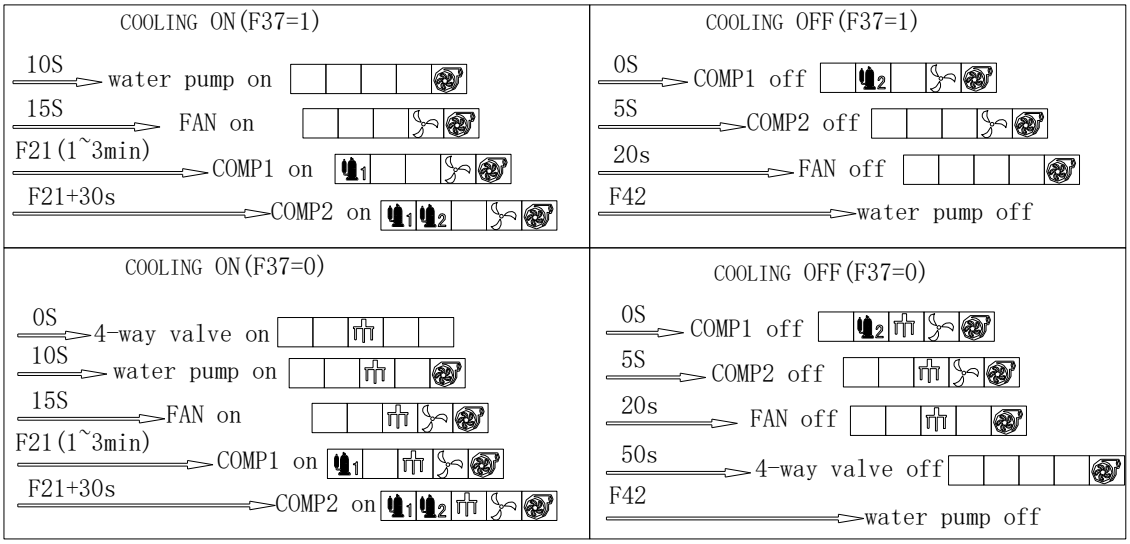
F29=0, Auto mode (C/H).
F29=1, only Heat mode (H).
F29=2, only Cool mode (C).
F29=3, Manual selection of the operating mode (M).

In the Cool mode, the machine starts cooling when the reading on the temperature probe is higher than the "User defined setpoint + Temperature differential" and it stops cooling when the temperature is lower than the "User setpoint temperature - Temperature Differential".

6.4.2 COOL MODE

Start-up process:

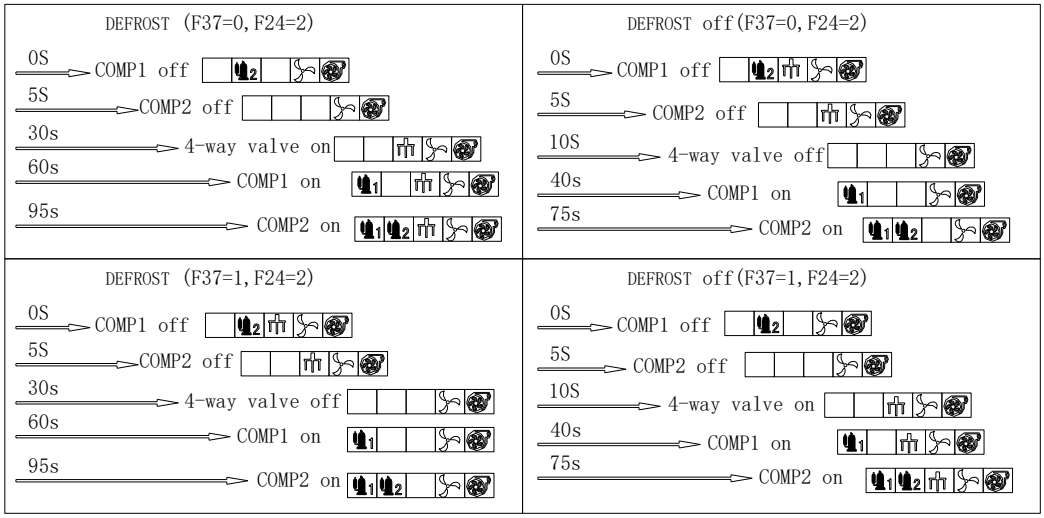
Start-up conditions: Water intake temperature > (Setpoint temperature + Temperature differential); and the Compressor stop time ≥ Compressor delay time



6.4.3 DEFROST PROCESS

The controller will supervise the temperature in the evaporator titanium coil, and decide whether a defrost process has to take place or not, according to the operation time in that continuous low temperature state. In other words, the defrosting process begins to count when the machine evaporator temperature is lower than “defrost start temperature”, and starts a defrost procedure when this value of time reaches “defrost start time”. The time count will be cleared if the evaporator temperature is higher than “defrost start temperature”, and it begins to count again when the evaporator temperature is lower than “defrost start temperature”. In other words, the value of defrosting count time is the continuous low temperature working time.

DEFROST SEQUENCE:



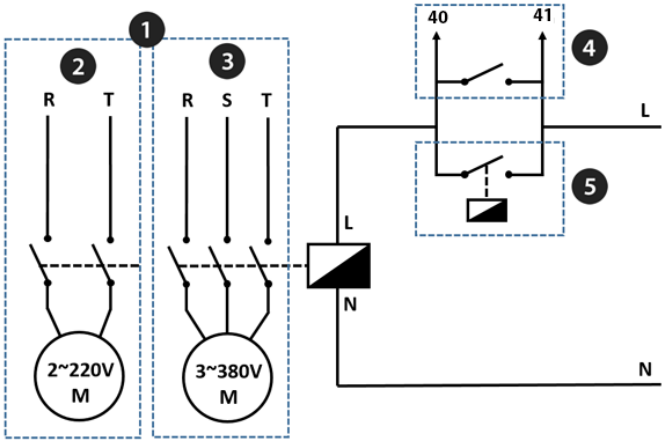
If the defrosting time surpasses the “max defrost time” value, the controller will turn off defrosting.

After reaching the conditions for stop defrosting in compressor 1, this compressor 1 will wait compressor 2 to reach those conditions. As soon as compressor 2 stops, the heating mode will start for both compressors at the same time (they will have a delay between them).

Remark: If pipe1 temperature sensor is not operational, pipe2 temperature sensor reading will be used.

6.4.4 WATER PUMP CONTROL

You can choose whether you want to control the filtration pump or not (F50), 0 means that the pump is not controlled, 1 means that the pump is controlled. When the pump is running, the compressor starts after a time (F51) and when the compressor stops, the pump stops after a time (F52). The compressor will not start until the pump reaches the time (F51). When the machine stops, the pump continues the cycle (F53) stop, (F54) run.



No.	DEFINITION
1	FILTER PUMP
2	SINGLE PHASE
3	THREE PHASE
4	ALASKA / SIBERIA / BERING.
5	FILTRATION CLOCK-TIMER

6.4.5 REMOTE SWITCH

When the remote switch is closed:

If the unit is running. The unit works normally

If the unit is stopped. The unit stops.

When the remote switch is open:

If the unit is running. The unit stops and the screen display "OFF".

If the unit is stopped. The unit stops.

6.5 PROTECTION SYSTEMS

6.5.1 COMPRESSOR DELAY PROTECTION

The compressor delay time is adjustable (F21) and set to 8 minutes by default. The regulator uses this time setting to prevent continuous ON/OFF cycles. When the compressor has been running and then stops, the next time it is started up, the regulator will check that this period of time has passed before starting it up again; if not, it will wait for 8 minutes until the compressor starts again. If the machine has just been started up, there will be a 8-minute wait before the compressor starts.

6.5.2 PHASE CONTROL

In three phases models, when the 3 phases of the machine are connected incorrectly or a fault is detected in any of the phases, the machine will stop and the error code "A91" will be displayed.

6.5.3 OVER CURRENT PROTECTION

Consumption is checked three seconds after the compressor starts up; if the current > F23 for 5 seconds, the machine will stop and error "A93" will be displayed.

6.5.4 WATER FLOW PROTECTION (F46=0, disabled)

After 30 seconds with the water pump ON, the flow switch status is checked; If after another 5 seconds the status of the flow switch is OFF, the machine is stopped and display the error code “A15”.

6.5.5 HIGH PRESSURE PROTECTION

It is a normally closed switch in the controller. The controller checks during 5 seconds the status of the high-pressure switch and it will take another 5 seconds to act. If it is open, the machine will stop. If at any time, the status of the high-pressure switch is closed, the machine will run automatically. But if within an hour we have 3 alarms of this protection, the system will be

blocked in alarm status and display error code “A12” or “A14”. In order to unblock the system, manual reboot is needed.

6.5.6 LOW PRESSURE PROTECTION

It is a normally closed switch in the controller. During the defrosting and in the first three minutes after switching on the machine, the status of the low-pressure switch is not checked.

The controller checks during 5 seconds the status of the low-pressure switch and it will take another 5 seconds to act. If it is open, the machine will stop. If at any time, the status of the low-pressure switch is closed, the machine will run automatically. But if within an hour we have 3 alarms of this protection, the system will be blocked in alarm status and display error code “A11” or “A13”. In order to unblock the system, manual reboot is needed.

6.5.7 EXHAUST TEMPERATURE PROTECTION

When exhaust temperature is higher than F45, the machine stops running, and shows the error code “A24” or “A25”. As soon as exhaust temperature drops to (F45-10ºC), the machine will run again (each compressor works independently).

But if within an hour we have 3 alarms of this protection, the system will be blocked in alarm status. In order to unblock the system, manual reboot is needed.

6.5.8 TEMPERATURE DIFFERENCE PROTECTION INLET AND OUTLET WATER

The difference between inlet and outlet water temperatures will be controlled by the regulator for 5 seconds. If the difference is higher than F72, error code "A44" will appear 5 seconds later and the compressor will stop. If this protection triggers 3 alarms in one hour, the system will lock down in alarm status. The machine will have to be restarted manually to unlock the system.

6.5.9 LOW AMBIENCE TEMPERATURE LIMIT

If extern air temperature is < F26， the compressors cannot be started (except for defrost protection in winter). Only the electrical heating can be started.

6.5.10 ANTIFREEZE PROTECTION IN WINTER

This feature is not active when the external air temperature is over 3ºC. If the water in temperature is below 4ºC and the air temperature is below 3ºC and the machine is OFF or in stand-by mode the machine will activate the water pump to avoid having the water in the pipes iced (piping broken).

6.5.11 SENSOR FAULT PROTECTION

Pipe 1、Exhaust 1、Pipe 2、Exhaust 2 Sensors work independently in each circuit and display different error codes to distinguish between different systems ；

Water inlet temperature sensor fault, stops the machine.

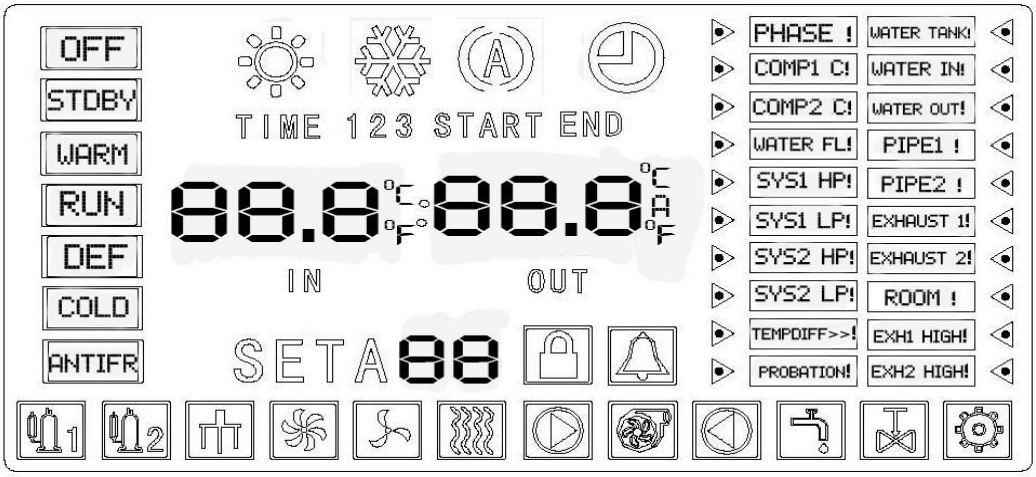
Auto test: if the sensor failure is corrected, the unit restarts.

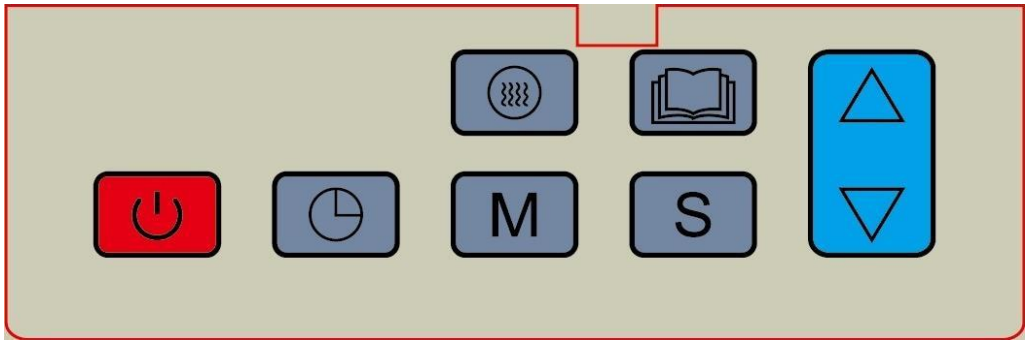
Note：If we get a failure when the machine is working, the water pump will continue working during 5 minites. Then it will be stop.

6.6 TROUBLESHOOTING GUIDE SYSTEM FAULTS AND LIST OF ERROR CODES

ERROR	LCD CODE	REASON	SOLUTION
Low pressure Malfunction of system 1	A11	Gas change too low. Possible system blockage	Check pressure switch and gas circuit; thermostatic valve closed, evaporator clogged, fan stopped.
High pressure Malfunction of system 1	A12	Gas change too high. Possible system blockage	Check pressure switch and gas circuit, refrigerant circuit. Insufficient water flow, stop pump
Low pressure Malfunction of system 2	A13	Gas change too low. Possible system blockage	Check pressure switch and gas circuit; thermostatic valve closed, evaporator clogged, fan stopped.
High pressure Malfunction of system 2	A14	Gas change too high. Possible system blockage	Check pressure switch and gas circuit, refrigerant circuit. Insufficient water flow
Flow switch failure	A15	No water/litter water in water system.	Check the water flow volume. Check water pump
Water inlet temp. sensor failure	A21	The sensor is open or short circuit	Check or change the sensor
Cool1 sensor 1 failure	A22	The sensor is open or short circuit	Check or change the sensor
Cool2 sensor 2 failure	A23	The sensor is open or short circuit	Check or change the sensor
Exhaust sensor 1 failure	A24	The sensor is open or short circuit	Check or change the sensor
Exhaust sensor 2 failure	A25	The sensor is open or short circuit	Check or change the sensor
Fault probe aspiration circuit 1	A26	The sensor is open or short circuit	Check or change the sensor
Fault probe aspiration circuit 2	A27	The sensor is open or short circuit	Check or change the sensor
Outdoor air temperature fault	A28	The sensor is open or short circuit	Check or change the sensor
Water outlet temperature sensor failure	A29	The sensor is open or short circuit	Check or change the sensor
Low pressure transducer failure (Optional)	A31	1# The sensor is open or short circuit	Check or change the sensor
High pressure transducer fault (Optional)	A33	2# The sensor is open or short circuit	Check or change the sensor
Exhaust temperature switch 1 failure	A42	Gas temperature (outlet) too high. Possible system blockage	Check sensor and gas circuit
Exhaust temperature switch 2 failure	A43	Gas temperature (outlet) too high. Possible system blockage	Check sensor and gas circuit
Temp. differential between water-in and water-out is too large	A44	Water flow volume not enough. Water pressure is too low	Check the water flow volume or water pipes blocked
External air temperature too low	A46	The external air temperature is lower than the limit fixed	Check sensor and external air temperature
Fan overload protection	A47	Fan overload	Check or change the fan motor
Compressor tripping protection	A51	AC contactor adhesions	Check the AC contactor
Phase unbalance	A52	Power failure	Check electrical connections
Power supply connections wrong	A91	Wrong connections or lack of connection	Check connections of power input wire
Phase loss	A92	Some phase has no voltage	Check electrical connections
Compressor 1 overcurrent protection	A93	Compressor overcurrent	Check the system
Compressor 2 overcurrent protection	A94	Compressor overcurrent	Check the system
The time limit running failure	A99	Running time exceed	Check the time limit
Signal failure	- -	The cable between the display and the card is badly connected	Check the continuity of the cable, and the terminal and the cables are well connected

6.7 CONTROL LCD



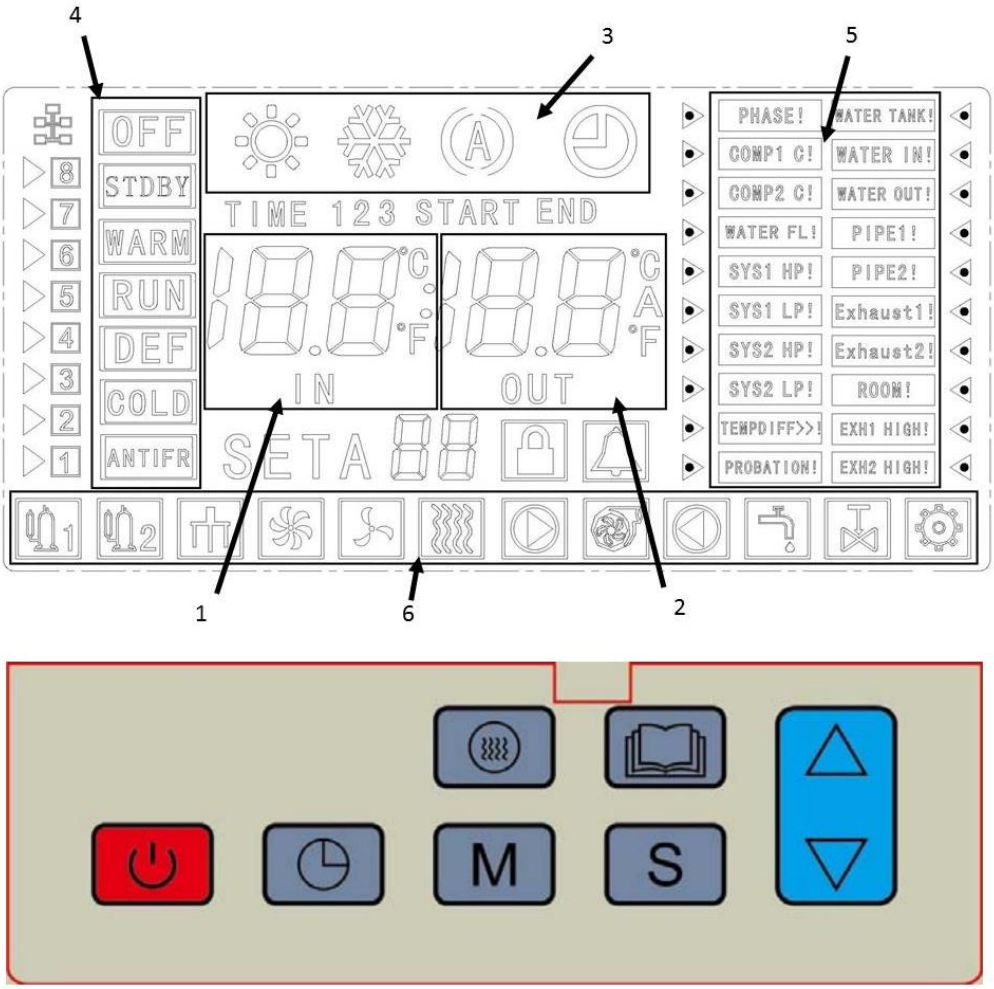


Note：The error codes flash when displayed on the LCD screen.

Icono	Descripción	Observación
OFF	The machine is off	
STDBY	The machine is setting and standby	
WARM	—	
RUN	The machine is running	
DEF	The machine is doing defrost	
COLD	—	
ANTIFR	Frost protection	
	HEAT MODE	

	COOL MODE	
	AUTOMATIC MODE	
	PROGRAMMING MODE TIME	
	Compressor 1	
	Compressor 2	
	4-way valve activated	
	High Fan Speed	
	Normal Fan Speed	
	Electric resistance (Optional)	
	Clean Fan	
	Water pump	
	communication is abnormally. (RS485)	
	Alarm	
	Locked keyboard	
	Phase protection.	
	1# Compressor consumption too high	
	2# Compressor consumption too high	
	No water/litter water in water system	
	System 1 high pressure protection	
	System 1 low pressure protection	

	System 2 high pressure protection	
	System 2 low pressure protection	
	Water flow volume not enough. Water pressure is too low	
	Limit of the operation time	
	Water inlet probe fault	
	Water outlet probe fault	
	Evaporator 1 probe failure	
	Evaporator 2 probe failure	
	Compressor exhaust probe failure 1	
	2 # Compressor exhaust probe failure 2	
	Failure in the outdoor air temperature probe	
	1# Compressor exhaust too high	
	2# Compressor exhaust too high	
	Time setting	
	Temperature Input / Output machine	
	SETPOINT TEMPERATURE	



1. WATER INLET TEMPERATURE
2. WATER OUTLET TEMPERATURE
3. OPERATION MODE
4. MACHINE STATUS
5. ALARM CODES
6. MACHINE OUTLETS STATUS

6.8 DISPLAY functions

1. **Heart pump ON/OFF**

Press  to switch the machine ON and OFF.

2. **Water temperature setpoint setting**

- Press  to access the water temperature setpoint for the pool.
- Change the setting by pressing  or  . Keep these buttons pressed to speed up the process.
- After changing the setting, press  again to save the change. To exit the setpoint setting, press  .

3. **Time setting**

- Press  to set the time.
- Change the time using  or  . Press  to adjust the minutes, using  or  .
- After setting the time, press  again to exit the time setting menu.

4. **Timer setting (ECONOMIC MODE)**

- Press  for at least 2 seconds to activate the SCHEDULE PROGRAMMING mode.
- Press  for at least 5 seconds; this will display the start and end times of the first period.
- Change the start hour of the first period using the  or  keys. Press  to set the start minutes of the first period, using  or  . Press  to set the end time of period 1, using  or  . Press  to set the end minutes of period 1, using  or  .

- Repeat the process to program periods 2 and 3 (if necessary).

- Press  to pass through all the periods and exit the menu.

NOTE: If the Schedule Program mode is activated and there are no periods scheduled, the machine will not start.

5. **Setting the machine operating mode**

- Press  to choose the machine operating mode (Heat, Cool and Automatic, only if F29=3).
- Press  for at least 2 seconds to activate or deactivate the Schedule Programming mode.

6. **Checking the temperatures (Reading variables)**

- Press  to display the temperature probe settings and compressor consumption (3 settings for each phase of the compressor). Use  or  to display the various settings.

The values shown refer to the following nomenclature:

T1	T2	T3	T4	T5	T6
Water inlet temperature.	Cool sensor 1 (Defrost Probe)	Compressor 1 discharge temperature	Sonda de Aspiración 1	Cool sensor 2 (Defrost Probe)	Discharge probe 2
T7	**T8**	**T9**	**T10**	**T11**	**T12**
Aspiration Probe 2	Ambient temperature	Water outlet temperature	Valve steps circuit 1	Valve steps circuit 2	High Pressure circuit 1 (BAR) HP1
T13	**T14**	**T15**	**T16**	**T17**	**T18**
Low Pressure circuit 1 (BAR) LP1	High Pressure circuit 2 (BAR) HP2	Low Pressure circuit 2 (BAR) LP2	Current phase 1-compressor 1	Current phase 2-compressor 1	Current phase 3-compressor 1
T19	**T20**	**T21**			
Current Phase 1-compressor 2	Current phase 2-compressor 2	Current phase. 3-compressor 2			

NOTE: The compressor consumption settings vary depending on water and outside temperature and the settings of phase consumptions does not have to be the same.

7. Blocking the keypad

- Press  and  at the same time for 5 seconds to block the buttons on the display. The blocked icon will appear on the screen. Press another 5 seconds to unblock the keys.

8. Manual Reset

- Press  to switch the machine ON and OFF.

7. GENERAL PRECAUTIONS

The installation, start-up and maintenance operations must be performed by qualified personnel.

This equipment should not be installed in inflammable or explosive environments.

The electrical power supply at the main circuit breaker must be switched off before any maintenance work is performed inside the machine.

It is mandatory to use personnel protection equipment, such as goggles, gloves, etc. during maintenance work.

During operation of the unit, it is normal that the condensation produced in the evaporation battery will produce a certain quantity of water which will have to be evacuated. The machine is equipped with a drain for this purpose that must always be unobstructed.

This water condensation doesn't need to be specially treated.

8. CHECK UP THE PACKAGING

This equipment comes with RECYCLABLE packaging that can withstand rough transport conditions. However, you should examine the device during installation to ensure there is no damage, thus avoiding any subsequent malfunction.

The MANUFACTURER will not be held responsible in this case

IS VERY IMPORTANT TO KEEP THE PACKAGED EQUIPMENT UPRIGHT, THE PACKAGING HAS BEEN SPECIFICALLY DESIGNED FOR THIS. ALWAYS MAINTAIN IT IN A VERTICAL POSITION.

IF THE UNIT IS DAMAGED, OR THE DELIVERY IS INCOMPLETE, MAKE A NOTE OF IT ON THE CARRIER'S BILL AND IMMEDIATELY MAKE A CLAIM TO THE COMPANY IN CHARGE OF DELIVERY.

Inside the parcel you will find the following elements:

Pool heating equipment

Installation manual.

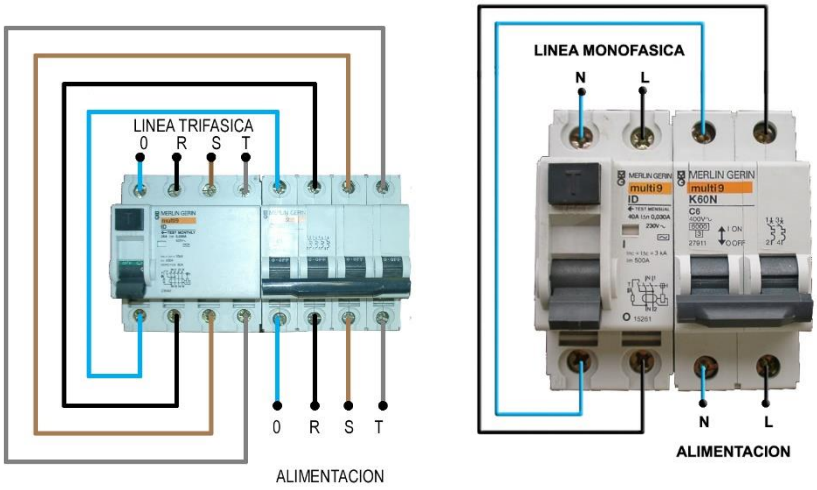
Warranty.

9. ELECTRICAL CONNECTIONS

The electrical connection must be carried out by the fitter taking the following points into account:

- Please perform the connection according to the circuit diagram included in this manual.
- Place a differential circuit breaker in the general power connection to protect the equipment from possible grounding problems. The differential breaker should be minimum 30 mA.
- Differential breaker.
- Automatic or circuit breakers.
- Before connecting the equipment, you must check that the electrical installation is disconnected and that there is no voltage between the power supply phases.
- Connect the lead-in wires to the machine's input terminal.
- Connect the ground wire to the relevant terminal.
- The provision of any legislation in force with respect to any electric lines against direct or indirect faults and contacts must be followed at all times.
- Verify the tightness of all electrical connections.
- You must check that the electrical resistance between the ground and any electrical terminal is over 1 megaohm. If not, the equipment cannot be started up until the electrical loss may be located and repaired.
- If there are fluctuations of the input voltage, it is recommended to install a voltage stabilising system to prevent damaging the equipment.

The illustration below shows a diagram of a proper connection.



never be operated without the water treatment pump running. Do not interconnect timers or programmers that may leave the unit running after the water treatment pump has been switched off.

Do not change the calibration of the motor protection breakers. If in doubt, contact the distributor.

All modules must be connected via a protective earth wire. All parts to make this connection are factory installed. The connection has to be made as the modules are assembled. The protective earth wire connection can be identified by the following symbol:

10.HYDRAULIC CONNECTIONS

The EF should be connected to a by-pass prepared for that purpose at the exit of the water treatment system and always before any chemical dosing system. If the intake of the dosing system is less than 25 cm under the heat pump water outlet, a syphon should be installed. A no-return valve should be installed as an additional safety measure to prevent the return of chemical products to the pump when water circulation is interrupted.

The equipment should never be run without water circulating through the hydraulic system.

Do not place concentrated chemical products in the pool skimmers.

Always respect the hydraulic connection diameters specified for each machine.

A full-flow shut-off valve should be installed on each of the hydraulic elements in the equipment, so that each of these may be isolated if needed (filter cleaning, repairs, replacements, etc.) without the need to drain the circuit.

Anti-vibration dampers should be installed in the inlet and outlet of the machine, in order to avoid vibrations which may cause cracks or breakage in the hydraulic connections.

Do not force the PVC pipes when connecting the equipment to the hydraulic network. This will prevent them from breaking or cracking.

11.START-UP PROCEDURE

When setting-up, the electrical connections, as well as the general power supply and voltage should be verified

- Check that the hydraulics are connected properly.
- Give power to the equipment by connecting the general power switch on the outside of the unit. Once the unit is connected, verify the current absorbed by the phases.
- It is important to note that the equipment comes with a standard crankcase heater and should be under voltage for at least 1 hour before start-up so the oil in the compressor can reach its ideal condition to lubricate the compressor components.
- Three phase machines are equipped with a phase control relay that ensures that the compressor rotates in the right direction. Alarm in the regulator.
- With the machine running, verify the intensities absorbed by the electric motors, making sure they do not exceed the limits mentioned in the technical specification sheet.
- Check that there are no gaps between currents in the various lines, except those caused by single phase circuits.
- High- and low-pressure switches should be installed in the cooling circuit and verify the refrigerant charge (Refrigerant Charge section).
- Disconnect the ON/OFF switch to stop the equipment.

12.PREVENTIVE MAINTENANCE

You must keep a record of each component maintained as well as the actions or repairs undertaken.

- DISCONNECT THE EQUIPMENT FROM THE POWER SUPPLY before performing any maintenance procedures.
- The surface of the exterior panels may be cleaned with a soft cloth and non-abrasive cleaner.
- The machine has been designed to operate outdoors.
- It is important that the equipment be installed on stable ground and protected from flooding.

When the installation is going to stand for long periods of time, it is advisable to remove the equipment from the installation or periodically ventilate the room where it is located. This is due to the humid and chlorinated environment to which the equipment is exposed, which causes the accelerated deterioration of its electronic components. The guarantee does not cover those cases in which the product is damaged by prolonged exposure to a humid and chlorinated environment

Things to take into account:

CONDENSER COIL:

The coil should be kept clean and free of obstacles which may hinder the circulation of air through them. In order to clean it, use water at low pressure and non-abrasive detergents or cleaning liquids made specifically for that purpose.

COMPRESSOR:

Compressor oil must be checked in those unit models provided with an oil viewer.

Make sure the crankcase heater works properly.

Verify that the compressor refrigerates adequately with the circulating gas (verify the refrigerant charge).

Verify that the power consumption has not increased.

Verify that the compressor discharge pressure is not too high and that the intake pressure is not too low.

Verify that the compressor fasteners are not deteriorated.

Verify that no frost develops on the compressor.

EVAPORATOR:

Install the chemical product dosifiers "downstream" from the heat pump, at a height lower than the pump itself and always as far away from the pump as possible. Never in the suction pipe of the water treatment pump, since this will damage the condenser.

NEVER place concentrated chemical products in the pool skimmers; this will damage the titanium condenser.

In climates subject to sporadic freezing temperatures, the water can be circulated by the water treatment pump to ensure that the water temperature remains above freezing (0ºC).

In the event of persistent freezing conditions, all the water treatment and heating system components should be completely drained. Draining is performed by removing the drain plug on the side of the condenser

FAN:

Verify the flows of the fan each year.

Clean the louvers of the fan as well as the protection grill regularly.

ELECTRICAL PANEL:

Check all electrical connections.

Verify that there is no over-heating of the electrical terminals.

Check that the safety systems are working correctly.

Verify that the thermostat or main control operates correctly and verify the temperature with a mercury thermometer (probe calibration).

13.WARRANTY AND GENERAL CONDITIONS

The manufacturer guarantees the quality of the equipment referred to in the LETTER OF WARRANTY that should be delivered with this start-up and operation manual.

The manufacturer's warranty does not cover breakdowns or damage caused by the following circumstances:

- Inadequate installation or use.
- Not following the cleaning and maintenance instructions.
- Inappropriate chemical conditions.
- Work performed by unauthorised personnel.
- Damage caused by inadequate watering.
- Damage caused by natural phenomena.

14. RECYCLING INSTRUCTIONS

This unit has a refrigeration gas in liquid state and electrical components. When the heat pump concludes its working life, it should be dismantled by a specialist company or you may take it to your local authority's disposal facility.

In order to reduce the amount of electric and electronic waste, the danger of its components, to promote the reuse of the equipment, waste reclamation and to establish an adequate waste management that may improve the efficiency of environmental protection, a number of regulations applicable to the manufacture of the product and others related to an adequate environmental management once the product has become waste are set out.

Furthermore, it is intended to improve the environmental behaviour of all stakeholders involved in the lifecycle of electric and electronic devices such as manufacturers, distributors, users and, in particular, those directly involved in managing the waste from such equipment.

From 13th of August 2005, whenever you want to discard this equipment, you have two possible return options:

- If you buy a new one that is of equivalent type or has the same functions, you may hand it back to the distributor, at no cost to you, when buying the new one.
- Or you may take it to your local authority's disposal facilities.

The equipment is tagged with a symbol that has been cross-over (rubbish bin), and this symbol means that it must be separated from other urban waste and collected separately.

Potential effects on the environment or human health of the hazardous elements it may contain.

PVC

The most widely used plasticizing agent in applications of PVC is DEHP (Diethylhexyl phthalate). Trials carried out in several laboratories show that it does not pose a risk to human health in the concentrated levels used in finished products, according to reports from BUA in Germany (Advisory Committee on Existing Chemicals of Environmental Relevance) and the BGA (Health German Authority), amongst others. The results from such trials, together with data obtained from biodegradatio studies, confirm that DEHP cannot be considered hazardous for the environment. All additives used in PVC formulations and, thus, in food applications are fully regulated both at European and Spanish level.

In Europe, there is the EU 90/128/EEC Commission Directive subsequently amended by EU 95/3/EEC. In Spain, there is the Spanish Royal Decree 1125/1982 of 30th of April, ratified by the Spanish Royal Decree 1042/1997 of 27th of June of that same year.

Modern technology applied to PVC production plants for some years allows us to declare that such plants do not pose a threat to the environment, the Life Cycle Analyses (LCA) show that the environmental impact of PVC is equivalent to that of other materials or even more favourable.

TITANIUM

Health effects. Elemental titanium and titanium dioxide are of a low order of toxicity. Excess exposure in humans to titanium dioxide due to inhalation can result in mild alterations in the lungs.

Effects of overexposure to titanium powder. Dust inhalation may cause tightness and pain in chest, coughing, and difficulty breathing. Contact with skin or eyes may cause irritation. Entry pathways: Inhalation, skin contact, eye contact.

Carcinogenicity. The International Agency for Research on Cancer (IARC) has listed titanium dioxide within Group 3 (The agent is not classifiable as to its carcinogenicity to humans.)

Environmental effects. Low toxicity. No negative environmental effects of titanium have been reported.

15. WARRANTY CERTIFICATE

a. 1. GENERAL CONDITIONS

- In accordance with these provisions, the seller guarantees that the product under this warranty (the "Product") does not show any non-compliance at the time of sale.
- The warranty period covers the Product for 3 years from the moment it is given to the buyer.
- In the event of non-compliance of the Product, and if the buyer notifies the seller during the Warranty Period, the seller must repair or replace the Product (bearing this cost) wherever it may be deemed appropriate, unless it may not be possible or disproportionate.
- Whenever the Product is not repairable or may not be replaceable, the buyer may request a proportional reduction in price or, if the non-compliance is significant, the termination of the sale agreement.
- Those parts replaced or repaired pursuant to this warranty will not extend the original Warranty Period, although they will have their own warranty.
- For this warranty to be effective, the buyer will have to prove date of purchase and the delivery of the Product.
- If six months have passed since the delivery of the Product to the buyer and the buyer claims non-compliance of the Product, the buyer must show proof of origin and existence of the alledged malfunction or defect.
- This Warranty Certificate does not limit or prejudice the rights of the consumer afforded to the consumer by national statutory law.

b. 2 PARTICULAR CONDITIONS

- This warranty covers any product referred to in this manual.
- This Warranty Certificate applies exclusively to European Union countries.
- For this warranty to be effective, the buyer will have to strictly follow the manufacturer's instructions included in the documentation accompanying the Product, whenever such documentation is applicable by Product range and model.
- Whenever a time schedule is set for replacement, maintenance or cleaning of Product parts or components, the Warranty will only be valid when such schedule has been duly followed.

c. 3. LIMITATIONS

- This warranty is only applicable to those sales made to consumers, "consumer" being the person who acquires the Product not for professional purposes.
- No guarantees are made regarding normal wear and tear of the Product. With regard to parts, components and/or perishable or consumables such as batteries, bulbs, etc., the documentation accompanying the Product will be followed, where necessary.
- The warranty does not cover those events where the Product: (I) has been subject to abuse; (II) repaired, maintained or handled by unauthorised persons or (III) repaired or maintained with non-original parts.

Whenever the non-compliance of the Product may be the result of incorrect installation or start-up, this warranty will only be valid whenever such installation or start-up is included in the Product's purchase-sale agreement and has been carried out by the seller or under the seller's responsibility.

TABLE 1: TECHNICAL DATA [ALASKA]

ALASKA			EF-4	EF-6	EF-8	EF-10	EF-15	EF-17
CODES			32535-MOB	32536-MOB	32537-MOB	32538-MOB	32540-MOB	32541-MOB
POWER SUPPLY			230 V / 50 Hz / I+N		400 V / 50 Hz / III+N			
CONDENSER			TITANIUM					
COMPRESSOR			SCROLL					
FANS	UNITS	Uds.	1	1	1	2	2	2
	TYPE		AXIAL					
	FLOW	m^3/h	3800	4900	5500	9800	11000	11000
REFRIGERANT GAS R-407-C		KG	2	4,3	4,5	8	9	10
WATER FLOW		m^3/h	6-10	6-10	7-12	7-12	10-15	10-15
WATER FITTINGS DIAMETER		mm	50	50	50	50	63	63
Air = 27 °C Water = 12°C 60% Hr	INLET POWER	kW	1,34	2,01	2,84	3,55	4,95	6,57
	OUTLET POWER	kW	4,43	5,72	8,88	10,73	16,60	22,71
	ERR		3,32	2,85	3,13	3,02	3,35	3,46
SOUND PRESSURE	dbA (d*)		70	70	70	70	70	70
	dbA (5 m)		65	65	65	65	65	65
GROSS WEIGHT		kg	115	115	185	190	205	240

TABLE 2: TECHNICAL DATA [SIBERIA]

SIBERIA			EF-4	EF-6	EF-8	EF-10	EF-15	EF-17
CODES			33301-MOB	33302-MOB	33303-MOB	33304-MOB	33306-MOB	33307-MOB
POWER SUPPLY			230 V / 50 Hz / I+N		400 V / 50 Hz / III+N			
CONDENSER			TITANIUM					
COMPRESSOR			SCROLL					
FANS	UNITS	Uds.	1	1	1	1	1	1
	TYPE		CENTRIFUGAL					
	FLOW	m^3/h	3800	4900	5500	9800	11000	11000
REFRIGERANT GAS R-407-C		KG	2	4,3	4,5	8	9	10
WATER FLOW		m^3/h	6-10	6-10	7-12	7-12	10-15	10-15
WATER FITTINGS DIAMETER		mm	50	50	50	50	63	63
Air = 27 °C Water = 12°C 60% Hr	INLET POWER	kW	1,83	2,33	3,15	4,45	7,66	9,28
	OUTLET POWER	kW	4,43	5,72	8,88	10,73	16,60	22,71
	ERR		2,42	2,46	2,82	2,41	2,17	2,45
SOUND PRESSURE	dbA (d*)		70	70	70	70	70	70
	dbA (5 m)		65	65	65	65	65	65
GROSS WEIGHT		kg	125	153	183	205	306	346

TABLE 3: TECHNICAL DATA [BERING]

BERING			EF-4	EF-6	EF-8	EF-10	EF-15	EF-17
CODES			66306	66307	66308	66309	66311	66312
POWER SUPPLY			230 V / 50 Hz / I+N		400 V / 50 Hz / III+N			
CONDENSER			TITANIUM					
COMPRESSOR			SCROLL					
REFRIGERANT GAS R-407-C		KG	1,5	1,8	2,5	2,5	2,7	8
WATER FLOW		m^3/h	6-10	6-10	7-12	7-12	10-15	10-15
CONNECTION DIAMETER		mm	50	50	50	50	63	63
Hot Water Pool= 27°C Cool Water Pool = 12°C	INLET POWER	kW	1,59	2,41	2,73	3,64	4,09	5,71
	OUTLET POWER	kW	5,72	8,88	10,73	13,46	16,60	22,71
	ERR		3,57	3,60	3,68	3,70	4,06	3,98
SOUND PRESSURE	dbA (d*)		70	70	70	70	70	70
	dbA (5 m)		65	65	65	65	65	65
GROSS WEIGHT		kg	100	110	120	190	220	225

TABLE 4: MAXIMAL ELECTRICAL DATA [ALASKA]

CODES	VOLTAGE	WIRE MINIMUN SECTION	POWER SUPPLY	COMPRESSOR MOC	FAN	TOTAL
	[V]	[mm2]		[A]	[A]	[A]
EF-4	230	2,5	I+N+PE	8,5	0,94	9,44
EF-6		4		9,84	1,90	11,74
EF-8	400	2,5	III+N+PE	6,20	0,80	7,00
EF-10		2,5		6,80	2x0,8	8,40
EF-15		4		9,90	2x0,8	11,50
EF-17		4		13,20	2x0,8	14,80

TABLE 5: MAXIMAL ELECTRICAL DATA [SIBERIA]

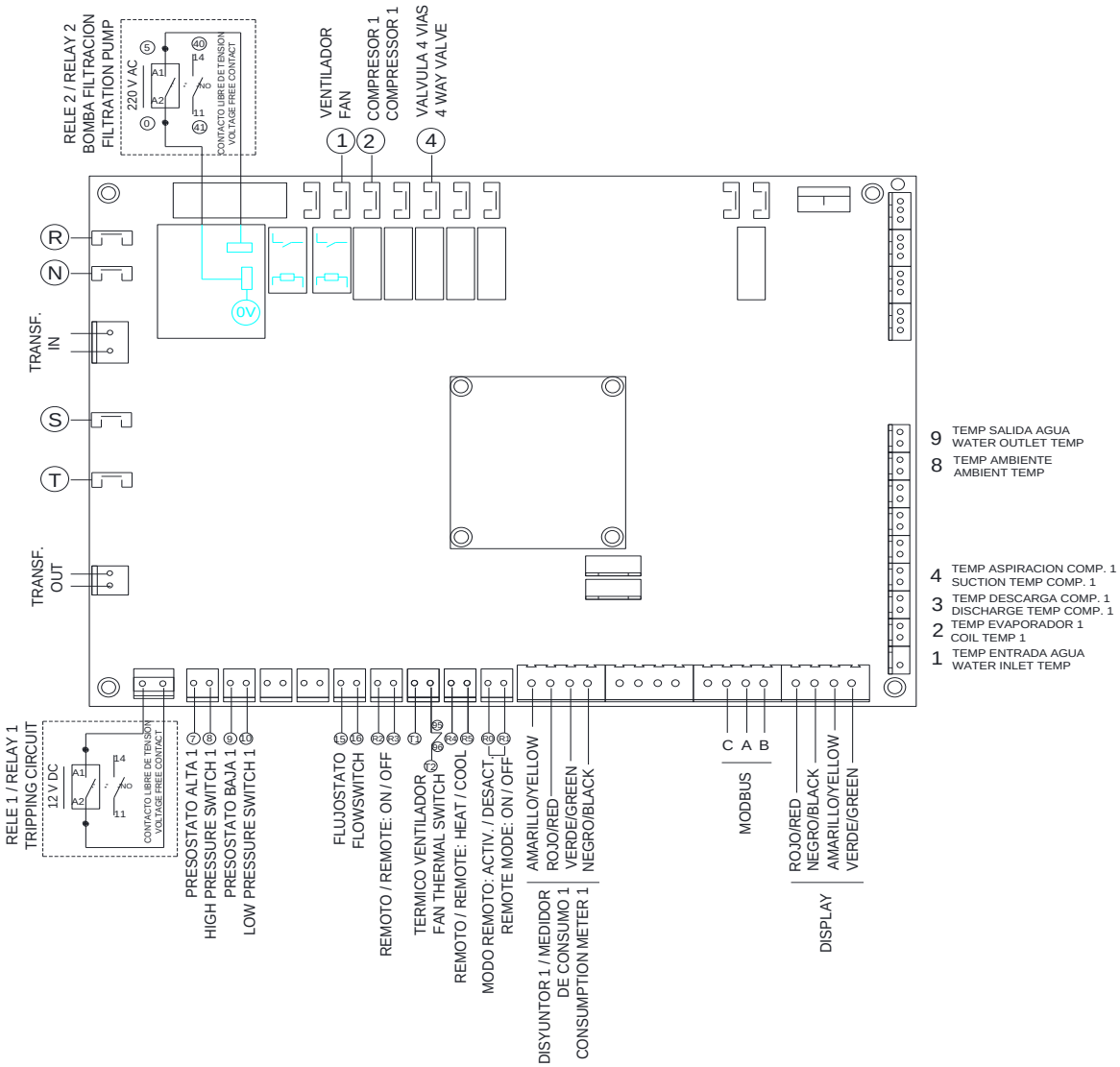
CODES	VOLTAGE	WIRE MINIMUN SECTION	POWER SUPPLY	COMPRESSOR MOC	FAN	TOTAL
	[V]	[mm2]		[A]	[A]	[A]
EF-4	230	4	I+N+PE	8,50	4,50	13,00
EF-6		4		9,84	7,60	17,44
EF-8	400	2,5	III+N+PE	6,20	4,20	10,40
EF-10		2,5		6,80	3,40	10,20
EF-15		4		9,90	3,40	13,30
EF-17		4		13,20	3,40	16,60

TABLE 6: MAXIMAL ELECTRICAL DATA [BERING]

CODES	VOLTAGE	WIRE MINIMUN SECTION	POWER SUPPLY	COMPRESSOR MOC	FAN	TOTAL
	[V]	[mm2]		[A]	[A]	[A]
EF-4	230	2,5	I+N+PE	8,50	-	8,50
EF-6		2,5		9,84	-	9,84
EF-8	400	2,5	III+N+PE	6,20	-	6,20
EF-10		2,5		6,80	-	6,80
EF-15		2,5		9,90	-	9,90
EF-17		4		13,20	-	13,20

IMAGE 1: ELECTRICAL SCHEME [ALASKA / SIBERIA / BERING]

ALASKA / SIBERIA



BERING

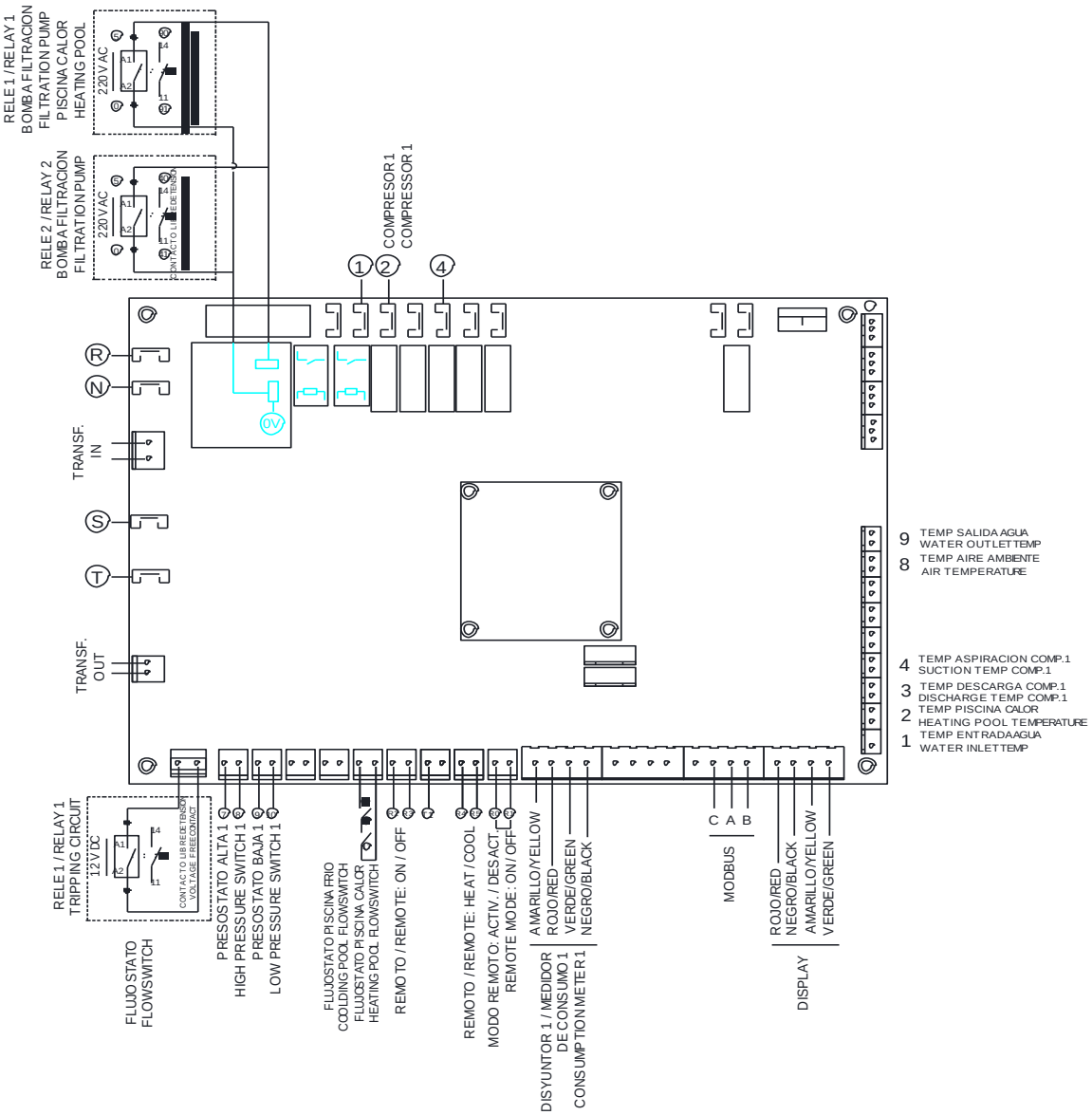


IMAGE 2: CONNECTIONS [ALASKA / SIBERIA / BERING]

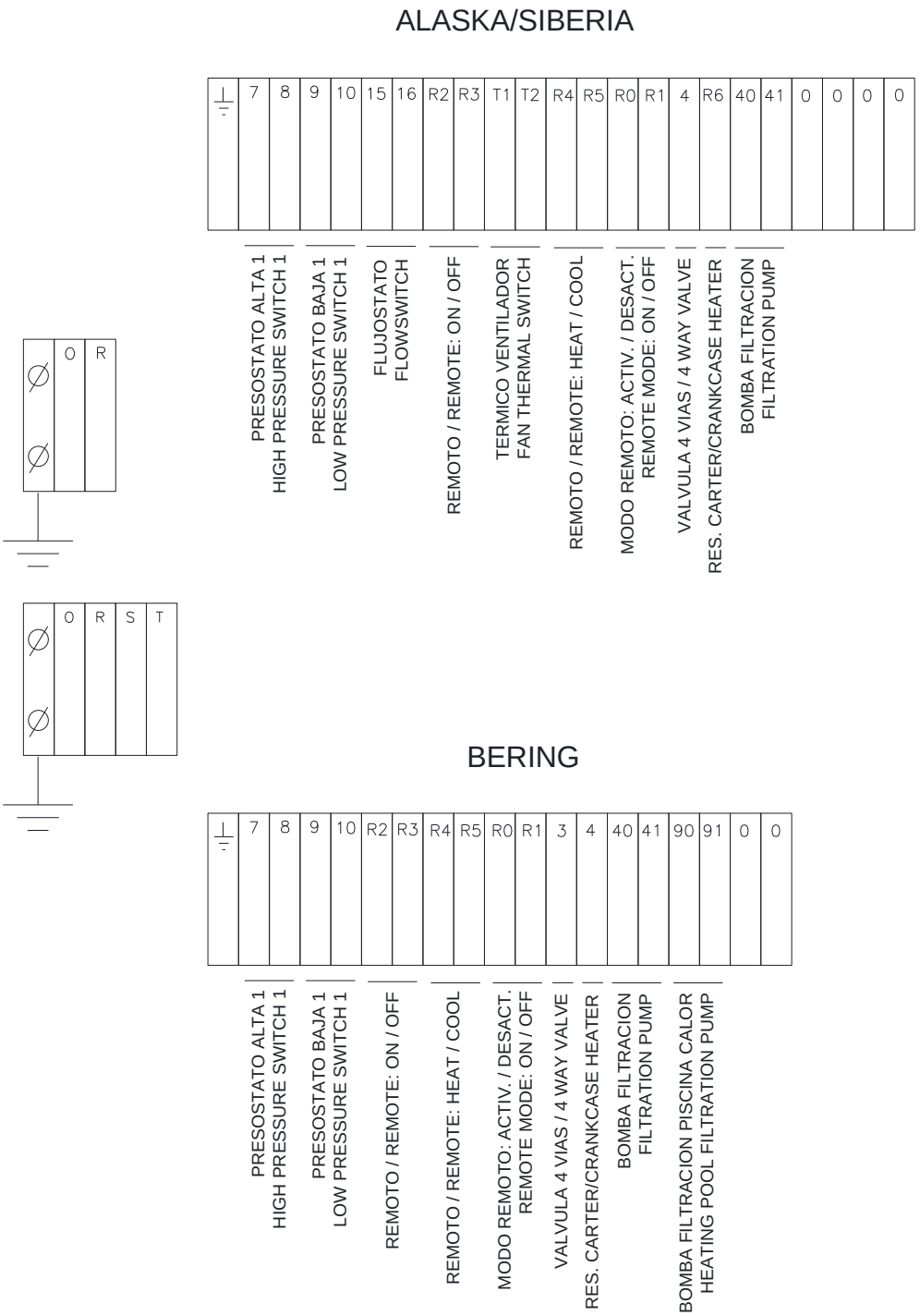
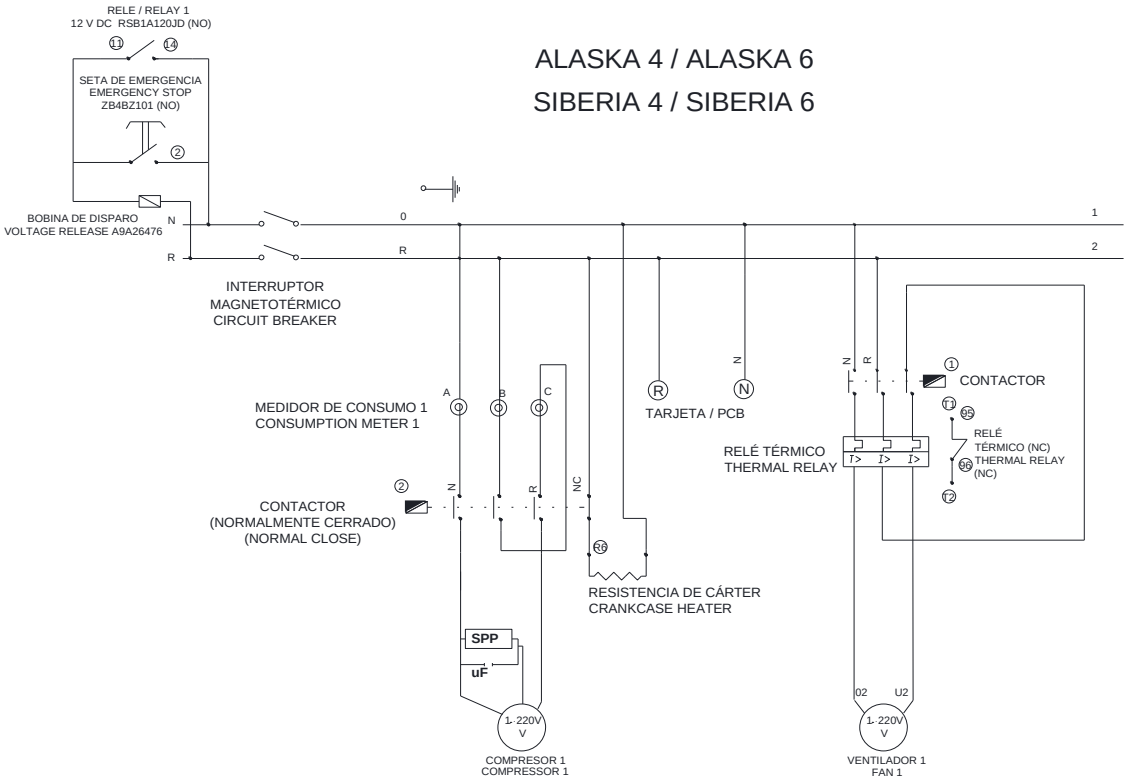
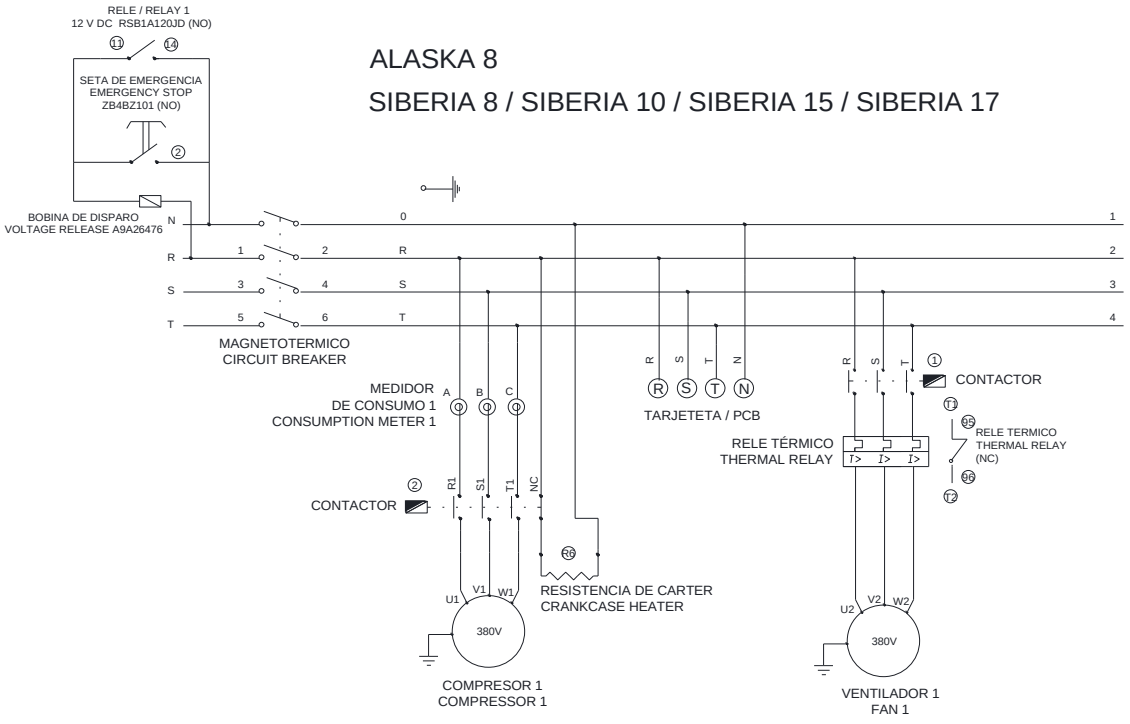


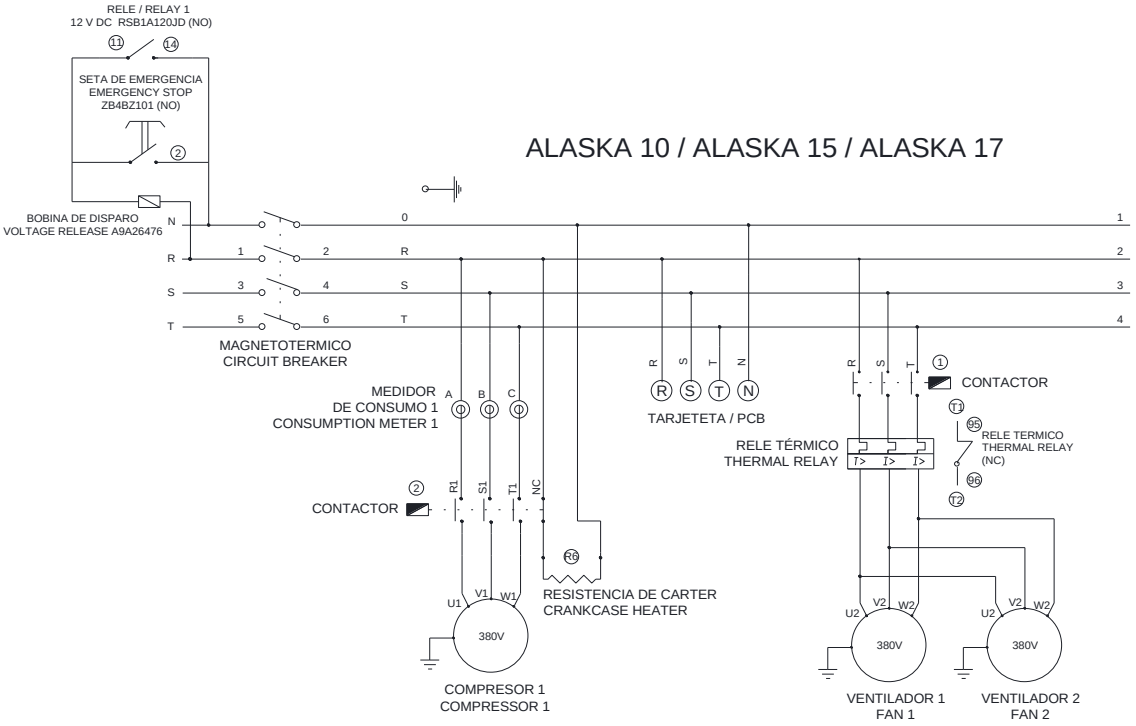
IMAGE 3: POWER DIAGRAM [ALASKA / SIBERIA / BERING]

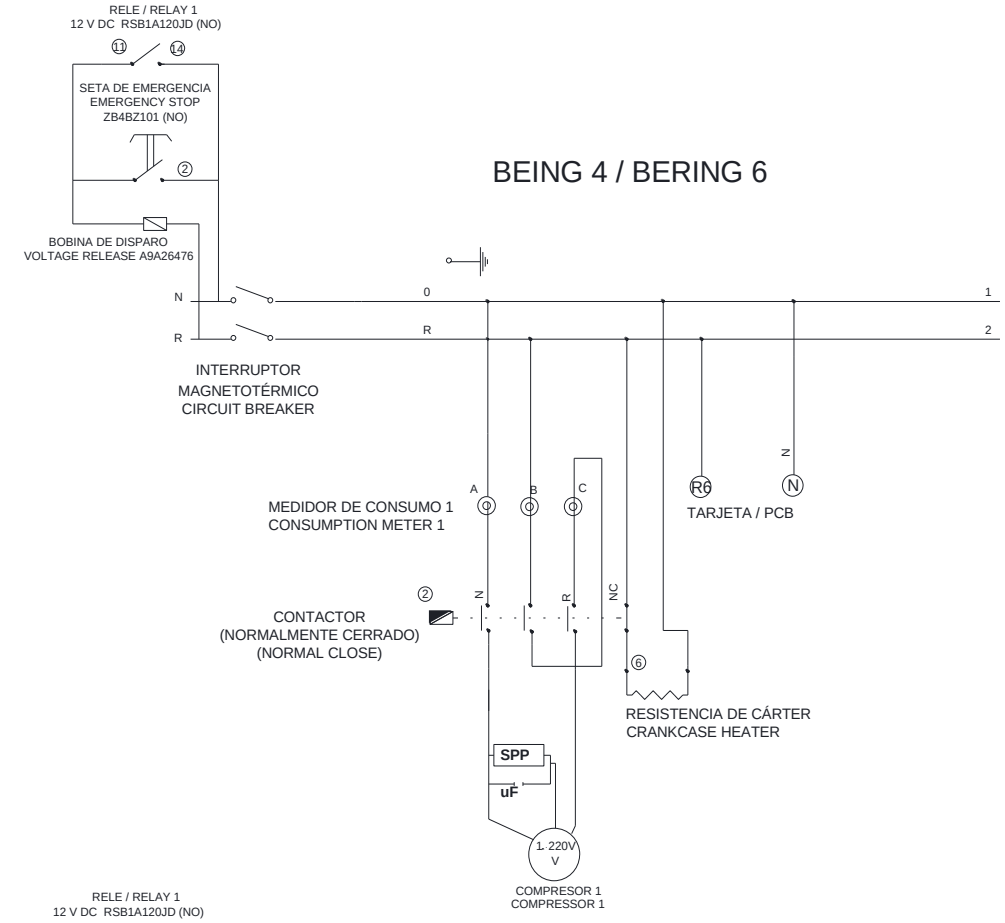


ALASKA 4 / ALASKA 6
SIBERIA 4 / SIBERIA 6



ALASKA 8
SIBERIA 8 / SIBERIA 10 / SIBERIA 15 / SIBERIA 17





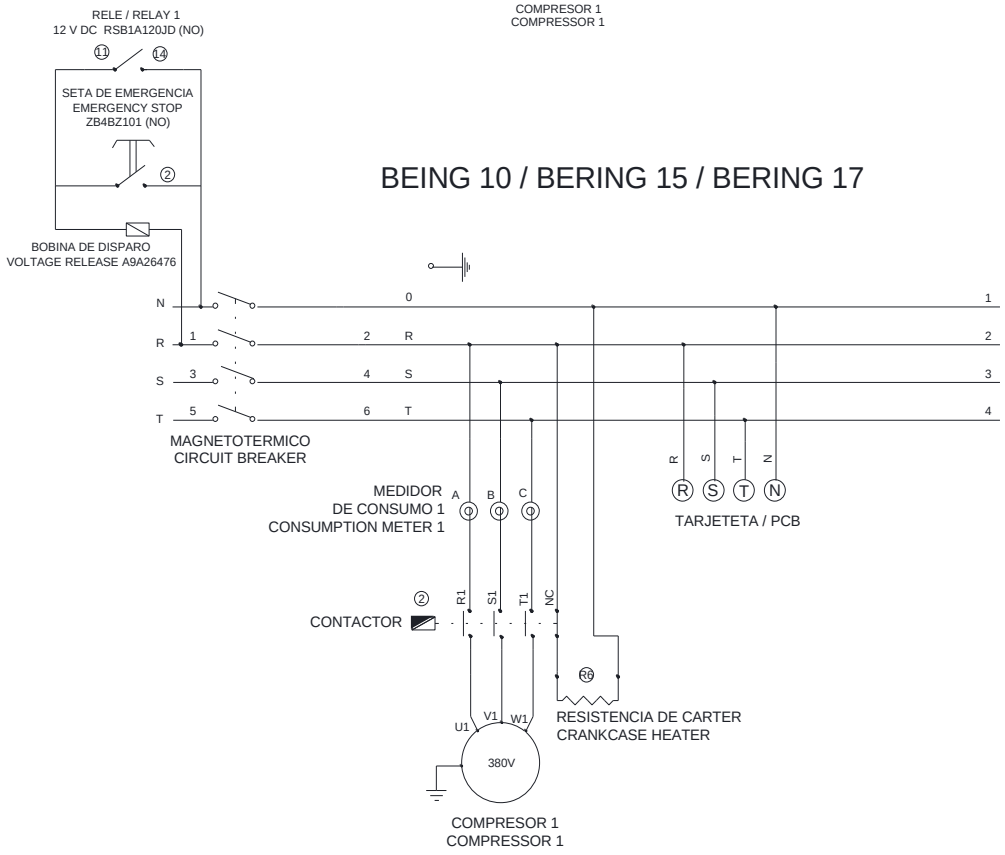
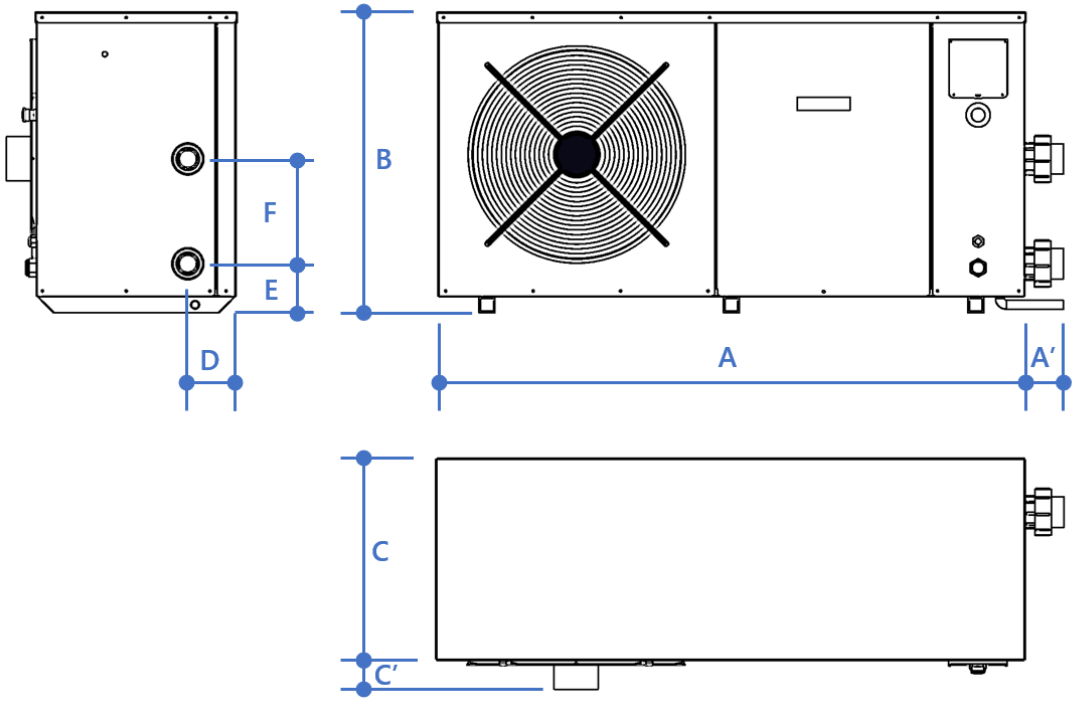
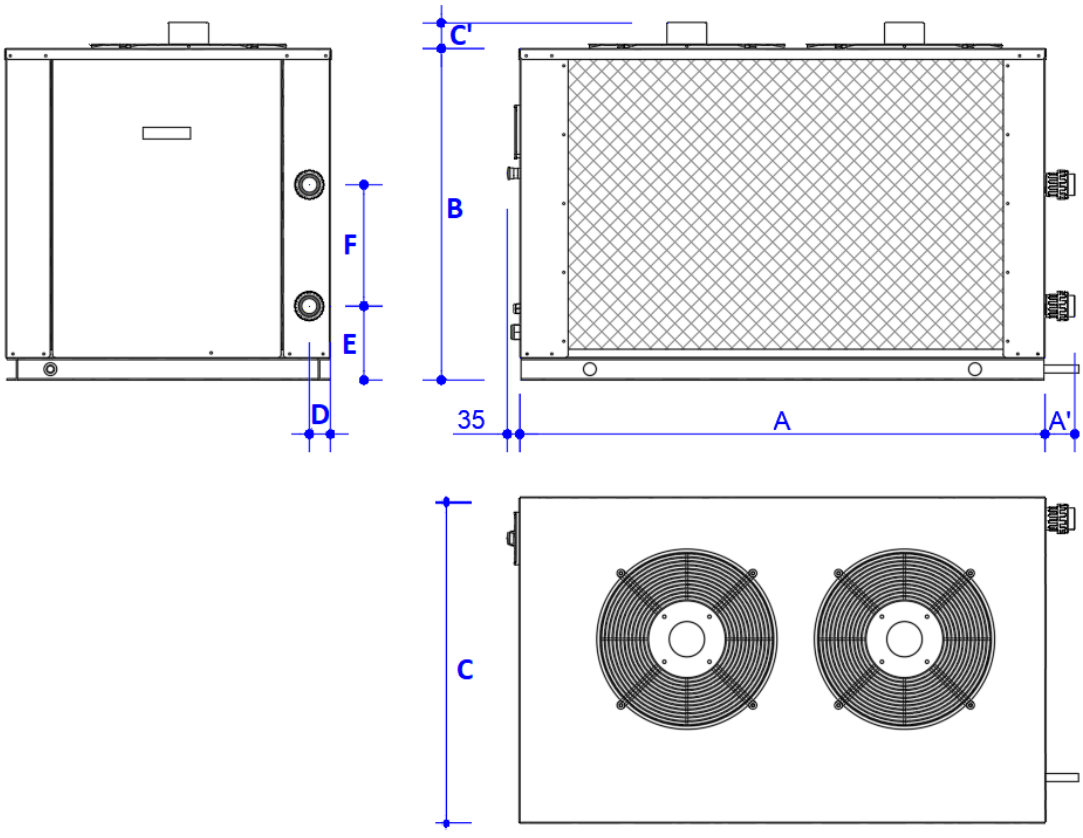


IMAGE 5: ALASKA DIMENSIONS

ALASKA 4 / ALASKA 6 / ALASKA 8



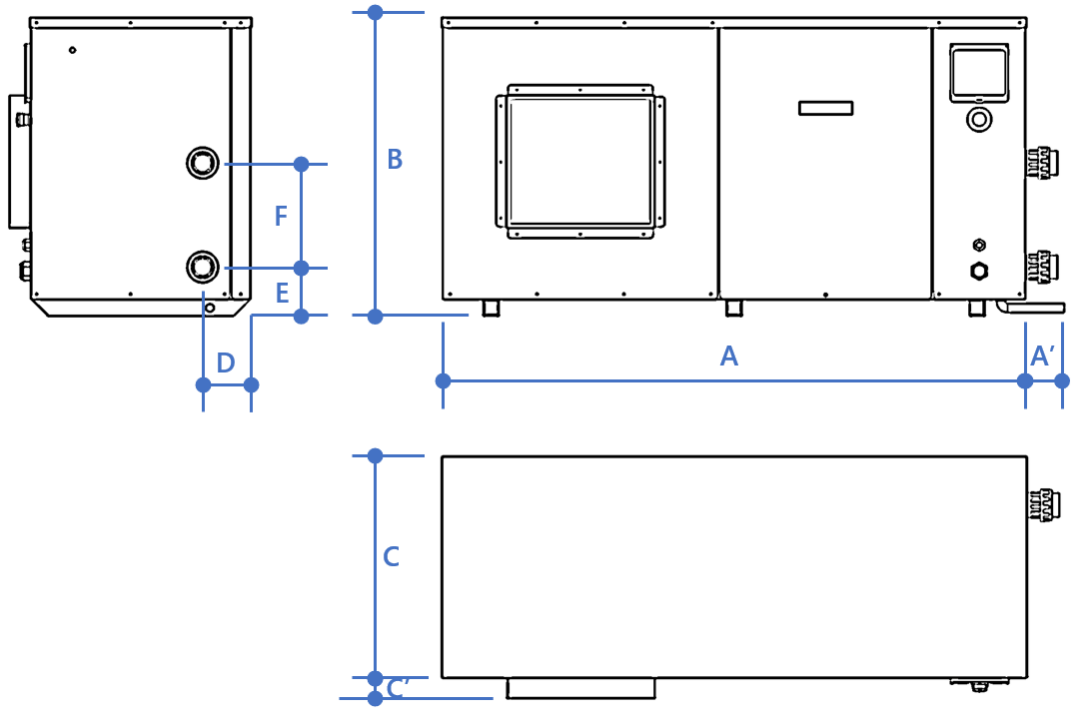
ALASKA 10 / ALASKA 15 / ALASKA 17



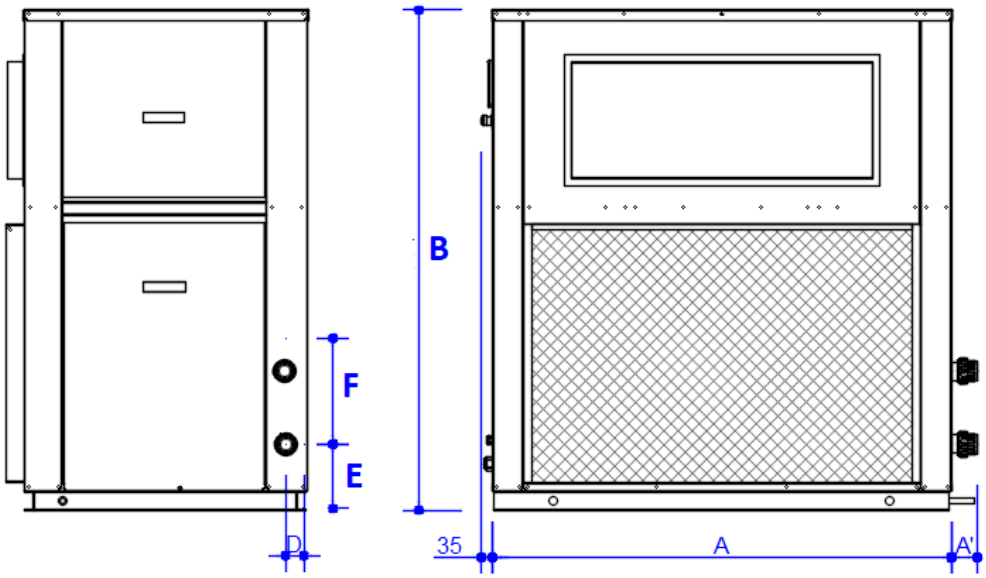
	A	A'	B	C	C'	D	E	F
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ALASKA-4	1463	80	746	502	72	122	122	260
ALASKA-6	1463	80	746	502	72	122	122	260
ALASKA-8	1613	80	846	542	72	122	122	280
ALASKA-10	1453	80	915	900	72	96	167	280
ALASKA-15	1807	112	866	900	72	122	167	270
ALASKA-17	1807	112	866	900	72	122	167	270

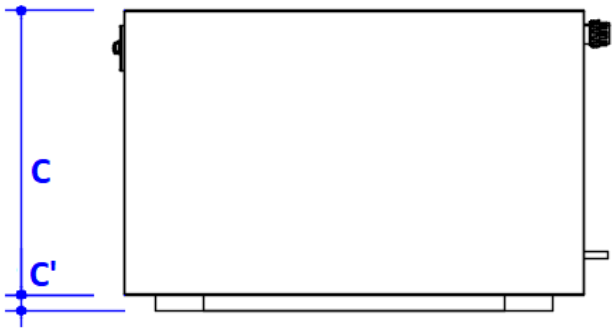
IMAGE 6: SIBERIA DIMENSIONS

SIBERIA 4 / SIBERIA 6 / SIBERIA 8



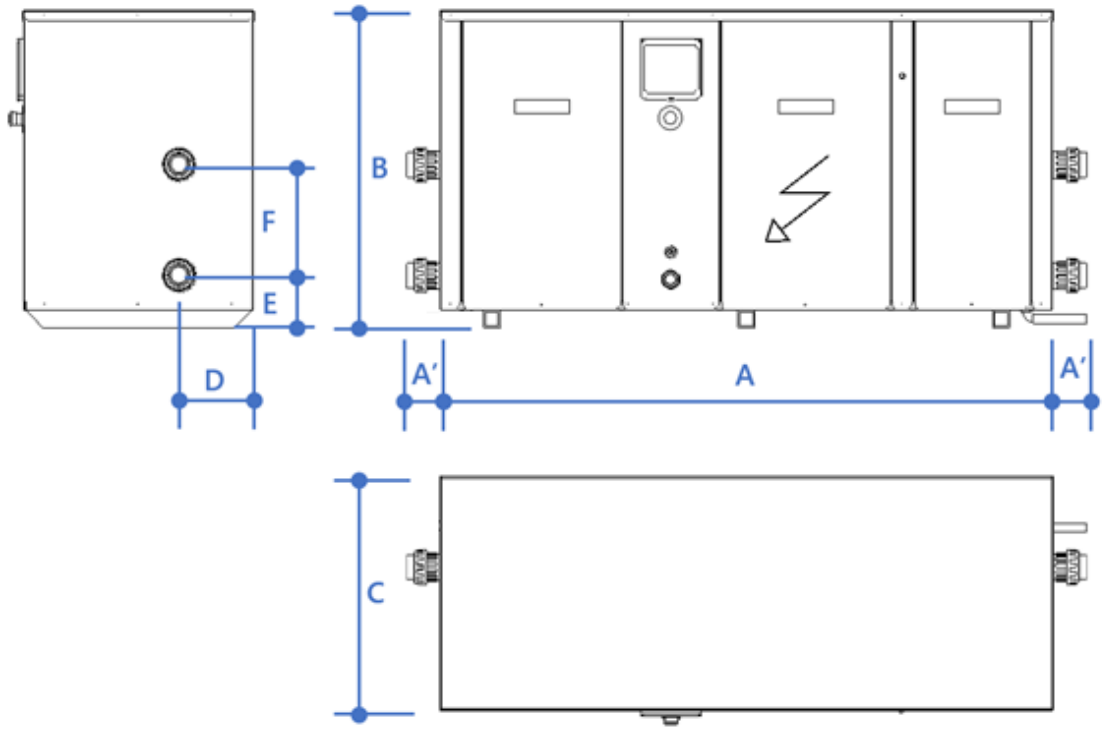
SIBERIA 10 / SIBERIA 15 / SIBERIA 17





	A	A'	B	C	C'	D	E	F
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
SIBERIA-4	1463	80	746	556	49	122	122	260
SIBERIA -6	1463	80	746	702	49	122	122	260
SIBERIA -8	1613	80	746	702	49	122	122	280
SIBERIA -10	1456	80	1584	900	49	87	167	280
SIBERIA -15	1856	112	1584	900	49	87	167	270
SIBERIA -17	1856	112	1584	900	49	87	167	270

IMAGE 7: BERING DIMENSIONS



	A	A'	B	C	C'	D	E	F
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
BERING-4	1460	80	746	550		175	122	260
BERING -6	1460	80	746	550		175	122	260
BERING -8	1460	80	746	550		175	122	280
BERING -10	1460	80	746	550		175	122	280
BERING -15	1670	112	846	650		225	122	270
BERING -17	1670	112	846	650		225	122	270

CE

EU DECLARATION OF CONFORMITY DICHIARAZIONE UE DI CONFORMITÀ
DECLARATION UE DE CONFORMITE EU-CONFORMITEITSVERKLARING
DECLARACIÓN UE DE CONFORMIDAD DECLARAÇÃO UE DE CONFORMIDADE
EU-KONFORMITÄTSERKLÄRUNG

The undersigned/ Le soussigné/ El abajo firmante/ Der Unterzeichnete/ Il sottoscritto/ Ondergetekende/ O abaixo assinado:

Talleres del Agua S.L. – Polígono Industrial de Barros, Parcela 5 – 39.400 Los Corrales de Buelna – Cantabria – SPAIN

Declares under its sole responsibility that the products:
Déclare sous sa seule responsabilité que les produits :
Declara, bajo su exclusiva responsabilidad, que los productos:
Erklärt unter seiner alleinigen Verantwortung, dass die Produkte:
Dichiara sotto la sua esclusiva responsabilità che i prodotto:
Verklaart onder zijn uitsluitende verantwoordelijkheid dat de producten:
Declara sob a sua exclusiva responsabilidade que os produtos:

Product description / Description du produit / Descripción del producto/ Produktbeschreibung / Descrizione del
prodotto / Productbeschrijving/ Descrição do Produto:

POOL CHILLER

Model / modèle / modelo/ modell /modello/model/modelo:

ALASKA / SIBERIA/ BERING

- **ALASKA - 4 (code: 32535 - XXX - YYY)**
- **ALASKA - 6 (code: 32536 - XXX - YYY)**
- **ALASKA - 8 (code: 32537 - XXX - YYY)**
- **ALASKA - 10 (code: 32538 - XXX - YYY)**
- **ALASKA - 15 (code: 32540 - XXX - YYY)**
- **ALASKA - 17 (code: 32541 - XXX - YYY)**
- **SIBERIA - 4 (code: 33301 - XXX - YYY)**
- **SIBERIA - 6 (code: 33302 - XXX - YYY)**
- **SIBERIA - 8 (code: 33303 - XXX - YYY)**
- **SIBERIA - 10 (code: 33304 - XXX - YYY)**
- **SIBERIA - 15 (code: 33306 - XXX - YYY)**
- **SIBERIA - 17 (code: 33307 - XXX - YYY)**
- **BERING - 4 (code: 66306 - XXX - YYY)**
- **BERING - 6 (code: 66307 - XXX - YYY)**
- **BERING - 8 (code: 66308 - XXX - YYY)**
- **BERING - 10 (code: 66309 - XXX - YYY)**
- **BERING - 15 (code: 66311 - XXX - YYY)**
- **BERING - 17 (code: 66312 - XXX - YYY)**

Brand/ marque/ marca/ marke/ marca/ merk/ marca:

ASTRALPOOL

Are in conformity with the following harmonized standards or specifications:
sont en conformité avec les standards harmonisés suivants ou spécifications :
cumple con las siguientes normas armonizadas o especificaciones:
in Übereinstimmung mit den folgenden harmonisierten Normen oder Spezifikationen sind:
sono conformi alle seguenti norme armonizzate o specifiche:
in overeenstemming zijn met de volgende geharmoniseerde standaarden of specificaties:
estão em conformidade com os seguintes padrões harmonizados ou especificações:

- **EN 55014-1: 2017; EN 55014-2:2015**
- **EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017**
- **EN 62233:2008 + AC:2008**
- **EN 60335-2-40:2003 (incl. Corr.:2006) + A11:2004 + A12:2005 + A1:2006 + A2:2009 + A13:2012 (incl. Corr.:2013)**

and therefore, answers to the essential requirements of the following European directives:
et par conséquent répondent aux exigences essentielles des directives européennes suivantes :
y por lo tanto cumple con los requisitos esenciales de las siguientes directivas europeas:
und damit den wesentlichen Anforderungen der folgenden europäischen Richtlinien entsprechen:
e pertanto soddisfano i requisiti essenziali delle Direttive europee seguenti:
en bijgevolg beantwoorden aan de essentiële vereisten van de volgende Europese richtlijnen:
e por conseguinte cumprem as exigências essenciais das seguintes diretivas europeias:

- **Low Voltage Directive.**
- **Electromagnetic Compatibility Directive.**

CE affixed in the year / CE apposé dans l'année / CE fijado en el año/ CE angebracht im Jahr/ CE apposto nell'anno/ CE aangebracht in het jaar / CE aposto no ano: 2021

Los Corrales de Buelna 21/12/2021

Signature / Firma/ Unterschrift / Assinatura

Mr. Carlos Pérez Macho B-39390968 General Manager

https://www.astralpool.com/products/

EN

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