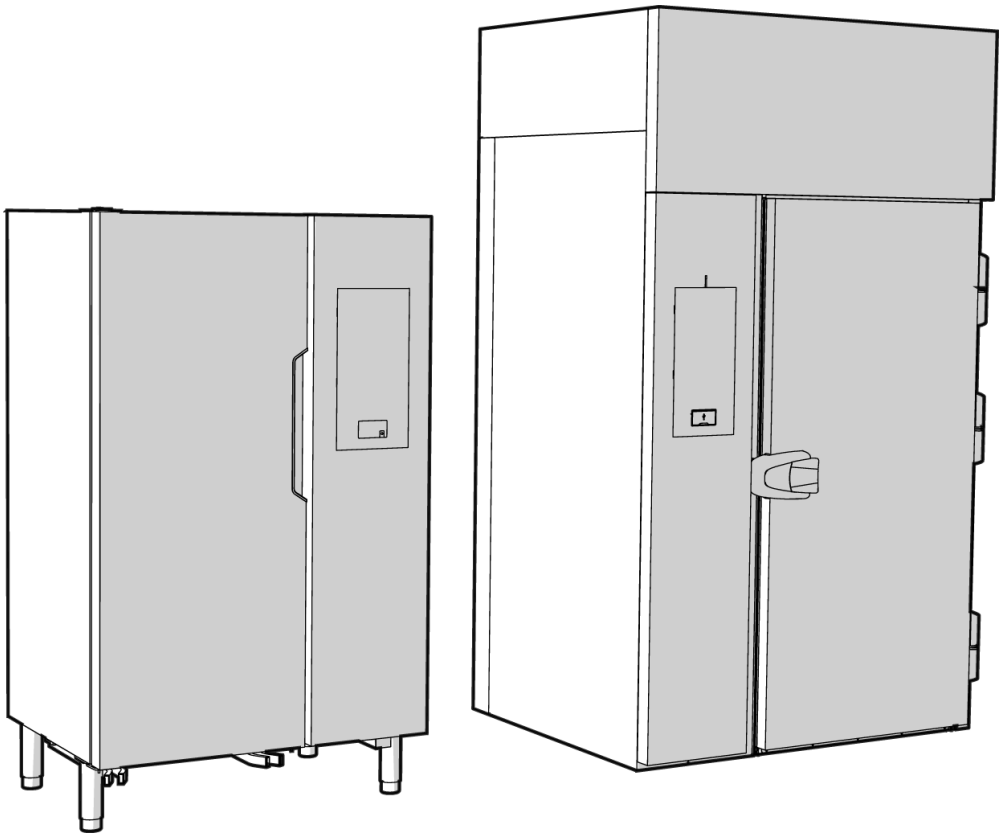
Electrolux PROFESSIONAL

SERVICE MANUAL

FREEZER 100 150 200 2019



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1.0.0	First publication	SEPTEMBER. 2019
1.0.1	Second publication	MAY 2020

Foreward

 The service manual (hereinafter Manual) provides the engineer with information necessary for correct and safe care of the machine (hereinafter “machine“, “appliance“ or “unit”).
The following instructions are intended to maintain the machine performance and to preventing injury to persons and animals and damage to property due to improper operating procedures.
All persons involved in machine transport, installation, commissioning and maintenance, repair and disassembly must refer to the content of this manual before carrying out the various operations. This, in order to avoid wrong and improper actions that could compromise the machine's integrity or endanger people.
If, after reading this manual, there are still doubts regarding machine use, do not hesitate to contact the Manufacturer or the Customer Care to receive prompt and precise assistance for better operation and maximum efficiency of the machine. During all stages of machine assessment, always respect the current regulations on safety, work hygiene and environmental protection. It is the user's responsibility to make sure the machine is started and operated only in optimum conditions of safety for people, animals and property.

IMPORTANT

- The manufacturer declines any liability for operations carried out on the appliance without respecting the instructions given in this manual as well as for operations carried out by the user without respecting the instructions given in the user manual.
- The manufacturer reserves the right to modify the appliances presented in this publication without notice; manufacturer’s relevant technical bulletins should be used as integration(s)/addendum(s).
- No part of this manual may be reproduced without the consent of the manufacturer
- This manual is available in digital format by:
  - contacting the reference customer care;
  - downloading the latest and up to date manual/technical bulletin(s) on the web site: “www.electrolux.com/professional“.

The manual must always be part of the documentation available when servicing the machine.

MODELS COVERED BY THE SERVICE MANUAL

This manual is relative to the following list of appliances.

MODEL TYPE	SKCH100R 100 KG REMOTE	SKCH150B 150 KG BUILT IN	200 KG BUILT IN	150 KG REMOTE	200 KG REMOTE	220 KG REMOTE
DESCRIP-TION	100/85 kg 20 GN1/1	150 kg 20 GN2/1	200 kg 20 GN2/1	150 kg 20 GN2/1	200 kg 20 GN2/1	220 kg 2x20 GN 1/1
POWER WATT	3000	8000	11100	6400	6400	/
POWER HEATING W	3000	5850	5850	6400	6400	6400
VOLTAGE	380-415 3N	380-415 3N	380-415 3N	380-415 3N	380-415 3N	380-415 3N
HZ	50/60	50	50	50/60	50/60	50/60
GAS REF.	R452 *	R452 *	R452	R452	R452	R452
CLIMATC CLASS	5	5	5	5	5	5
AMPERE	6,4	15.5	20.5	13.5	13.5	
REFR. QUANTITY g.	tbd	2300	3000	tbd	tbd	tbd
IP PROTECTION	X4	X4	X4	X4	X4	X4
CONSUMP-TION H2O L/min.	/	Cycle freezer 240 min=1331 L/Minutes Cycle refrigerated 90 min= 672 L/Minutes				

MODEL TYPE USA	100 KG REMOTE	200 KG REMOTE
DESCRIPTION	100/85 kg 20 GN1/1	200 kg 20 GN2/1
POWER WATT	3800	6700
VOLTAGE	208	208
GAS REF.	R448a	R448A
CLIMATC CLASS	5	5
MCA MOP	16/20	33/35
REFR. QUANTITY g.	TBD	TBD
IP PROTECTION	X4	X4

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1. GENERAL INFORMATION

1.1 GENERAL INFORMATION

To ensure safe use of the machine and a proper understanding of the manual it is necessary to be familiar with the terms and typographical conventions used in the documentation. The following symbols are used in the manual to indicate and identify the various types of hazards:

WARNING
Danger for the health and safety of operators.

WARNING
Danger of electrocution - dangerous voltage.

CAUTION
Risk of damage to the machine or the product.

WARNING
Danger of magnetic fields.

IMPORTANT
Important instructions or information on the product

Read the instructions before using the appliance

Clarifications and explanations

- Only specialised personnel are authorised to operate on the machine.
- This appliance must not be used by minors and adults with limited physical, sensory or mental abilities or without adequate experience and knowledge regarding its use.
- Do not let children play with the appliance.
- Keep all packaging and detergents away from children.
- Cleaning and user maintenance shall not be made by children without supervision.
- Do not store explosive substances, such as pressurized containers with flammable propellant, in this appliance or close to the appliance.
- Do not remove, tamper with or make the machine “CE“ marking illegible.
- Refer to the data given on the machine’s data plate “CE“ marking for relations with the Manufacturer (e.g. when ordering spare parts, etc.).
- When scrapping the machine, the “CE“ marking must be destroyed.

1.2 SAFETY INFORMATION/PRECAUTIONS

Risks mainly of a mechanical, thermal and electrical nature exist in the machine. Where possible the risks have been neutralised:

- directly, by means of adequate design solutions.
- indirectly by using guards, protection and safety devices.
- During maintenance several risks remain, as these could not be eliminated, and must be neutralised by adopting specific measures and precautions.
- Do not carry out any checking, cleaning, repair or maintenance operations on moving parts. Workers must be informed of this prohibition by means of clearly visible signs.
- To guarantee machine efficiency and correct operation, periodical maintenance must be carried out according to the instructions given in this manual.
- Make sure to periodically check correct operation of all the safety devices and the insulation of electrical cables, which must be replaced if damaged.
- Extraordinary machine maintenance operations must only be carried out by specialized Technicians provided with all the appropriate personal protection equipment (safety shoes, gloves, glasses, overalls, etc.), tools, utensils and ancillary means.
- Never operate the machine, removing, modifying or tampering with the guards, protection or safety devices.

Before carrying out any operation on the machine, always consult the manual which gives the correct procedures and contains important information on safety.

1.3 PERSONAL PROTECTION EQUIPMENT

Summary table of the Personal Protection Equipment (PPE) to be used during the various stages of the machine's service life.

Stage	Protective garments	Safety footwear	Gloves	Glasses	Safety helmet
					
Transport	—	●	○	—	○
Handling	●	●	○	—	—
Unpacking	○	●	○	—	—
Installation	○	●	○	—	—
Normal use	●	●	●1	○	—
Adjustments	○	●	—	—	—
Routine cleaning	○	●	●	○	—
Extraordinary cleaning	○	●	●	○	—
Maintenance	○	●	○	—	—
Dismantling	○	●	○	○	—
Scrapping	○	●	○	○	—
Key:					
●	PPE REQUIRED				
○	PPE AVAILABLE OR TO BE USED IF NECESSARY				
—	PPE NOT REQUIRED				

[1] During Normal use, gloves must be heatproof to protect hands from contact with hot food or hot parts of the appliance and/or when removing hot items from it. Failure to use the personal protection equipment by operators, specialized personnel or users can involve exposure to chemical risk and possible damage to health (depending on the model).

1.4 GENERAL SAFETY INFORMATION

The machines are provided with electric and/or mechanical safety devices for protecting workers and the machine itself. Therefore, the user must not remove or tamper with such devices. The Manufacturer declines any liability for damage due to tampering or their non-use.
Never operate the machine, removing, modifying or tampering with the guards, protection or safety devices.
Do not make any modifications to the parts supplied with the appliance.
Several illustrations in the manual show the machine, or parts of it, without guards or with guards removed. This is purely for explanatory purposes.
Do not use the machine without the guards or with the protection devices deactivated.
Do not remove, tamper with or make illegible the safety, danger and instruction signs and labels on the machine.
Air recirculation must take into account the air necessary for combustion, 2 m³/h/kW of gas power, and also the "well-being" of persons working in the kitchen.
Inadequate ventilation causes asphyxia.
Do not obstruct the ventilation system in the place where this appliance is installed.
Do not obstruct the vents or ducts of this or other appliances.
Place emergency telephone numbers in a visible position.
The measured sound level emitted “A“ does not exceed 70 dB (“A“).
Turn the appliance off in case of fault or poor operation.
Do not use products (even if diluted) containing chlorine (sodium hypochlorite, hydrochloric or muriatic acid, etc.) to clean the appliance or the floor under it.
Do not use metal tools to clean steel parts (wire brushes or Scotch Brite type scouring pads).
Do not allow oil or grease to come into contact with plastic parts.
Do not allow dirt, fat, food or other residuals to form deposits on the appliance.
Do not spray water or use steam to clean the equipment.
Do not store or use gasoline or other flammable vapours, liquids or items near this or any other appliance.
Do not spray aerosols near this appliance while it is in operation.
Never check for leaks with an open flame.

1.4.1 Residual risk

The machine has several risks that were not completely eliminated from a design standpoint or with the installation of adequate protection devices. Nevertheless, through this manual the Manufacturer has taken steps to inform operators of such risks, carefully indicating the personal protection equipment to be used by them. In order to reduce the risks, provide for sufficient spaces while installing the unit.
To preserve these conditions, the areas around the machine must always be:

1. kept free of obstacles (e.g. ladders, tools, containers, boxes, etc.);
2. clean and dry;
3. well lit.

For the Customer's complete information, the residual risks remaining on the machine are indicated below: such situations are deemed improper and therefore strictly forbidden.

Residual risk	Description of hazardous situation
Slipping or falling	The operator can slip due to water or dirt on the floor
Burns/abrasions (e.g. heating elements)	The operator deliberately or unintentionally touches some components inside the machine without using protective gloves
Electrocution	Contact with live parts during maintenance operations carried out with the electrical panel powered
Tipping of loads	When handling the machine or the packing containing it, using unsuitable lifting systems or accessories or with the unbalanced load

Mechanical safety characteristics, hazards

The appliance does not have sharp edges or protruding parts. The guards for the moving and live parts are fixed to the cabinet with screws, to prevent accidental access.

Protection devices installed on the machine

The guards on the machine are:

fixed guards (e.g. casings, covers, side panels, etc.), fixed to the machine and/or frame with screws or quick-release connectors that can only be removed or opened with tools.

1.5 SAFETY SIGNS TO BE PLACED NEAR THE MACHINE AREA

Prohibition	Meaning
	Do not remove the safety devices
	Do not use water to extinguish fires (placed on electrical parts)
	Keep the area around the appliance clear and free from combustible materials. Do not keep flammable materials in the vicinity of the appliance
	Install the appliance in a well-ventilated place to avoid the creation of dangerous mixtures of unburnt gases in the same room

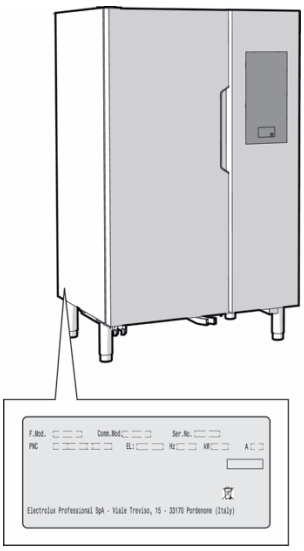
Danger	Meaning
	Danger of burns
	Danger of electrocution (shown on electrical parts with indication of voltage)
	Risk of electromagnetic fields
	Access forbidden to wearers of electrical stimulator (pacemakers)

End of use: When the appliance is no longer to be used, make it unusable by removing the mains power supply wiring.

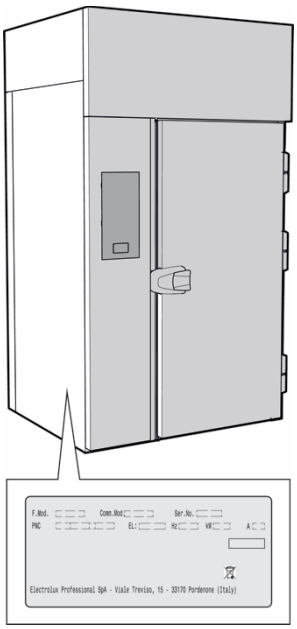
1.6 DATA PLATE (IDENTIFICATION STICKER)

The identification sticker is located under the flap of the control panel. The meaning of the various information is listed below:

100 kg



200 kg



The meaning of the various information is listed below.

Legend of data plate

F.Mod.	Factory model description
Comm.Model	Commercial description
Type Ref.	Refer to model of family (used on spc)
PNC	Production number code
Ser.No	Serial number
V	Power supply voltage / phase
Hz	Power supply frequency
kW	Max. Power input
A	Current absorption
Cyclopentane	Expanding gas used in insulation
IP	Dust and water protection rating
CE	CE marking
L	Logo IMQ/GS
Refrigerant Type	Gas type used
Climatic class	Refer to climatic test
Defrost power	KW
GWP	Global Warning Potential
CO2 eq	Quantity of greenhouse gases
CAP.	Nominal capacity
Electrolux Professional SPAViale Treviso, 15 33170Pordenone (Italy)	Manufacturer:

F.Mod. xxxxxxxxx	Comm.Model xxxxxxxxx	LW30B Cyclopentane	2017
PNC 9VTX xxxxxxxx	Ser.Nr. xxxxxxxx		
W Tot. xxx kW	Volt xxxx xxx xxHz	Total Current xxA	
Potenza Sbrinamento / Defrost Power xxx kW		Classe / Class x GWP xxxx CO2-eq xxx t	
Resistenza Evaporazione / Evaporation Heater El. x kW		Refrigerante / Refrigerant xxxxx xx Kg	
Illuminazione / Lighting x W		Cap. x	
Rated Pressure Mpaxx			
IP23			

Electrolux Professional SPA - Viale Treviso, 15 - 33170 Pordenone (Italy)

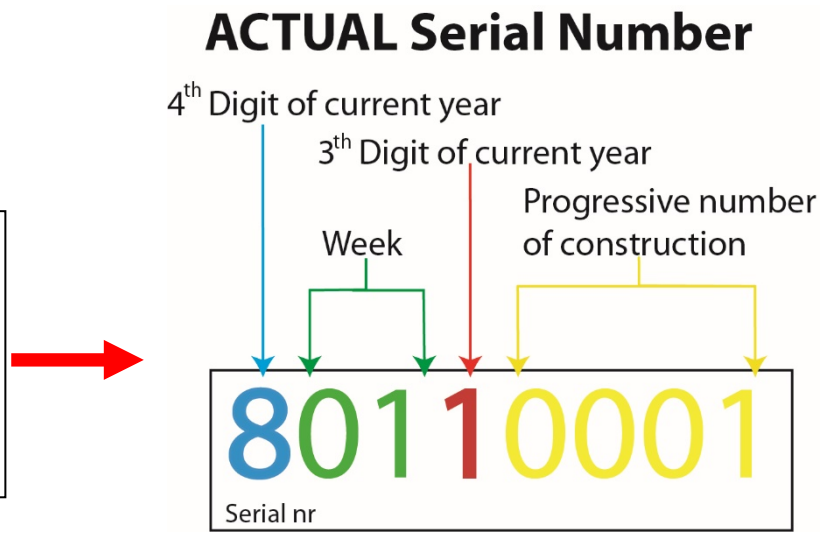
1.6.1 Serial Number (Production Date)

The serial is necessary to find the correct spare part or to ask tech. support.

EXAMPLE: Serial Number

8 01 1 0001

18 YEAR
01 WEEK
0001 APPLIANCE MANUFACTURED



1.7 TECHNICAL DATA AND DRAWINGS WITH MEASUREMENTS

Please, for technical data and overall drawings refer to Installation Manual available on website www.electro-lux.com/professional.

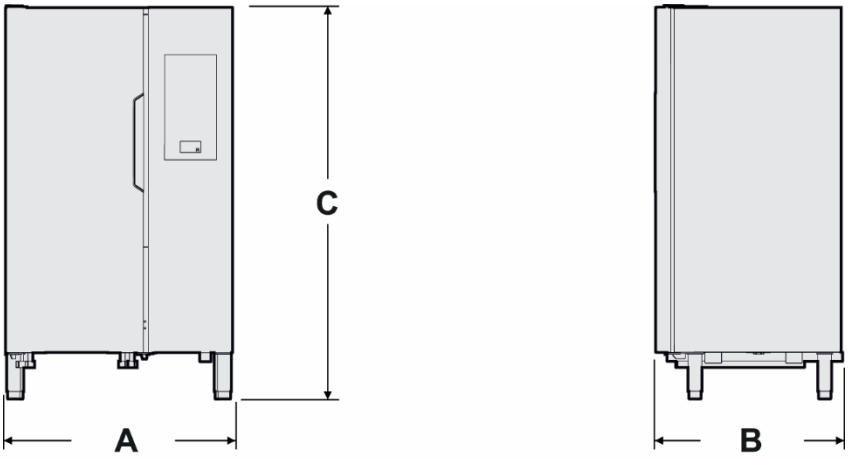


Table reference of dimensional units:

Models	Width mm	Depth mm	Height mm	Whit door open
	A	B	C	
100 Kg	1040	850	1793	1412

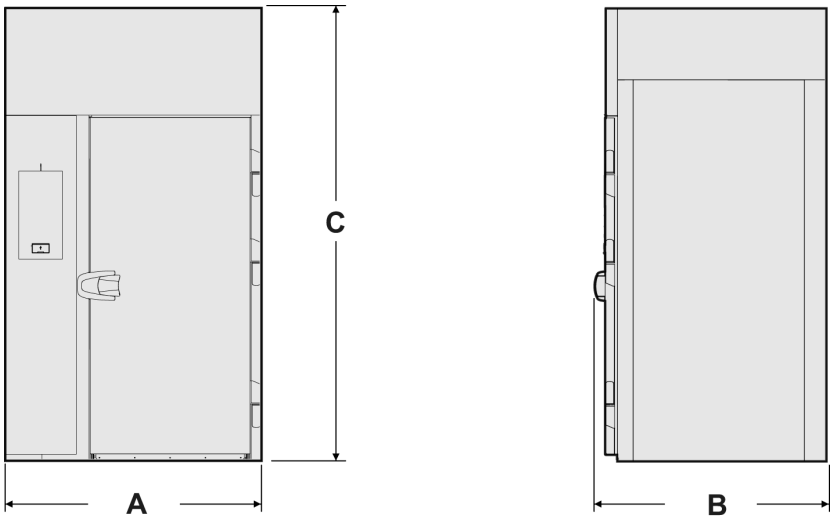
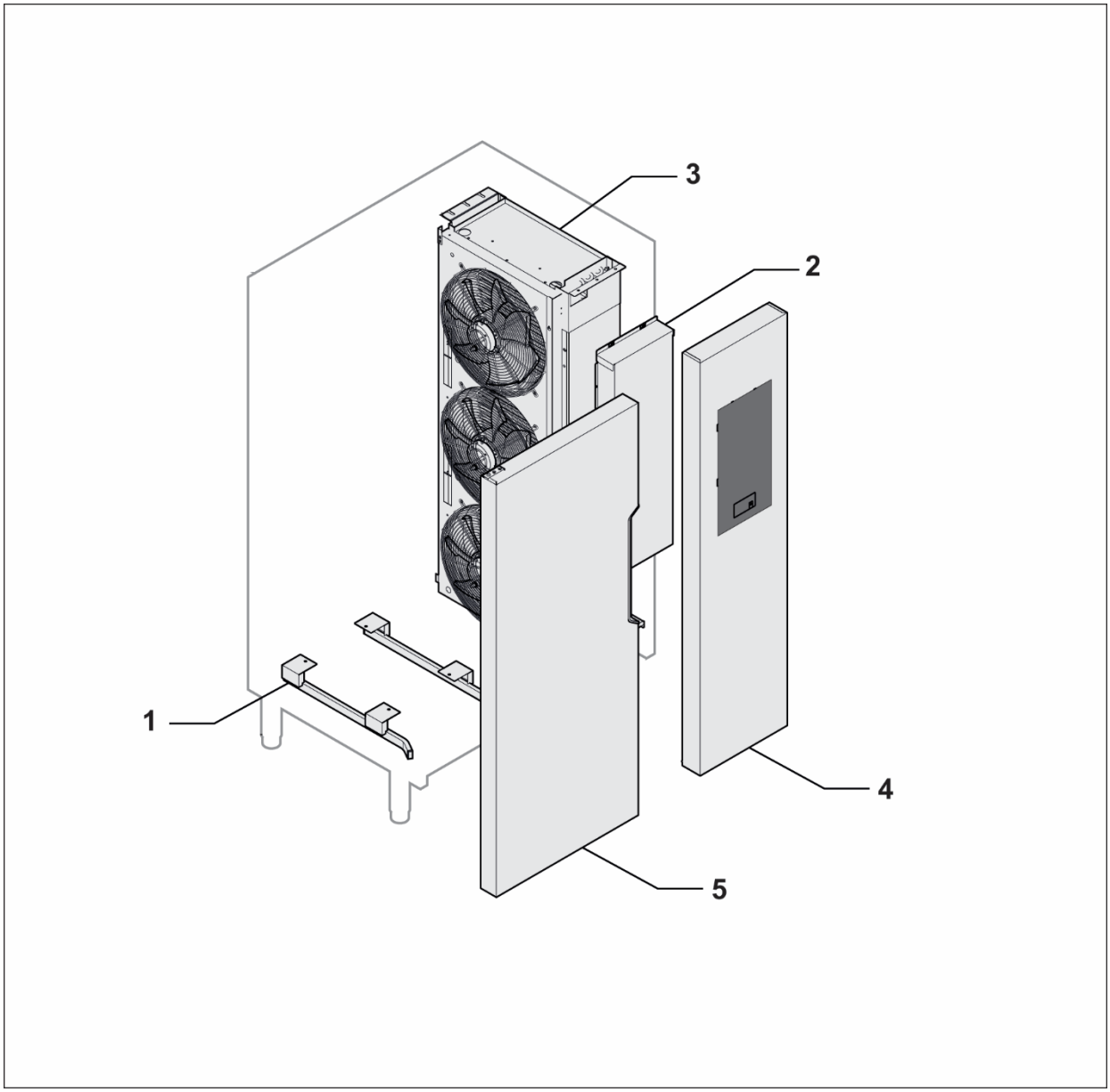


Table reference of dimensional units:

Models	Width mm	Depth mm	Height mm	Whit door open
	A	B	C	
200 Kg	1400	1266	2489	2156

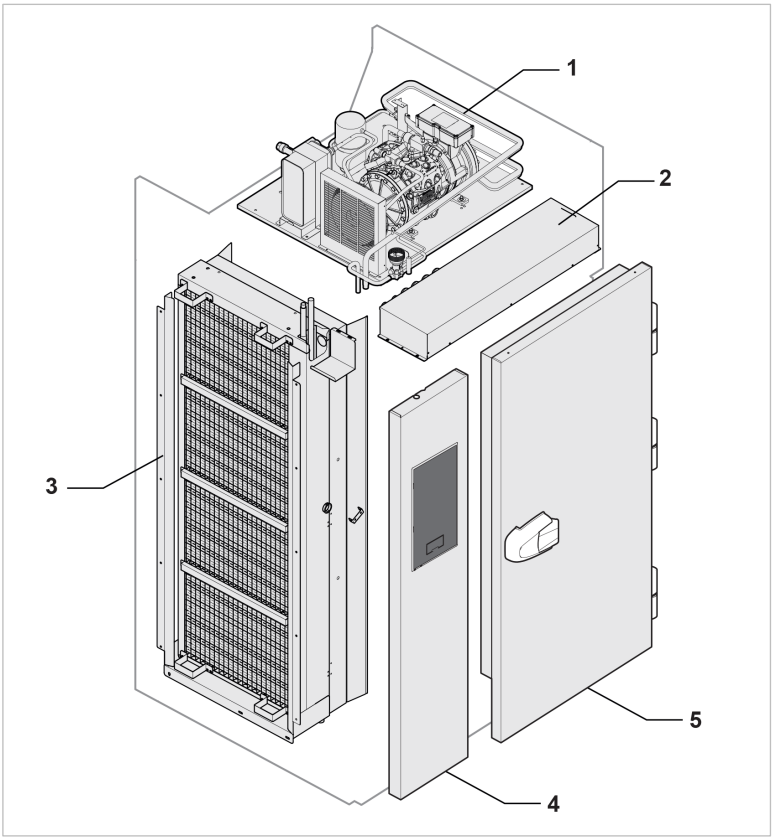
1.8 MACHINE PRESENTATION 100 KG



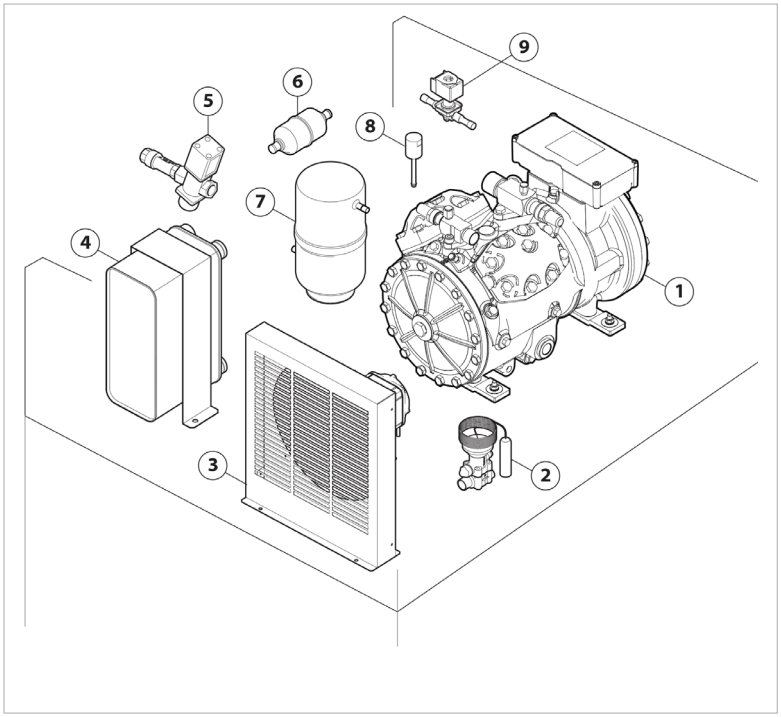
POS	DEFINITION
1	Guides
2	Main electrical box
3	Evaporator module
4	Command module
5	Door module

EWD to scheme

1.9 MACHINE PRESENTATION 200 KG



POS	DEFINITION
1	Unit or Remote connections
2	Main electrical box
3	Evaporator module
4	Command module
5	Door module



POS	DEFINITION
1	Compressor
2	Thermostatich valve
3	Condenser fan
4	Condenser
5	Water thermostatic valve
6	Dehidrator filter
7	Tanic receiver
8	Pressure switch
9	Solenoid valve

2. INSTALLATION AND COMMISSIONING

2.1 INSTALLATION

Refer to IM (Installation manual) LINK TO PNC OF THE UNIT FIND IN WEB

2.2 PRE-CONNECTION PREPARATIONS

Refer to the installation drawing for information about supply power connection and general clearances of the unit sides from walls and ceiling.

2.3 LIST OF POSSIBLE INSTALLATION SOLUTION

1. Insulation bottom and ramp (only model 150 200kg)
2. Marine feet: guarantee free access to the unit rear side.
3. Remote configuration: see IMPORTANT note at 2.7.1.

2.4 ROOM REQUIREMENTS

According to IEC/EN 60335-2-89 and IEC/EN ISO 23953, room requirements depend on the unit climatic class: see the table below.
For the specific unit climatic class refer to the installation manual and to the unit data plate.

CLIMATIC CLASS	TEMPERATURE	RELATIV HUMID-ITY	CONDENSATION POINT	MASS OF STEAM PRESENT IN THE AIR
3	25°C	60%	16,7°C	12,0 g/kg
4	30°C	55%	20,0°C	14,8 g/kg
5	40°C	40%	23,9°C	18,8 g/kg
7	35°C	75%	30,0°C	27,3 g/kg

2.5 REFRIGERATION POWER OF REMOTE UNIT

2.5.1 REFRIGERATION POWER TABLE

PNC REMOTE UNIT	COMPRESSOR	Type Gas	EVAP TEM in WATT				CONDENSATION	AMB. TEMP./ Water temp.	MAX pipes USED
			-10	-20	-36	-40			
881158	H505CS	R404A	11740	8130	3690	2850	AIR	40°C	30 meters
881159	H751CS	R404A	15990	11110	6010	\	AIR	40°C	30 meters
881160	H1001CS	R404A	22190	14490	7190	5570	AIR	40°C	30 meters
881171	H505CS	R404A	11740	8130	3690	2850	WATER	10° to 30°	30 meters
881172	H751CS	R404A	15990	11110	6010	\	WATER	10° to 30°	30 meters
881173	H505CS	R404A	11740	8130	3690	2850	AIR and WATER	40°C	30 meters
881223	H505CS	R452A	11650	8040	3600	2770	AIR	40°C	30 meters
881224	H751CS	R452A	15620	10870	5910	\	AIR	40°C	30 meters
881225	H1001CS	R452A	21760	15140	7100	5560	AIR	40°C	30 meters
881228	H505CS	R452A	11650	8040	3600	2770	WATER	10° to 30°	30 meters
881229	H751CS	R452A	15620	10870	5910	\	WATER	10° to 30°	30 meters
881230	H505CS	R452A	11650	8040	3600	2770	AIR and WATER	40°C	30 meters

2.6 CONNECTION REMOTE UNIT

2.6.1 Technical Instructions / Installation Precautions

The instructions below are general guidelines, but they do contain the major points that shall be taken into account for proper and safe product installation for assuring best performances and preventing warranty voidance.

⚠ **Caution: Refrigeration systems are pressurized circuits! It is therefore of the utmost importance that the condensing units are removed and / or installed only by technically qualified personnel, with knowledge of the equipment and of the processes to be adopted.**

2.6.2 General Information

Inspect the unit for detecting possible damages occurred during the transport: report to the carrier immediately if any damage.

The warranty does not cover damage due to storage, transport or installation of the condensing unit carried out in the wrong position.

⚠ **Warning: Make sure you have read and understand all procedures and caution messages before you execute any maintenance or installation tasks! It is imperative – for your own safety - that the testing devices used are functioning well and properly sized.**

2.6.3 Basic Installation – Overview

The installation site shall be well ventilated, ensuring that there will be sufficient air flow behind the condenser (refer to Figure 1)

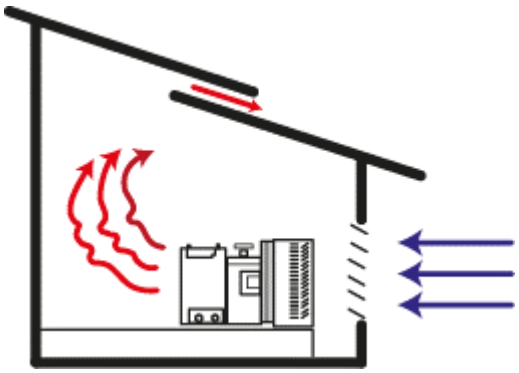


Figure 1 – Natural airflow through the roof

If the flow of air to the condenser is limited (or even partially blocked), system performance and reliability can be drastically reduced. Condensing units are designed to operate at ambient temperatures up to 43°C (110°F). Therefore, make sure that the temperature at the installation site does not exceed the recommended limit.

⚠ **Warning: it is necessary to periodically clean the condenser, so that no particles damage or block the air circulation.**

2.6.4 Installation Steps

INFORMATION:

Select and size the equipment needed to assemble the refrigeration system according to the project specifications (pipes, valves, accessories, condensing unit). Carefully observe the scope for each model.

IMPORTANT: Size pipe/hose based on the condensing unit dimensions (do not size based on the evaporator).

A. Phases

1. **Weld the pipes to the condensing unit and evaporator connections. Check the seal (leak test) in all soldered or threaded connections.**
2. **Obtain the vacuum in the circuit (check with the pressure gauge if the vacuum is stable).**
3. **Fill the required refrigerant mass (kg): the gas should preferably be charged in the liquid phase.**
4. **To ascertain the correct behavior of the system, switch ON and monitor:**
    a. **Low/high pressures**
    b. **Liquid/gas lines suction temperatures**
5. **If detecting low performance or excessive pressures, fine tune the set up by either filling more refrigerant or discharging it until reaching the correct pressures/temperatures (see below additional general notes for more details).**

B. Refrigerant mass set up:

- Taking into account both the temperature set on the BCF chamber and the temperature where the remote condenser is installed, when the liquid/gas lines suction temperature gets closer to the design values, proceed with the final adjustments (phase 5 mentioned above).
- The superheating at the evaporator (given by the difference between temperatures at the piping surface at the point where the expansion valve's bulb is fixed, and the evaporation temperature*(*)*) shall be between 5°C and 10°C (9°F and 18°F). Superheating at the compressor's inlet must be between 10°C and 15°C (18°F and 27°F), where in such case it is the difference between the temperature at the surface of the return pipe, at a distance 150 mm (6") from the compressor, and the evaporation temperature. The sub-cooling in the condenser shall be between 3°C and 10°C (5°F and 18°F), i.e., the condensing temperature less than the temperature at the pipe's surface at the condenser's outlet.

  (*) Evaporation temperature obtained by converting the suction pressure into temperature.

C. Cleaning the System (in case condensing unit replacement):

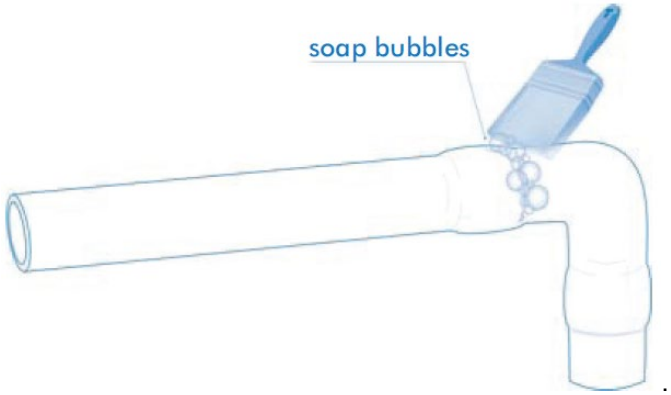
- Cleaning the system before installing a new condensing unit is mandatory to completely remove residues and other contaminants.
- The manufacturer recommends the installation of a filter-dryer at the suction line during the cleaning operation to retain and filter any undesired particles
- It is recommended to make the joints by braze-welding

D. Welding operations:

- While welding keep nitrogen (N2) circulating into the pipes with a pressure between 1 and 2 psig (equivalent to 1.08 - 1.15 bar): this will prevent oxidations and scale forming, hence ensuring that the piping is free from any contaminants (oil, grease, oxides).
- Use a damp cloth when welding valves or fittings or pipes to prevent the components overheatingbecause of the heat propagation.
- The compressor and the filter- dryer are extremely susceptible to humidity. As such, they shall only be opened during installation or replacement phases. In case of opening, do not leave them exposed to air for more than 10 min.

E. Leakage test

- During the system leakage tests, never pressurize the pipes using air, oxygen or acetylene. There is a potential risk of fire and/or explosion.
- After the installation is finished, pressurize the system using nitrogen and/or a small refrigerant charge up to 100 psig (equivalent to 7,8 bar); never use pressures higher than 150 psig (equivalent to 11.35 bar) for preventing the low-pressure switch damage.



(Figure 2) Leakage tests with soapy water bubbles

- Check for leaks using an electronic detector or a halide detector (torch). An alternative method is to check leakage with soapy water bubbles (see Figure 2). When all fittings are properly checked, depressurize the system and go to the next step.

2.6.5 System Evacuation

Warning: Never use the compressor itself to evacuate the system, nor energize the system when it is under vacuum, as it may cause the compressor be damaged because of short-circuit caused by overload.

To evacuate the system, use a high vacuum pump and a vacuum gage. The system shall be evacuated up to 0,5mmHg (equivalent to 0,0066bar) or less. In any case, at least 20 minutes of vacuum must be applied (see Figure 3)

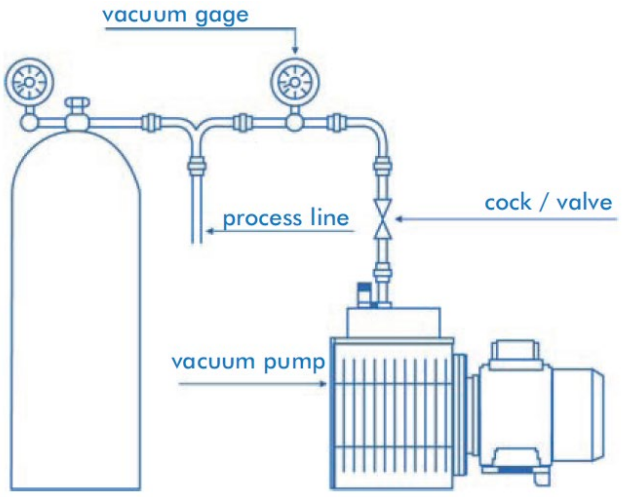


Figure 3 – Vaccum operation scheme

Warning: Never use anti-freeze elements (methyl alcohol and derivates), as they cause irreversible damages to the cooling system.

2.6.6 Procedures for Refrigerant Charge

The refrigerant shall only be charged after the proper vacuum has been achieved. Please check on the compressor or condensing unit tag what is the type of refrigerant that should be used to charge the system. Break the vacuum only when the compressor is switched off.

It is recommended that the refrigerant charge be provided in the liquid state (with the compressor switched off), through the high side (tank liquid valve) and by the refrigerant mass measurement (kg), according to the system specification.
Wait for 15 minutes before switching on the system again, to allow the gas to be evenly distributed and balance the pressure levels.
The fine-tuning of the refrigerant charge must be done while the system is running (compressor switched on), by observing the sight glass. The charge will be complete when there are no more bubbles forming.
When performing a condensing unit replacement always check the specified refrigerant charge.

2.6.7 Piping

Piping shall be sized so that:
It is flexible, to avoid rupture due to expansion and due to the transmission of vibration usually caused by compressors.
Ensure that the refrigerant is well distributed through the evaporator(s), and prevent the liquid from flowing back to the compressor. To do that, use an expansion valve with proper dimensions, and an inverted siphon at the outlet of each evaporator.

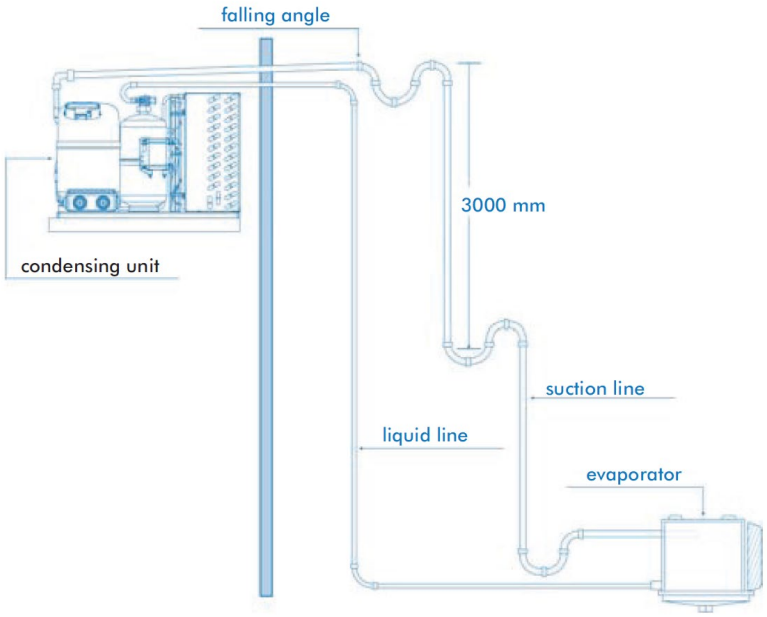


Figure 4 – Evaporator under the condensing unit

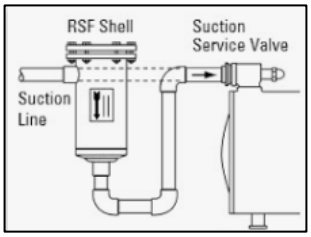
Prevent the liquid from flowing back to the compressor when the system stops and the evaporator(s) is/are located above the Condensing Unit, using an inverted siphon and suction accumulator (see Figure 4).
Aid the return of lubricating oil coming from the evaporator(s) to the system where the Condensing Unit is located over 3000 mm above the evaporator(s), using an inverted siphon every 3000 mm in the piping.
Allow secondary operations, such as attaching measurement instruments, isolating stretches for maintenance purposes and pump down.

Warning: The diameter of the fittings for the condensing units and evaporators shall not be used as a parameter to select the diameters of the other system components.

Warning: After replacement the condensing unit and its accessories must be handled and recycled according to the material group (ferrous, non-ferrous, polymers, oils,) directives. These recommendations are intended to minimize the adverse impacts on the environment.

2.6.8 Basic Accessories of a Cooling System

	**Filter-Dryer** Installed at the liquid line, its function is to retain particles and mainly remove residual humidity from the system.
	**Sight Glass** It is installed at the liquid line, just after the filter -dryer and used to monitor the system refrigerant charge. Some models also allow humidity detection.
	**Pressure Control** Some Condensing Units are fitted with High / Low Pressure Switches. Their function is to prevent the compressor from operating under pressure levels that are outside of their application range.
	**Solenoid Valve** It is installed at the liquid line, prior to the expansion valve and used for the pump down procedure.
	**Oil Separator** It is installed at the discharge line, when the evaporator is below the compressor's height (long distances)
	**Suction Accumulator** It is installed at the suction line, just before the compressor. It prevents liquid refrigerant from flowing back towards the compressor. Conditions that favor the flow-back of liquid to the compressor and where the use of a suction accumulator is recommended: • Systems with more than one evaporator • High refrigerant charges • Operations with defrosting by hot gas • Where the distance from the compressor to the evaporator is over 15 meters (50 feet) • Evaporator(s) above the condensing unit
	**Fan Speed Control** The Fan Speed Control controls the head pressure in air-cooled condensers by reducing the fan speed to maintain head pressure as the outside temperatures/condenser pressure drops. As the motor speed drops under lower ambient/load condition fan noise is also reduced.

	**Schrader Valve** Used for service operation (Refrigerant Charge).
	**Suction Filter** It is recommended to clean the systems if the compressor has burned out. Installed at the suction line, its main task is to retain the contaminants (result of the burning of the compressor), and to retain system particles.
	**Fuse plug** A/C systems can include a pressure release valve that is usually mounted at the compressor or fuse plug mounted on the receiver dryer.The relief valve can open at a preset pressure and then reclose.The center of the fuse plug melts to let pressure escape. In case of release the melt part replace with new one same capacity.

2.6.9 Expansion Valve

It is installed at the liquid line, before the evaporator.
Its function is to keep the pressure different between the condenser and the evaporator; it also adjusts the refrigerant flow within the evaporator. For systems operating under low evaporating temperatures (lower than -17.7°C (0°F), it is recommended using an expansion valve fit with MOP (**M**aximum **O**peration **P**ressure), to protect the compressor against high pressures during the suction phase at the start of the procedure.

2.6.10 Setting the Expansion valve

The valve is already set from factory in the standard condition and it is suitable for most installations.
If adjustment is needed, it is possible proceeding by means of the expansion valve rod adjustment.
By rotating the rod clockwise, the expansion valve overheat increases, while turning the rod counterclockwise then it will decrea the overheating
IMPORTANT: Turn the rod maximum 45° each time; wider rotations will provoke flash-gas!
To eliminate evaporator swing, increase overheating by turning the rod clockwise until it stops.
Rotate the rod anticlockwise step by step until the swing will reappear.
From this position, turn the rod 45° clockwise.
When the calibration is done (swing approximately at the average), the refrigerator will no longer swing and the evaporator can be considered as working at full capacity (see Figure 5).
If overheating in the evaporator is too high, this may be either due to an insufficient refrigerant fluid mass or to a insufficiend dimension of the thermostatic valve (thermostatic valve not sized correctly).
Note: Variations of the overheating of ± 0.5 ° C are not considered swing.

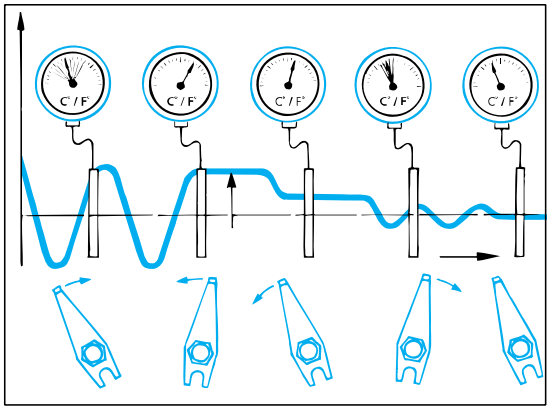


Figure 5

2.6.11 Correct position of the thermostatic bulb

It is recommended to mount the bulb on a horizontal section of the suction line as close to the evaporator as possible and in a position corresponding to the watch hands between 1 and 4.

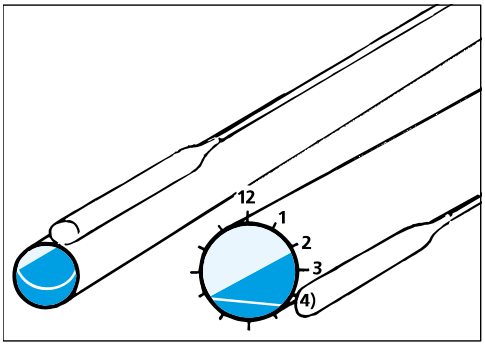


Figure 6

The position depends on the external diameter of the tube.
When the suction pipe has an outside diameter of 16 mm or less, it can be secured both in the positions (see Figure7):

a. above the suction line
b. by the side of its own path, in horizontal position

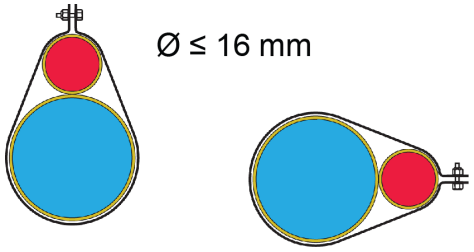


Figure 7

When the tube has a diameter greater than 16 mm, the bulb must be secured beneath the horizontal axis of the tubing itself to form a 45 ° angle with the same horizontal axis (see Figure 8)

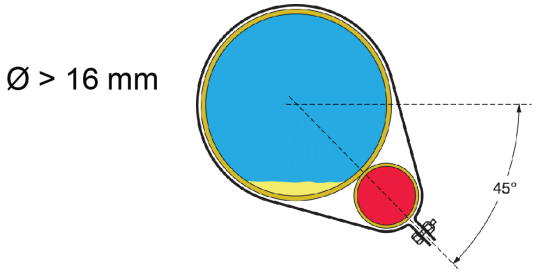


Figure 8

Warning: **The bulb must never be mounted at the bottom of the suction line, as it will receive false control pulses due to the oil present at the bottom of the tube itself.**

2.6.12 Identification of the thermostatic valve

The thermostatic element is equipped with a laser engraving on the top of the membrane (see Figure 9).
This engraving indicates the type of valve (with the numerical code), the field of evaporation temperature, MOP point, the refrigerant and the maximum operating pressure and the type of nozzle installed

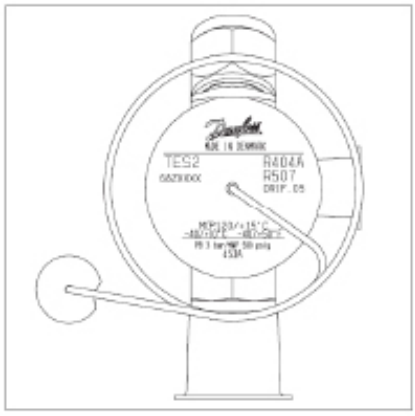


Figure 9

2.6.13 Charge MOP

All MOP valves have a very small charge in the bulb.
This means that the valve or the element should be placed in the hottest position of the bulb otherwise a charge migration may occur from the bulb to the element and the expansion valve will stop working.
The MOP charge has a limited charge in the bulb.
MOP means Maximum Operating Pressure (sometimes called “Motor Overload Protection”) and is the maximum suction / evaporation pressure allowed in the suction / evaporation line.
The refrigerant liquid will evaporate when the temperature reaches the MOP point. As the suction pressure increases, the expansion valve starts reducing the pressure to 0.3 / 0.4 bar, below the MOP point, until fully closing when the suction pressure will be equal to the MOP point.

2.6.14 Quantity of refrigerant to charge

The exact quantity of refrigerant to charge (see Figure 10) in the system depends on:

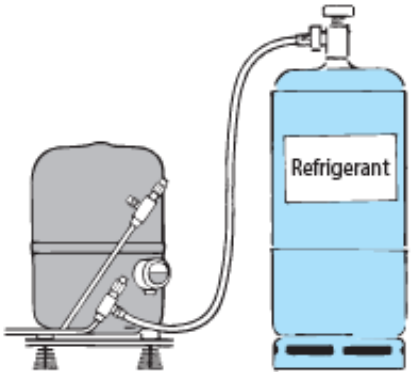


Figure 10

1. **Data plate identification (in case of remote unit the reference are points 2 and 3)**
2. **Liquid container receiver (max quantity in kg of refrigerant)**
3. **Liquid spy** (see Figure 11) **on the system.(where present)**

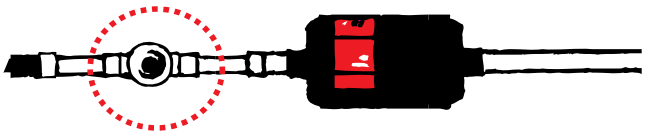


Figure 11

COMPLETE OPERATIONS IN SUMMARY - After correct cleaning and vacuum of the system:
a) Start to charge the refrigerant on suction/service pipe on the compressor.
b) Keep the appliance door opened
c) Switched ON the appliance
d) Charge a small amount of refrigerant step by step without freezing the pipe until air bubbles show on liquid spy.
e) Close the door and verify the evaporation pressure.
f) Check the overheating on external pipe of evaporator following the evaporation pressure/temperature
g) Check for presence of swing of pressure due to thermostatic valve (refer to chapter 2.5.10)
h) In case of swings, set the valve or add refrigerant.

⚠ **Warnings**: **Do not provoke flash gas!!!!! The pipe must be slightly cooled not frozen!!**

2.6.15 Electrical connection

Use the separate power supply from remote unit and bcf.

For the power supply dimensioning, check the electric wiring diagram of the appliance: after retrieving current absorption and power data relevant to the live lines, determine the cables sections able to support the ab-sorbed current.

In order to detect the remote unit alarms, the connection between it and the BCF must be done with a six-wire cable whose section is sufficient for signals.

The BCF electric wiring diagram shows the correspondence between the clamps of the remote unit and of the BCF: labels are then present on both the remote unit and the BCF terminal clamps.

The main labels are:

T1-T2 = connection of power compressor

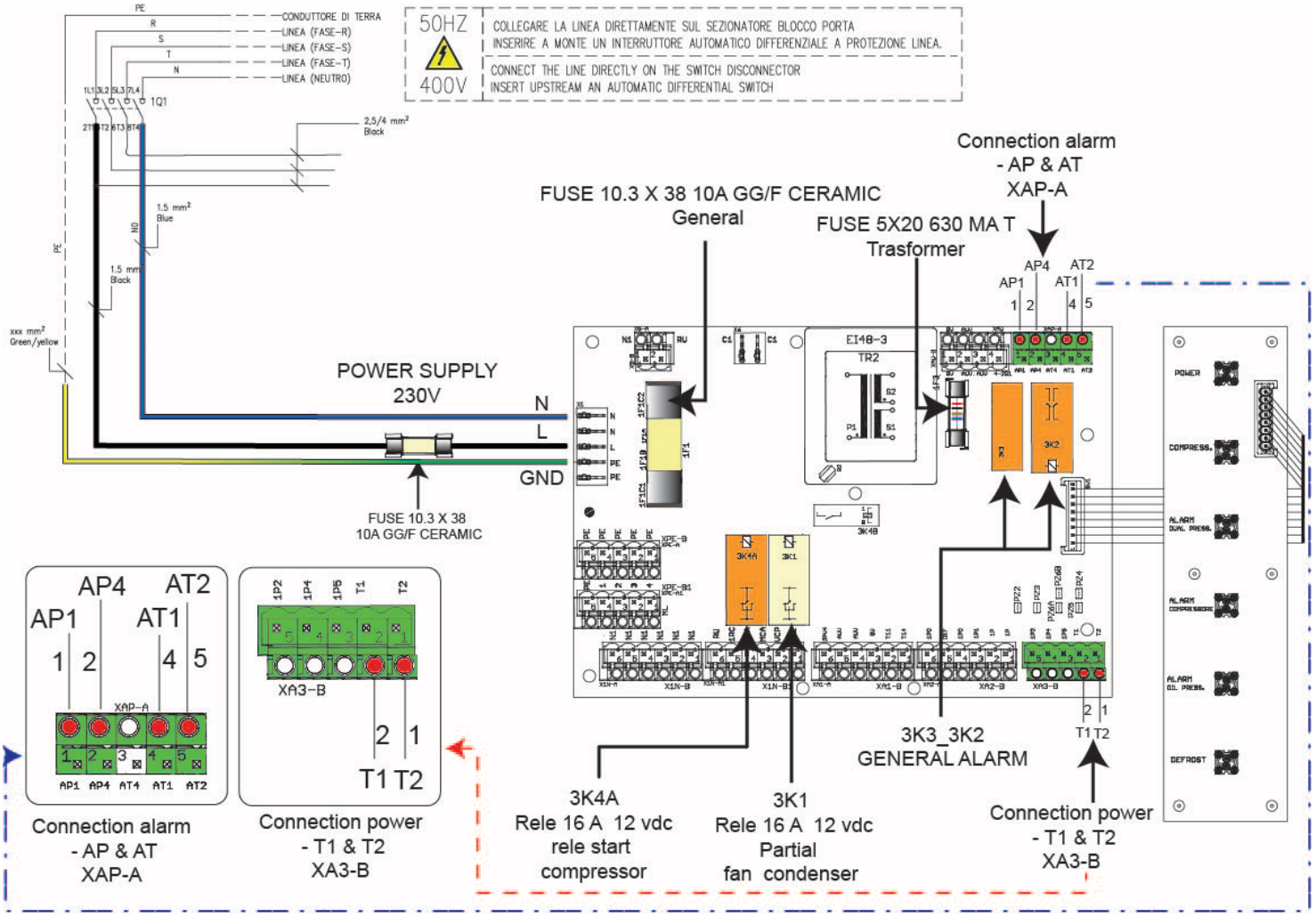
AP_AP = Alarm pressostat

AT_AT = Alarm Thermic compressor

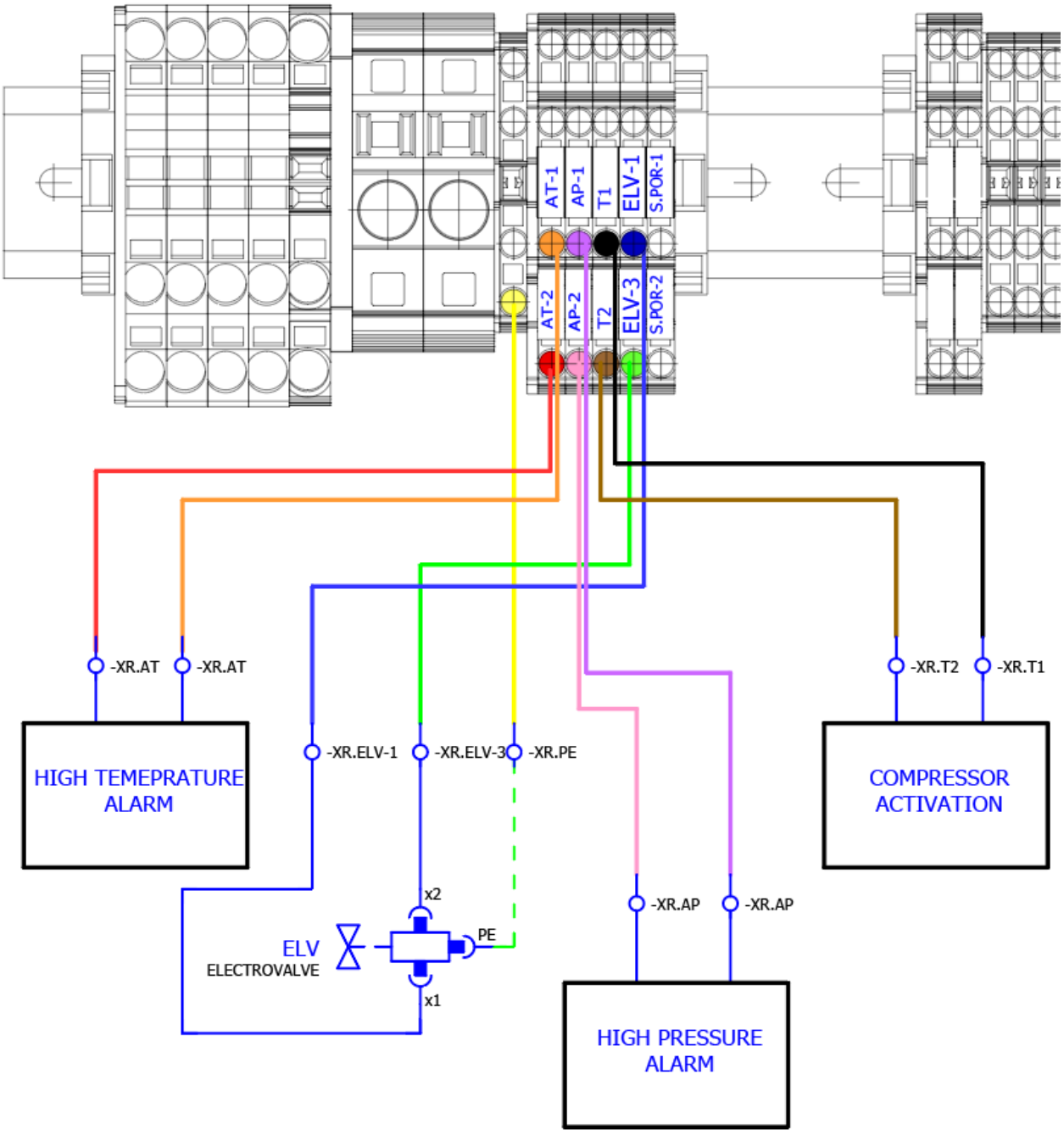
More detail is in the chapter 2.1.16 (Electrical drawing present on electrical box of remote unit)

lectrical box drawing on remote unit

2.6.15.1 Electrical box drawing on remote unit



2.6.15.2 Electrical box in the BCF IE. Of clamp connections



Warning: Remember use DIFFERENT power supplies for energizing the BCF and the remote unit.

2.7 UNPACKING AND POSITIONING THE EQUIPMENT

See reference instructions provided with the INSTALLATION MANUAL for each model present on web CODE: 595R361... /595R489..

2.8 COMMISSIONING

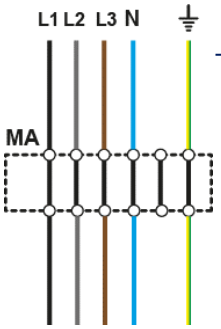
2.8.1 Power connection on bcf

The units are not predisposed the power cable, the MCA and MOP are to help to determine the cable and the max protection safety device

The reference to the adsorbed current and the voltage are on the unit data plate.

The color of the main conductors present in the power cable are standard as:

Blue = N neutral
Dark= L1 Phase
Grey= L2 Phase
Brown= L3 Phase
Yellow and Green= Heart



NOT USE THE PLUG!
IT IS MANDATORY USE A PERMA-NENTLY CONNEC-

The readings should be:

L1 / L2 / L3	+	N*	(Phase and Neutral)	**~ 230 Volts**	(± 6% based on European standards
L1 and/or L2		L3	(Phase and Phase)	**~ 400 Volts**	
L1 / L2 / L3		⏚	(Phase and Earth)	**~ 230 Volts**	
N		⏚	(Neutral and Earth)	**~ 0 Volts (or approx. zero V)**	

Warning: The combination and results obtained will permit you to find all wires: PHASE, NEUTRAL and EARTH.

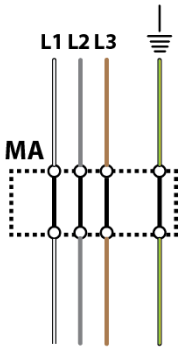
2.8.2 Power connection on bcf 208V (USA)

The units built-in **are not predisposed with power cable**.

The reference to the adsorbed current and the voltage are on the unit data plate.

The color of the main conductors present in the power cable are standard as:

White = L1 Phase
Grey = L2 Phase
Brown = L3 Phase
Yellow and Green= Heart



The readings should be:

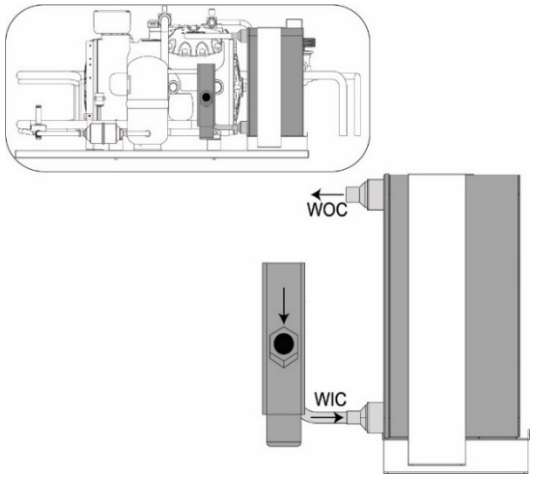
L1 and/or L2	+	L3	(Phase and Phase)	**~ 208 Volts**
L1 / L2 / L3		⏚	(Phase and Earth)	**~ 120 Volts**

Warning: The combination and results obtained will permit you to find all wires: PHASE, and EARTH.

Warning: The power cable must be installed from technician, following the normative present in the local place. The connection will be done on clamp present under the condenser panel and in the electrical box predisposed for this connection. Other information are present in the Installation manual (USA)

2.8.3 WATER CONNECTIONS (MODEL WITH WATER CONDENSATION BUILT IN)

- maximum system pressure = 500 kPa (5 bar / 72.5 psi)
- • minimum system pressure = 150 kPa (1.5 bar/ 21.7 psi)
- • The cooling water temperature must be between 10℃ (50℉) and 30℃ (86℉).
  The refrigerating units (in the appliances with incorporated refrigerating unit) have a water-cooled condensing unit.



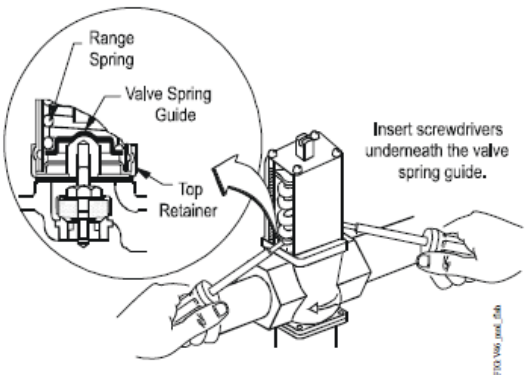
Therefore it is necessary to carry out the water connection, proceeding according to the instructions given below:

- This appliance is intended to be permanently connected to the water mains and not connected by a hose-set;
- The supply water must come from the domestic water system, through a shutoff valve, with disposable water, or to a water recirculation system connected to a cooling system that allows an adequate temperature (as system description) to the water entering the condenser through the water pressure switch valve.
- The setting water pressure switch valve must be done conforming the different type of refrigerant gas used
- Manual Flushing:
  1. To clear any sediment that might accumulate, valves may be manually flushed.
  2. Insert screwdrivers under both sides of the valve spring guide and lift upwards to flush the valve. See picture below.

Manual flushing does not affect valve adjustment

- **Adjustment**:

Valves may be adjusted with standard service valve wrenches or screwdrivers. To raise the valve opening point, turn the adjusting screw, located at the top of range spring housing, counterclockwise. Turn the adjusting screw clockwise to lower the opening point. Exact settings can be made using a pressure gauge in the refrigerant line to determine the throttling point. Put the system under normal operating load and adjust to the desired operating pressure. If the compressor operates in high ambient temperatures, head pressures may remain high enough during off cycles to prevent the valve from closing completely. In such instances, the opening point of the valve



should be raised just enough to cause the valve to close during compressor standby periods. This will also raise the throttling point.

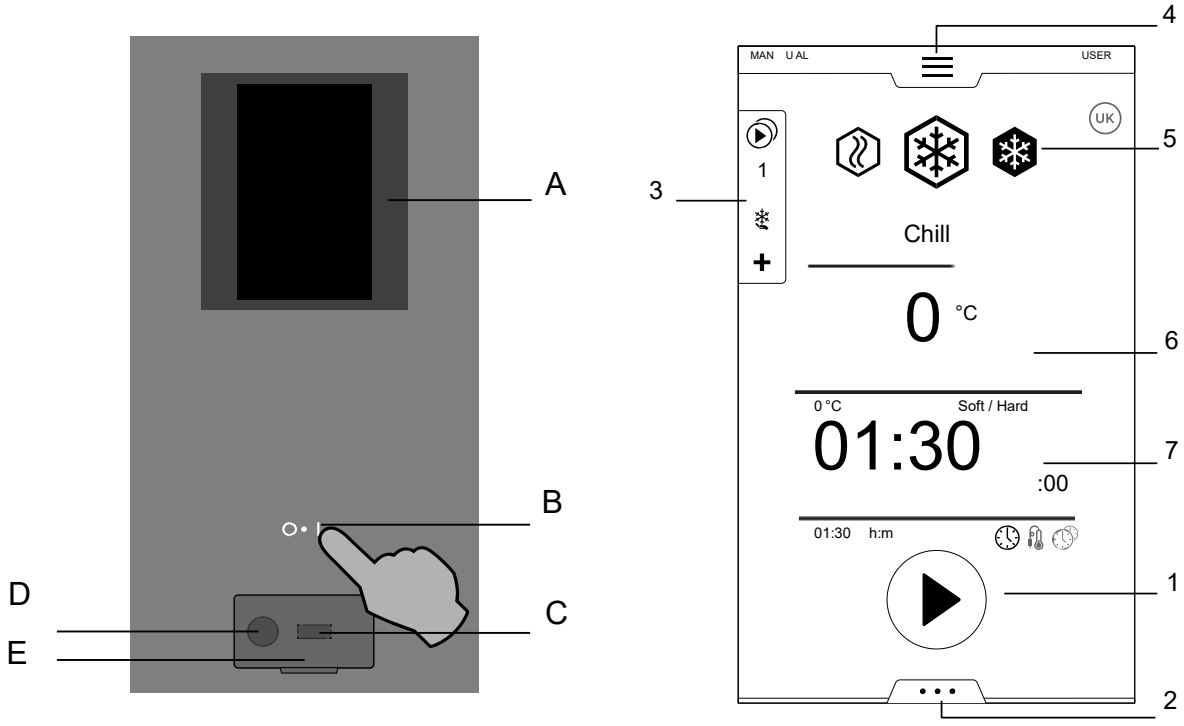
- **Suggestion**:
  1. Water temperature between IN and OUT of the water condenser, can be DELTA OF 10 temperature°C
  2. The condensation temperature in the pressure gauge, or pipe (give from thermocouple) and the temperature out water from condenser must be higher than 6°C

2.8.4 Description Main Display

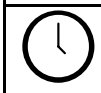
A	Main display Touch screen	1	Start button
B	Button ON OFF button	2	Utility drawers
C	USB key in/out	3	Multiphase drawer
D	Other connection aux	4	Main menu drawer
E	Open able flap	5	Cycle selection buttons
		6	Temperature area
			Time area

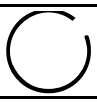
Warning:

After pressing the ON/OFF button, the display illuminates and shows the screen below, in Manual mode, with the default cycle:



2.8.4.1 Icon description, Message of Dialogues

0°C	Temperature set		Move between the pages
Soft/ Hard	Soft chill cycle Hard chill cycle		Move between the pages or in-crease/decrease a value
	Skip phase		Sky hub
	Time icon		Settings
	Multitimer icon		Chilling cycle
	Delayed start		Freezing cycle
	Time (daily)		Lite Hot cycle
	Delayed start		Stop cycle
	Restore Multi Time program		Start cycle
	History (cycle, temp.)		Automatic cycles
	Probe icon		Programs (personal)
	Precooling cycle		Hygiene
	Preheating cycle		Data Monitor
	Cruise chilling		Drawer (up or down)
	Turbo cooling		Manual cycles
	Defrost cycle		Door open.
	Conserve cycle		Alarms.
	Help		Compressor
	Warnings pop-up		User
	Information		Agenda

	Confirm and save the selection		Guidelines
	Discard the selection or close a pop-up		Multicycles
	Come back to the previous menu		Save program
	Clear all phases		Save all pre-sets
	Delete the pre-set		Save MT program
	Clear all pre-sets		Date (daily)
	Read messages		Unread messages
	Read message with attachment		Unread message with attachment
	Training		Language
	Media		Software update
	Graphs		Sky Duo
	Fan Speed		Measurement Units
	Display (setting)		Touch screen calibration
	Touch screen test		Auto start
	Special cycles		Default setting
	Accessory		Messages
	Wi-Fi		Chiller Identity Card
	Change password		Service area
	Duplicate the Pre-set		Sound
	Automatic Drying		Soft Drying
	Strong Drying		Germicidal Cycle

*Please to reference to description of icons and messages dialogues to User manual code 595R362...

2.8.5 SOFTWAR UPDATE

The software for each PNC is available for authorized technicians on the web sites (PRIDE-SERVICE PORTAL- AGELUX etc..) and can be downloaded in a zip file. For those that do not have access to the web sites, refer to your local country customer care.

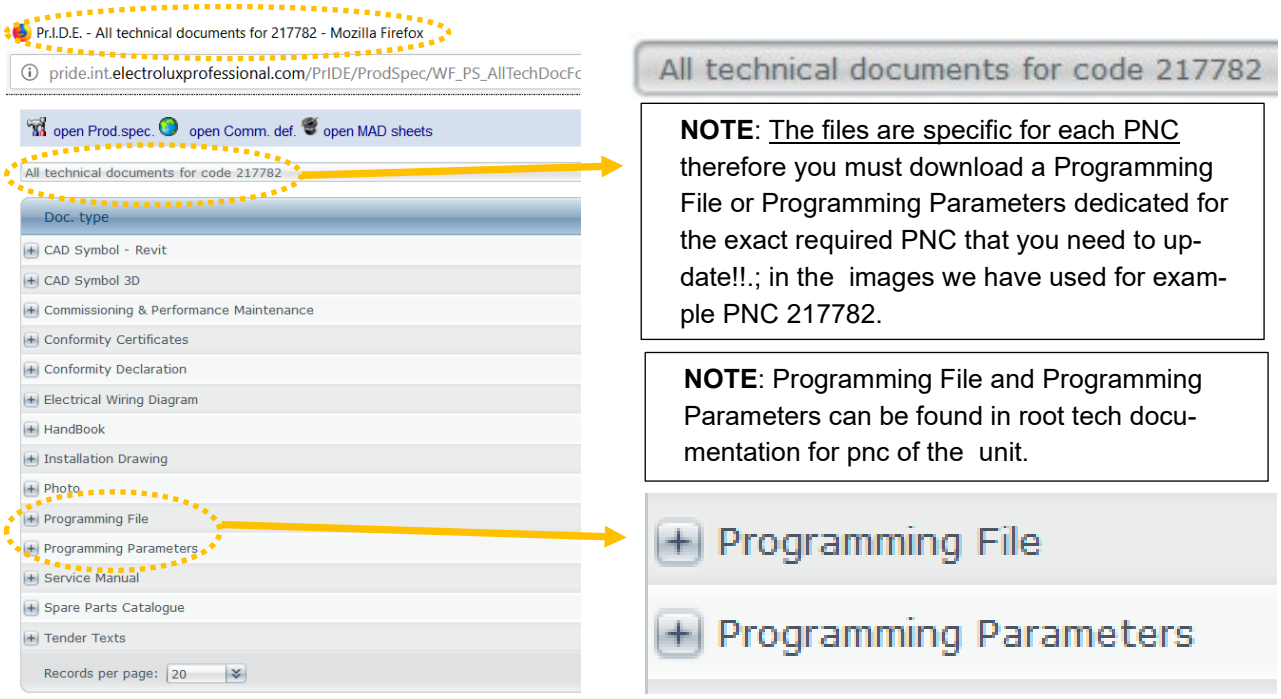
The software to update an oven is divided in three different files

- **Programming File**
- **Programming Parameters**
- **Pnc & Ser upload (pncSerial.json)**

each file can be installed individually but we mandatory recommend to install the first two files at the same time while the Pnc&Ser is needed to be installed only when replacing a **power board**.

The three different software files can be downloaded from the official tech web pages (hereafter are some pics of the files appearance in PRIDE).

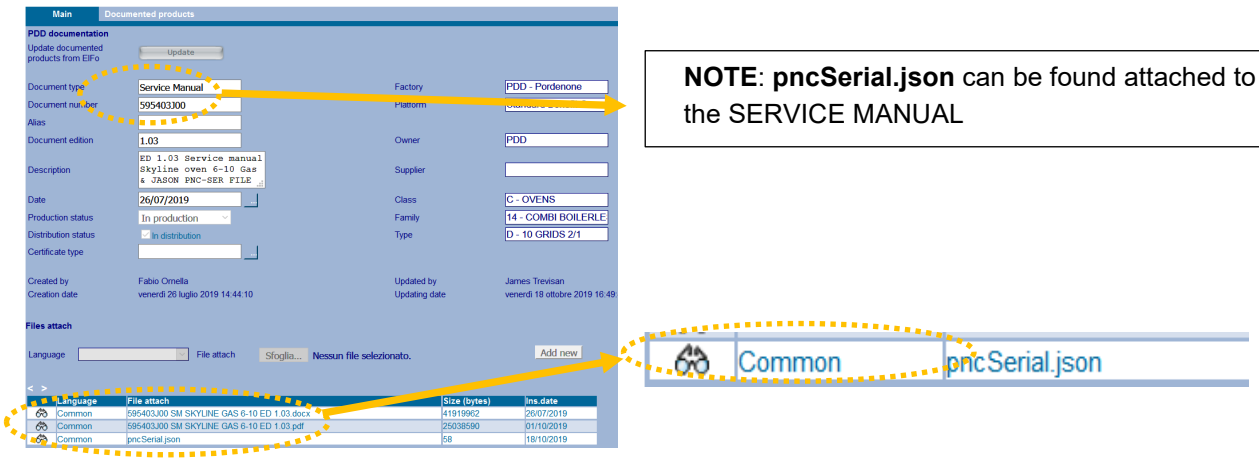
PRIDE WEB SITE- EXAMPLE ILLUSTRATION



NOTE: The files are specific for each PNC therefore you must download a Programming File or Programming Parameters dedicated for the exact required PNC that you need to update!!.; in the images we have used for example PNC 217782.

NOTE: Programming File and Programming Parameters can be found in root tech documentation for pnc of the unit.

pncSerial.json - EXAMPLE ILLUSTRATION



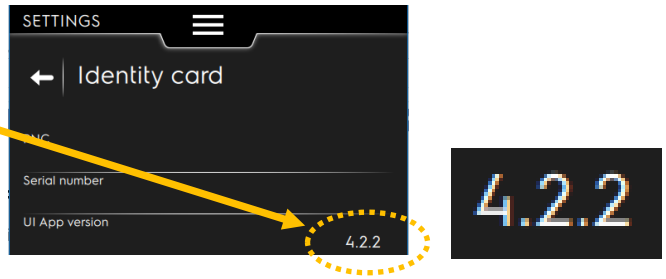
NOTE: **pncSerial.json** can be found attached to the SERVICE MANUAL

Dowload zipped software file from the web site and unzip it into a USB key into the main root (not in sub folders / refer to the example picture).

2.8.6 PROGRAMMING FILE

The Programming file (that from now on we will call **P.F** as abbreviation) is the software application of the oven and this is stored in the U.I.

The **P.F.** will update the software edition refer to the UI App version at chapter § BCF IDENTITY CARD



In case of need to update the software of the oven it will be necessary to download locally the **P.F** and then upload the **P.F** into the oven via USB key.

The **P.F** installation will NOT erase the recepies of the customer nor change any personalization, parameters etc ; the software update will update the application , not the parameters!!

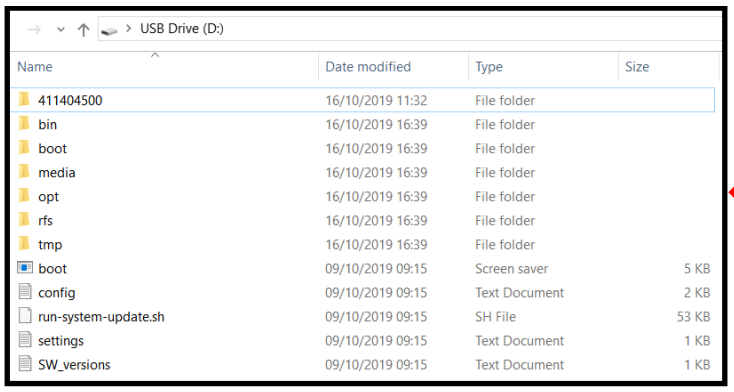
WHEN TO UPDATE:

- when ever you see an older version U.I application software
- in case of any spare part replacement (UI, ACU, BRIDGE or INVERTER)

NOTE if a **P.F** has been updated it is mandatory to install also the latest parameter file.

2.8.6.1 HOW TO UPDATE:

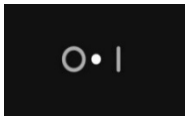
In the previous chapter § SOFTWARE UPDATE BCF (TOUCH SCREEN) we have explained were to locate the **P.F** in the PRIDE web site; double click to unzip and locally save the **P.F** into your USB key in the root. It is preferable to have the following USB type: **USB TYPE 2.0 8Gb or 16Gb FAT 32 FORMATTED**



Appearance of the **P.F** when un-zipped and locally saved on your USB key in root.

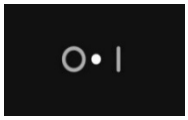
NOTE that in this picture we have already downloaded into our USB the **P.P** (programming parameters) folder 411404500, the **P.P** and **P.F** do not interfere between each other

Once that the **P.F** is locally installed in your USB key:

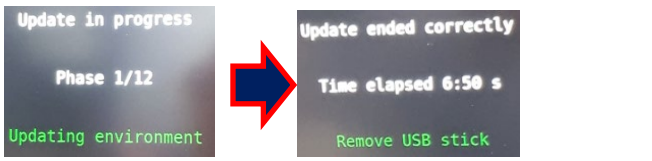


Turn OFF The oven

Insert the USB Key



Turn ON The oven



The oven will update; follow display instructions / Extract the USB Key without turning OFF the oven when requested

The unit will automatically reboot and install the application; on the display will appear a pop up indicating the operation is in progress.

The software will update the **UI, ACU, BRIDGE and electronic boards**.

The **P.F** installation will NOT erase the recepie of the customer nor change any personalization, parameters etc ; a software update will update the application , not the parameters!!

NOTE:

- in case of power loss during installation, in case of extraction of the USB Key during installation or other maneuver error, don't worry; The update process can be restarted again without damaging the appliance.
- In case of errors or problems with the detection of the USB Key, upload the software into another type of USB key (manufacturer/dimension size) it could be that some USB key manufacturers cannot be read by the unit.

2.8.7 PROGRAMMING PARAMETERS

The Programming parameters (that from now on we will call **P.P** as abbreviation) is the complete parameter list. The parameters contained in each list/appliance are more informations, but only a fraction of the parameters can be set by “hand” in the service area by scolling in the parameter list and manually changing the value. The “hidden” parameters are for factory eyes only, they are algorithms or sensible values (any unnecessary changement could block / jam permenantly the electronic board).

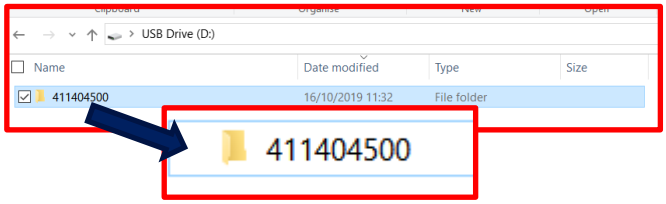
In case of need to update a complete parameter list it will be necessary to download locally the **P.P** and then upload the **P.P** into the oven via USB key.

WHEN TO UPDATE:

- always after any software update (**P.F** programming file upload)
- in case of any spare part replacement (UI, ACU, BRIDGE)

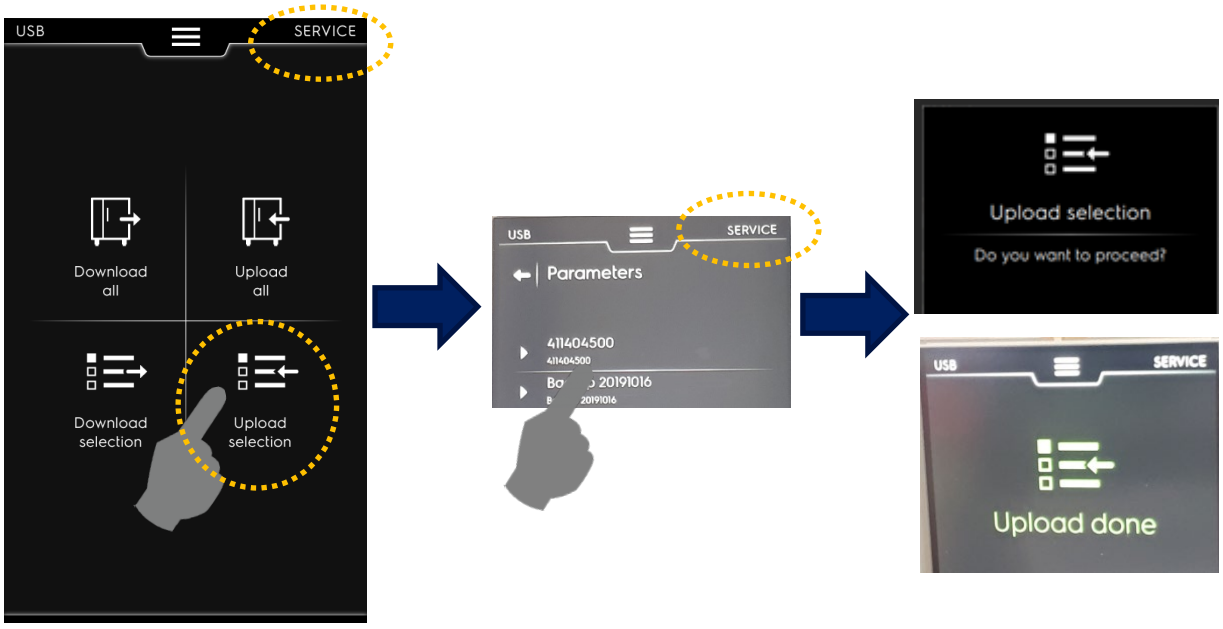
HOW TO UPDATE:

In the previous chapter § SOFTWARE UPDATE BCF (TOUCH SCREEN) you have located the **P.P** on the PRIDE web site; double click to unzip and locally save the **P.P** into your USB key in the root. It is preferable to have the following USB type: **USB TYPE 2.0 8Gb or 16Gb FAT 32 FORMATTED.**



Appearance of the **P.P** when unzipped and locally saved on your USB key in root.

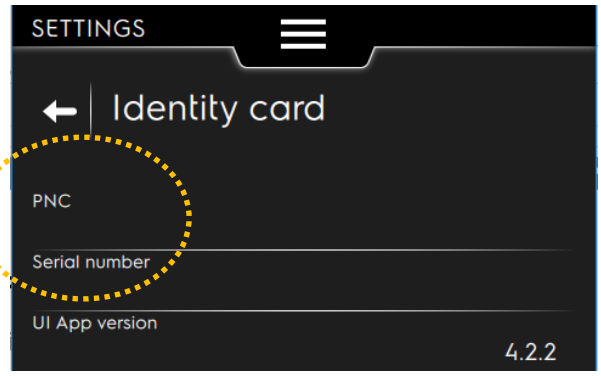
- Insert the freshly made USB key into the access USB port of the oven
- Follow instructions in how to enter into the § USB TRANSFER AMBIENT (SERVICE FUNCTIONS) with “service credentials ”
- Enter into the “Upload selection”; select the **P.P** (411404500) that you have downloaded and saved into your USB key that you desire to transfer from the USB key into the oven UI and press 



2.8.8 PNC & SER UPLOAD (pncSerial.json)

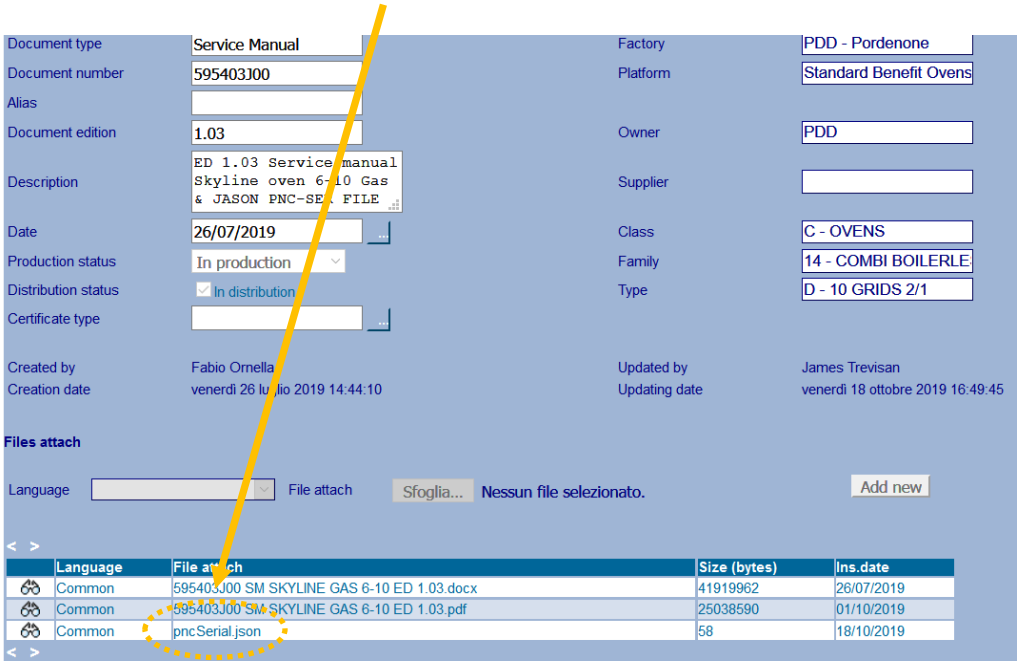
This is also the procedure to upload into a replaced spare part the PNC-SER § OVEN IDENTITY CARD that is needed fot SKY DUO/CONNECTIVITY.
In case that we have to replace an user board (U.I) it will be necessary to upload into the new board the Programming file, Programming Parameters files (refer to previous chapters) and also upload the **PNC & SER**.
The **PNC & SER** fields aren't filled in by the software installation when uploading **PF / PP** software

In the picture an example of identity card of a new spare part U.I installed. After **P.P** and **P.F.** upload, the **PNC & SER** will have not updated and will

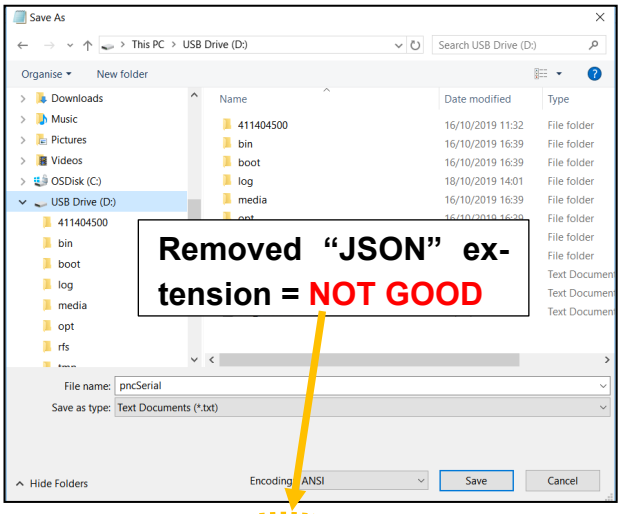


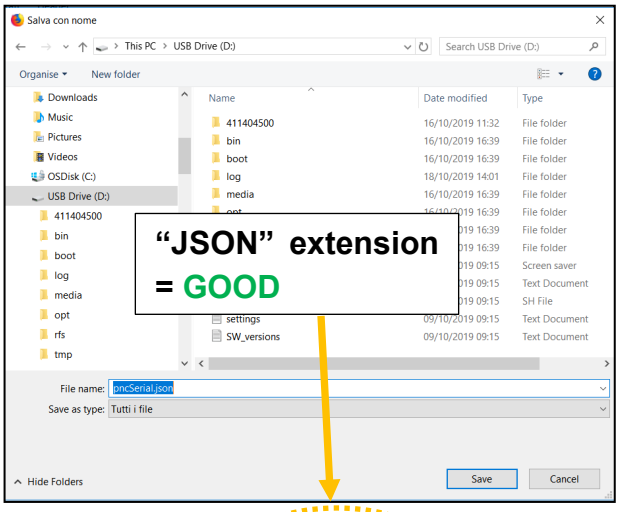
2.8.8.1 HOW TO UPDATE PNC & SER (pncSerial.json):

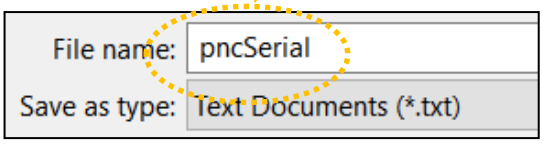
Located in the PRIDE web site, attached to the SERVICE MANUAL of the UNIT (DIGIT HE PNC) is located a file named **"pncSerial.jason"**;

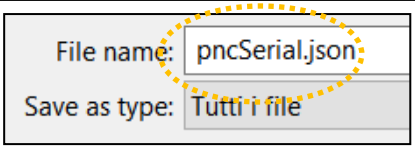


Double click to unzip and locally save the "**pncSerial.jason"** into your USB key in the root. It is preferable to have the following USB type: **USB TYPE 2.0 8Gb or 16Gb FAT 32 FORMATTED.**
Be carefull to MAINTAIN the extension " pncSerial.**json** " when you are saving the file to your USB key!!
It could be that the proposed name for the file has removed the **".JSON "** extension or replaced it with a "TXT extension"…. we need to keep the "pncSerial with" . **".JSON "** extension.

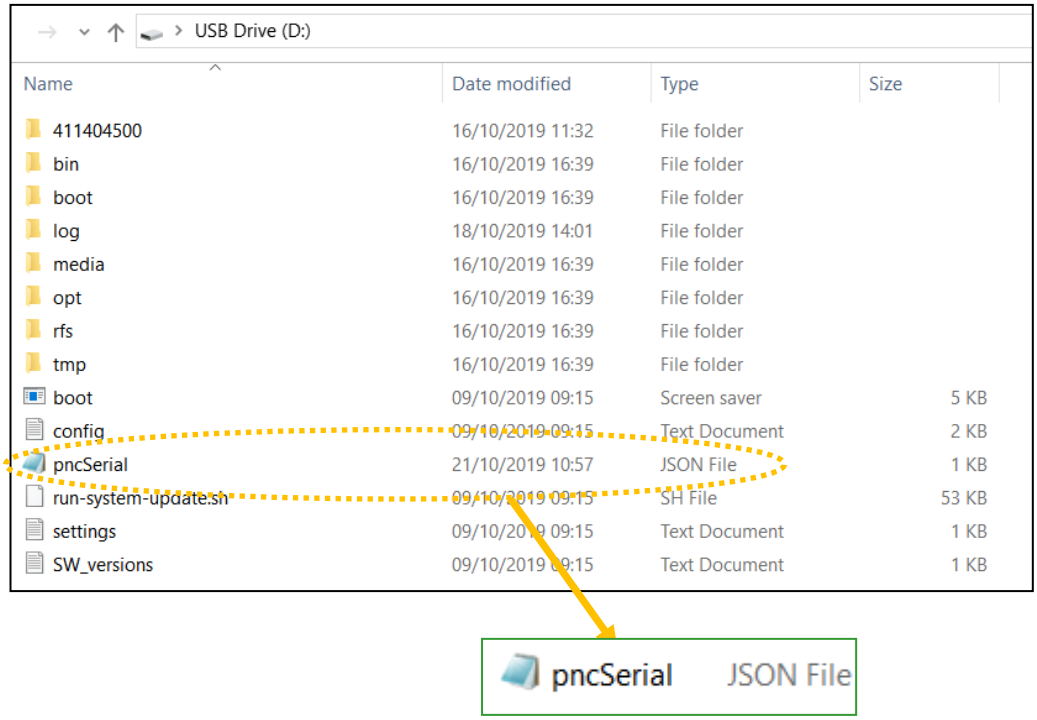




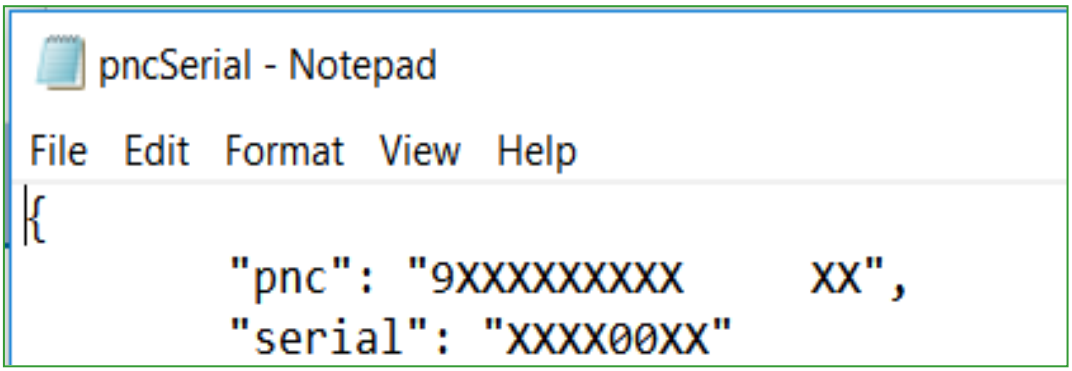




The correct appearance of the json file saved locally in your usb key.

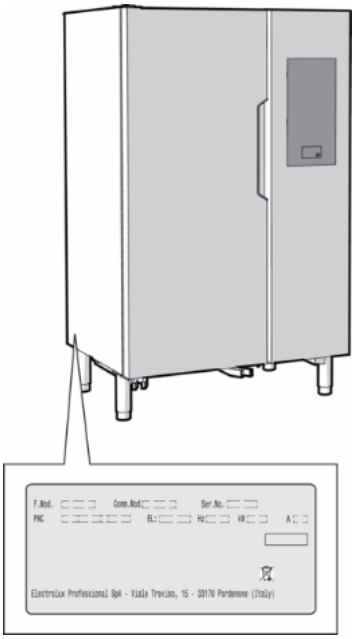


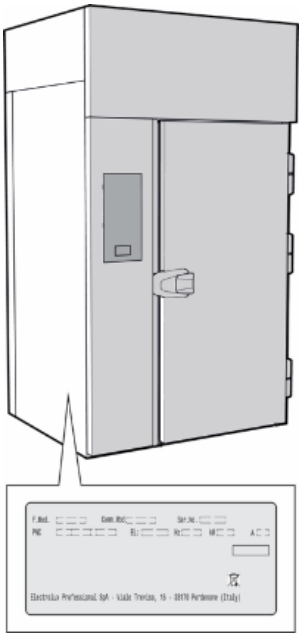
Open the **pncSerial.json** just saved onto your USB key with “notepad”; you should see an empty file like this:

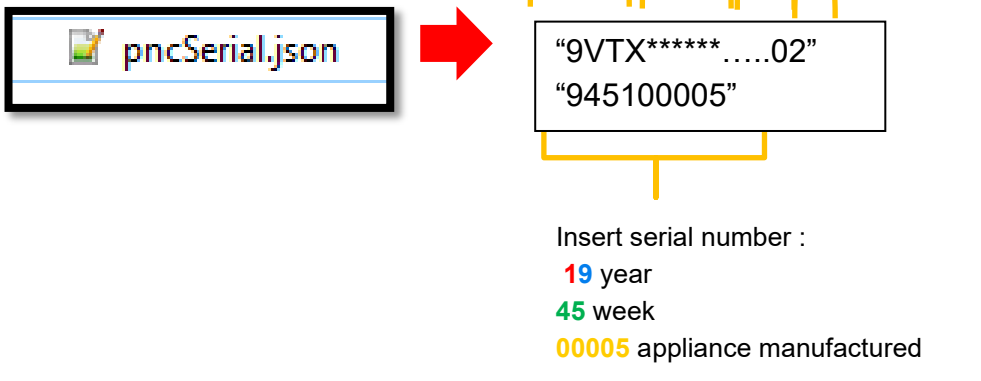


9PDD = oven
9VTX = Refrigeration

Insert into the notepad file your data of PNC and SER that you can read on the UNIT identification sticker data plate, be carefull to respect all characters and the five spaces as indicated in the description.

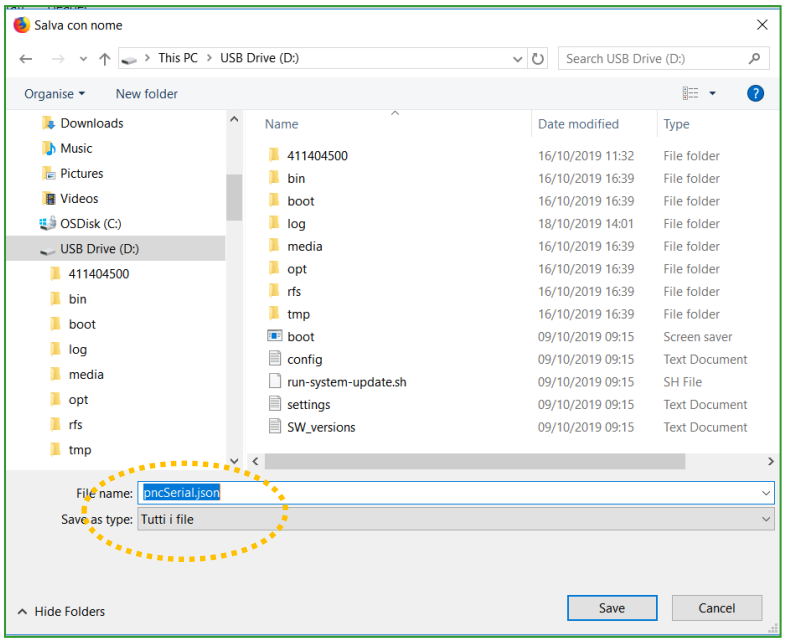


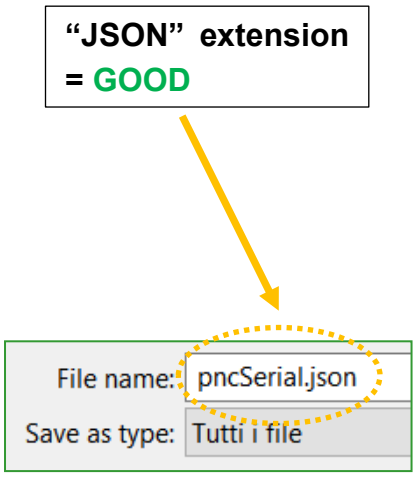




Insert serial number :
19 year
45 week
00005 appliance manufactured

Once that the data has been inserted correctly save the file with the **".JSON "** extension back to the USB Key

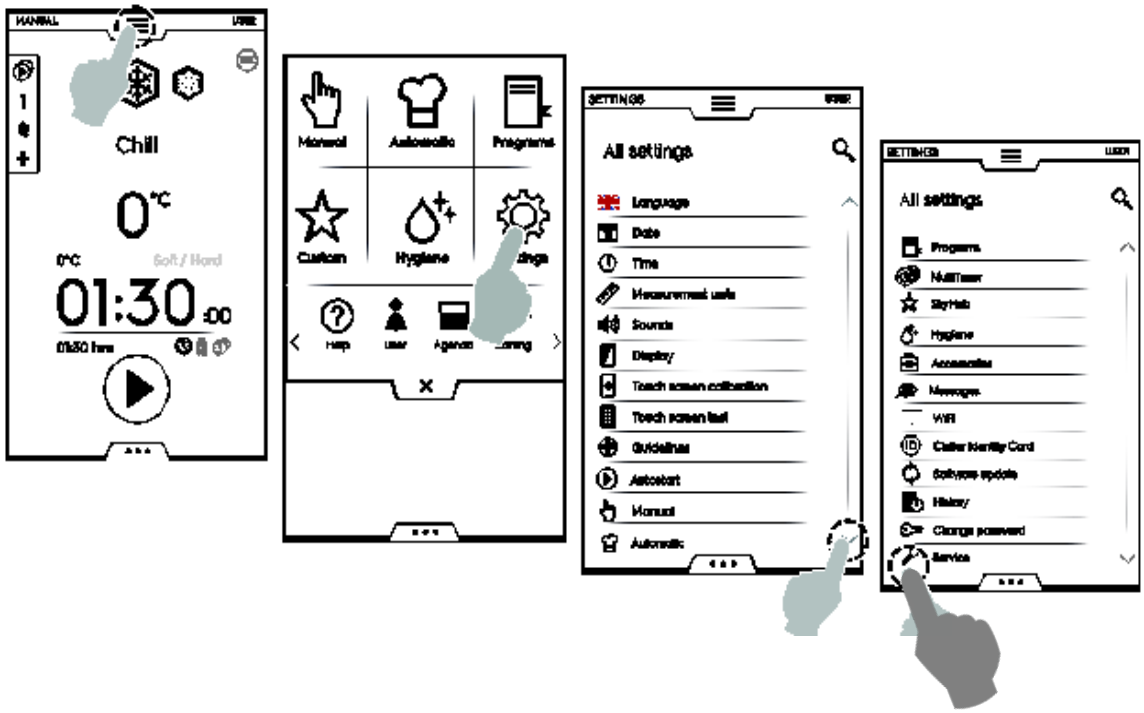




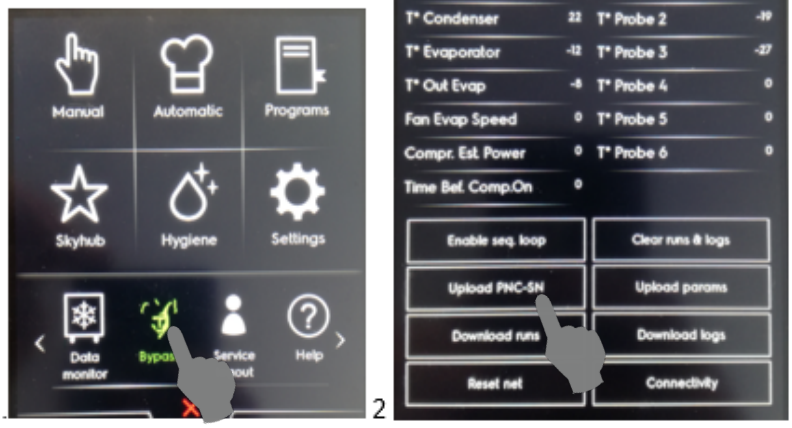
2.8.8.2 HOW TO INSTALL UPDATE PNC & SER (pncSerial.json):

With the oven turned on, insert your USB Key into the main port, enter into the § BY-PASS ENVIRONMENT:

1. Enter in the service area to activate the "Bypass" (not necessary for the oven-already activated)



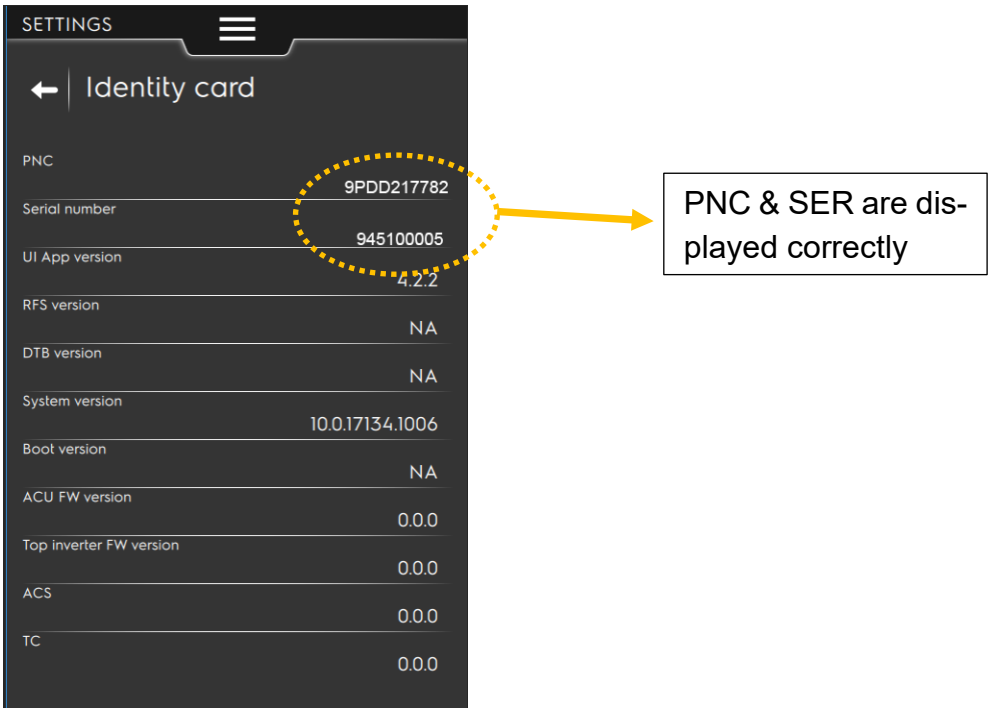
2. INFORMATION: Could be necessary to enter in the service area to digit a PASWORD that can guarantee to only specialized personnel access to this environment where can modify the actual setting.
3. The PSW IS 11235813.....
4. Back to main environment menu



5. Press the icon "Bypass" 1. 2
6. Insert the flash usb into the draver of contro panel
7. Press the button "upload PNC-SN" in the screen of Bypass _For the oven press "LOAD"

8. At the end of upload will apper the label PNC and SN has been updated successfully for the oven "**Pnc & serial loaded**"
9. Go back in enviroment Skyduo as described in the paragraph "**1.3 pairing status**", and the pnc will prensent.

Crosscheck that the **PNC and SER** have been written into the identity card by enetering into the § SETTINGS , accessible in the main screen view by pressing the menu drop down menu. The access of this area does not require a password.

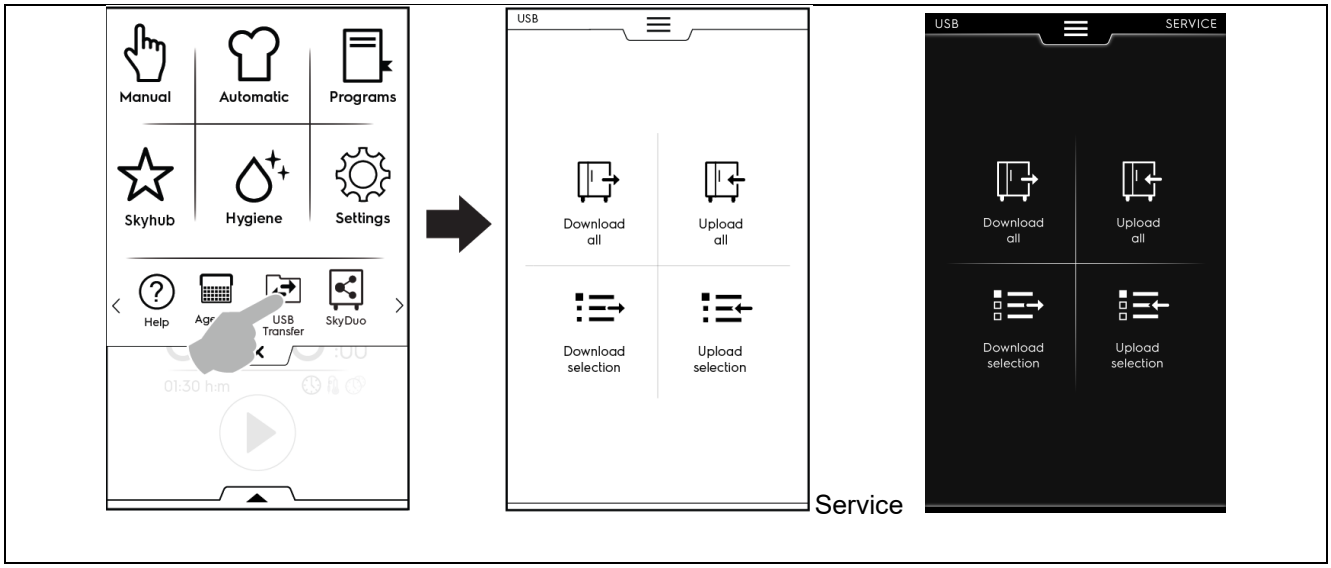


2.8.9 Usb Data Transfer

The Transfer ambient is used to manage data transfer between UI and a USB key. It contains four functionalities:

- Download all: Used to copy all data (parameters, recipes,…) from UI to USB key;
- Upload all: Used to copy all data from USB key to UI;
- Download selection: Used to select, from a single category (parameters, recipes,…), which items to copy from UI to USB key;
- Upload selection: Used to select, from a single category, which items to copy from USB key to UI.

The navigation will be the same for the generic user and the Service user, but the effects on the download/upload operations will be different.



2.8.9.1 Users management

Only two user profiles will be available on the first functionality release: “User” and “Service”.
“User” will be the default profile, “Service” will be accessed through password on the Settings->Service menu. Once the password is correctly entered the “Service” credentials will be active for 15 minutes while navigating the interface. The 15 minutes timeout is continually reset while the appliance is in running state and every time the interface detects a touch. If the “Service” credentials are active, there has to be a “logout” button in the secondary menu in the upper drawer to force the switch from “Service” to “User” credentials.
With “Service” credentials the user interaction will differ for the following points:

1) The download/upload functionalities will include Service parameters, including size and other characteristics related to the machine model. Anyways, the user will receive a warning popup while changing these parameters.
2) The download functionalities for logs will include additional logs for debugging or post-mortem analysis purposes.
3) In running state the user will have access to the top drawer. Only the data monitor button will be active.
4) The user will have full access to Service parameters setting and data monitor.

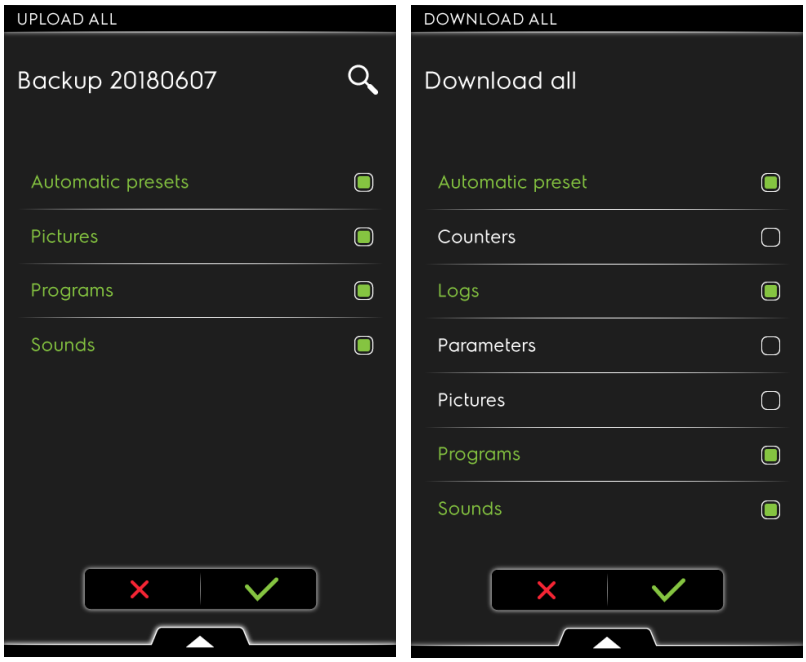
The user knows if “Service” credentials are active because on the top right of the screen will be visible the “SERVICE” label. If “User” credentials are active, the space will be left blank.

2.8.9.2 What follows is a diagram to show menu navigation

1. LOG IN as SERVICE following the procedure**” HOW TO ACESS TO SERVICE AREA”**
2. Go back in the enviromente main menu
3. Select the USB folder
4. The display showed the functionality of Download or Upload

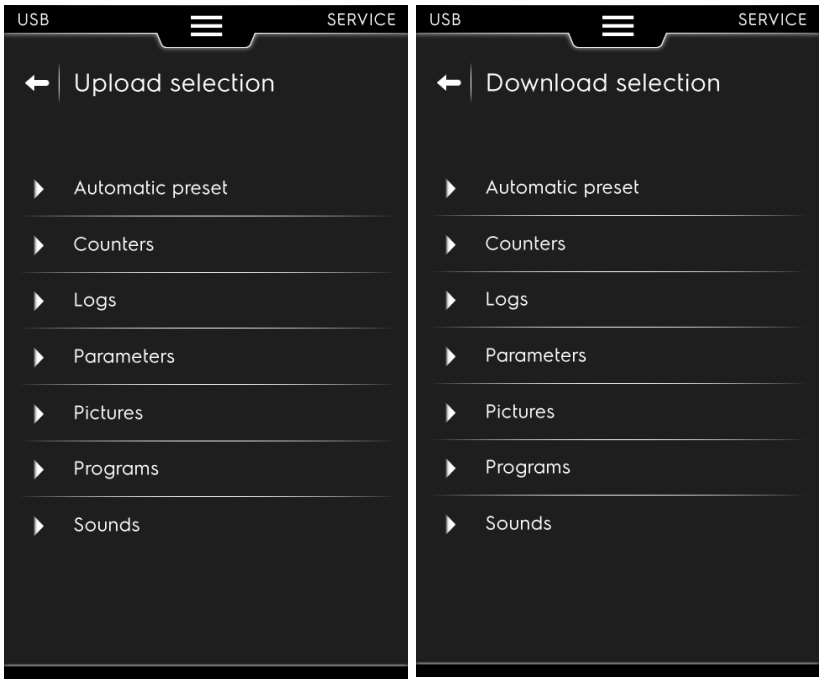
What follows is a description for each of the pages:

2.8.9.3 Select types



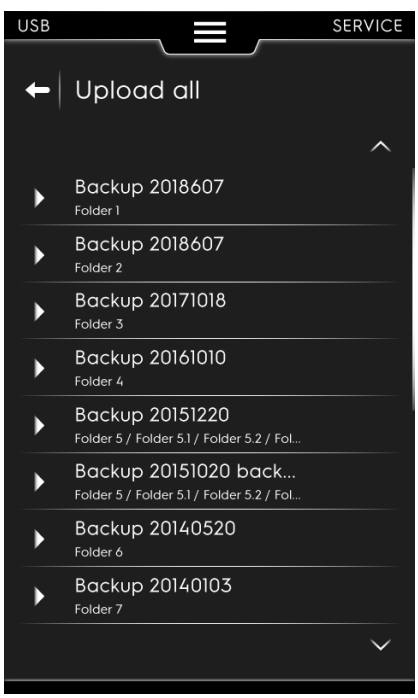
In the download all and upload all functionalities, the user can choose which data to include in the download or upload operation:
In case of an upload operation, only the types present on the USB key will be present in the list.

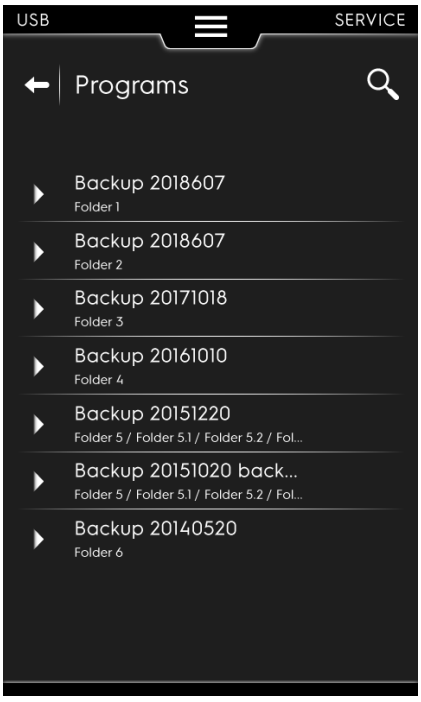
2.8.9.4 Select type



In the download selection and upload selection functionalities. It is similar to paragraph 1 (select types), but the user can only choose a type from a list:

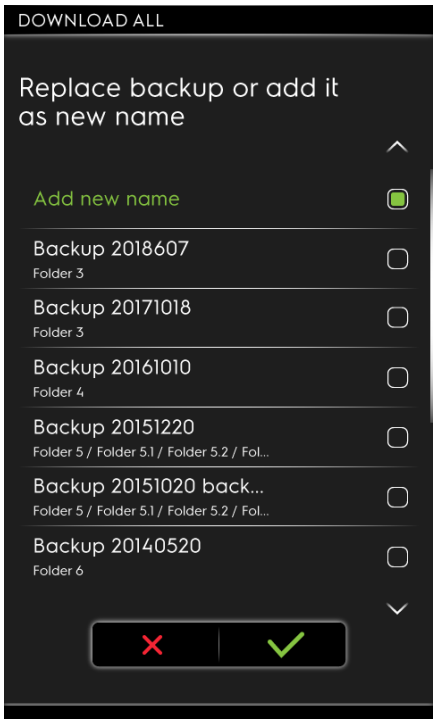
2.8.9.5 Select file

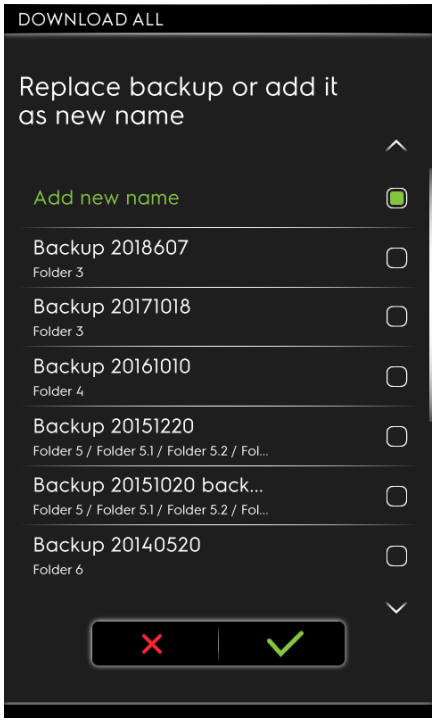




It is present for all of the upload functionalities. The user can select a file for upload operation.
On the bottom of the file name there is the file path displayed, unit excluded.

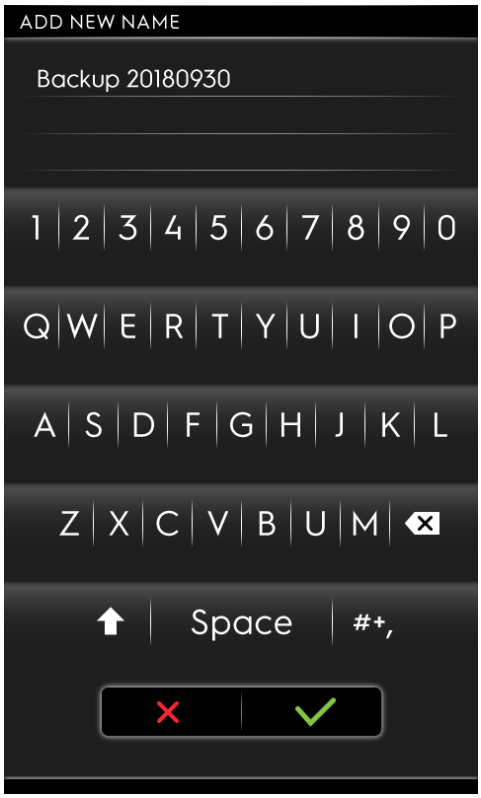
2.8.9.6 Select file or add new file

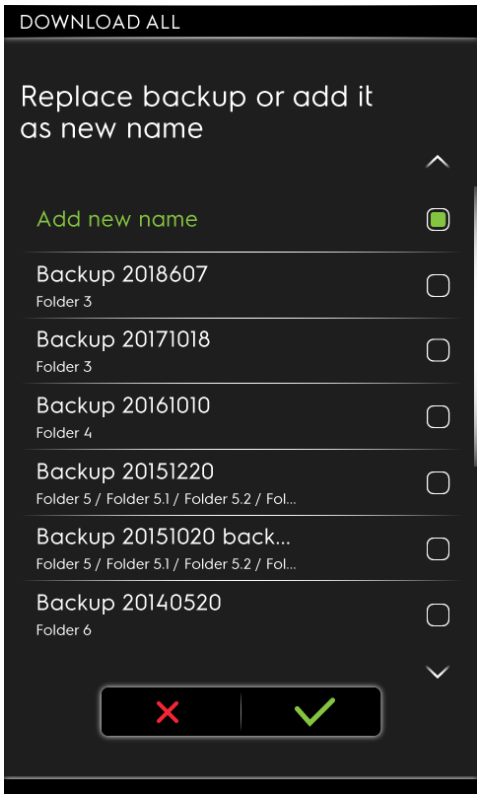




It is present for all of the download functionalities. The user can select a file to overwrite, or create a new file.

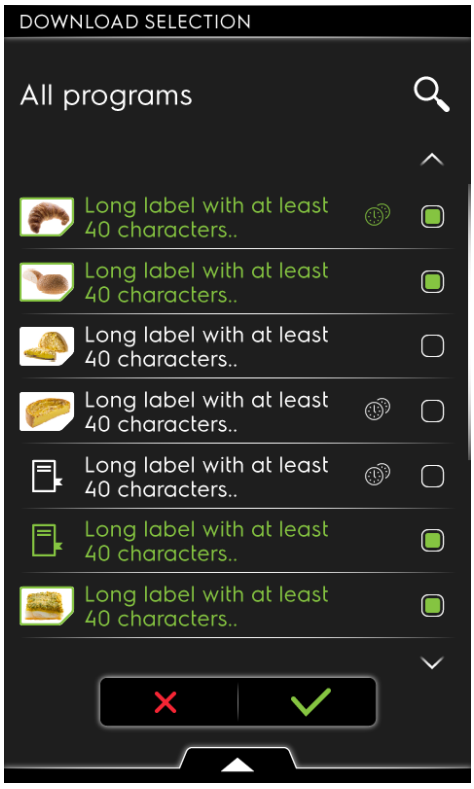
2.8.9.7 Enter file name





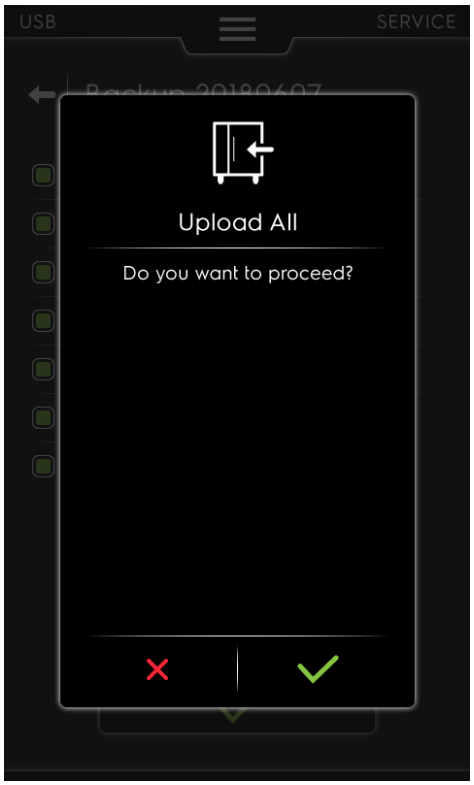
Enter a name for the file being created.

2.8.9.8 Select Items



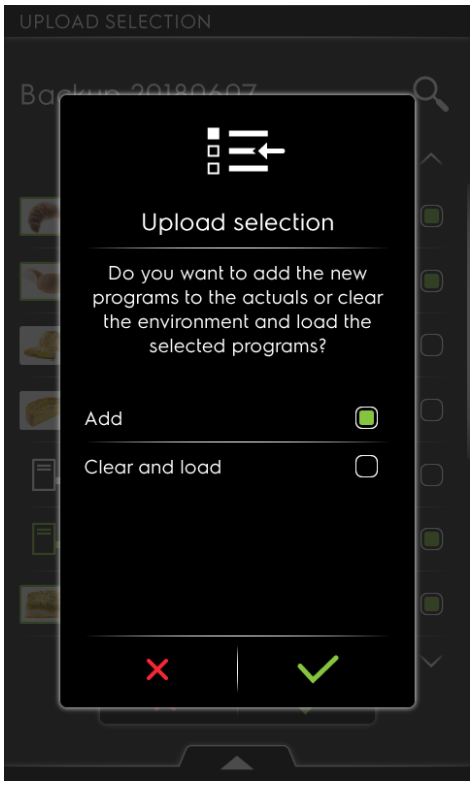
In the download selected and upload selected functionalities, it is used to select which items to copy from/to the USB key.

2.8.9.9 Confirm



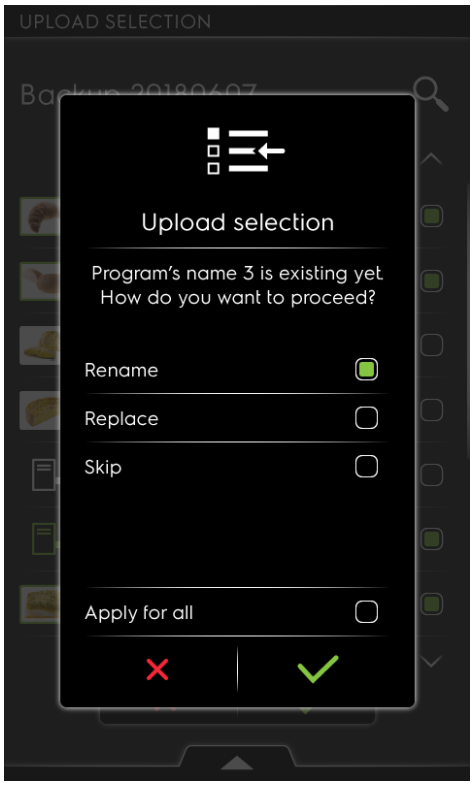
A confirmation popup used to acknowledge a file overwrite on USB key or on the UI (symbols and texts differ for different operations).

2.8.9.10 Replace or add items ie . PARAMETERS



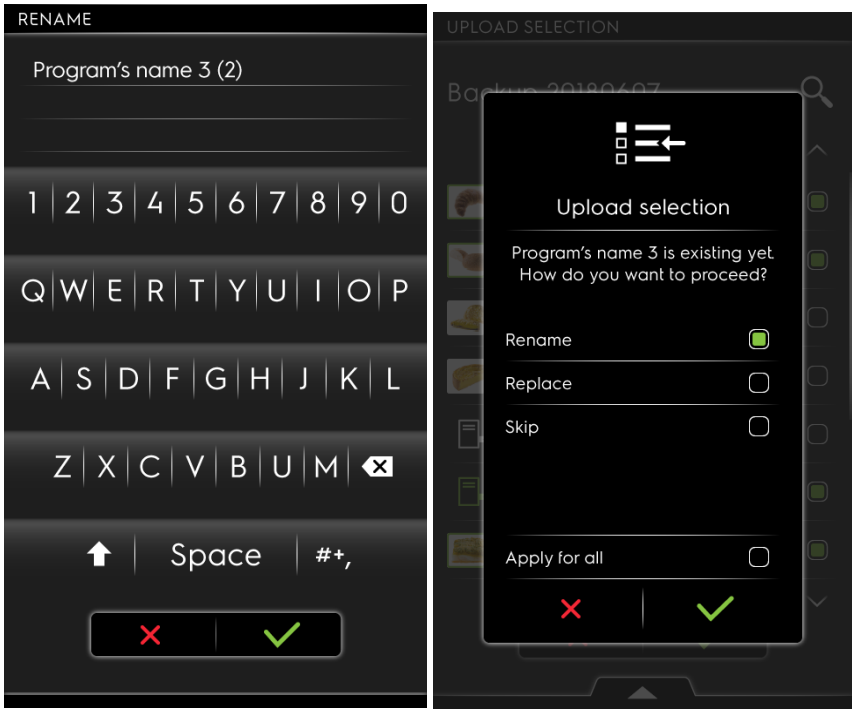
In the upload selected functionality, it is used to specify if the items selected have to replace the existing items or they should be added.

2.8.9.11 Skip, Duplicate, Add



When the user is importing items from USB, this page is displayed if there are items with the same name on the UI. For each of the items, the user can choose to keep the existing item (skip), to replace it with the new one (Replace) or to duplicate it (Duplicate). In the page there will be a checkbox to apply the operation for all of the remaining items.

2.8.9.12 Enter item name



It is similar to paragraph 5 (Enter file name), but it is used to specify an item name instead of a file name. It is reached only from paragraph 9 (Skip, Duplicate, Add), if the user chooses Duplicate.

2.8.9.13 Types list for service:

Type	Selectable in download/upload selected	"Replace" and "Add" available in "upload selected"	Only download	File extension
Programs	✓	✓		.prg.json
Automatic presets	✓	✓		.apres.json
Parameters				.par.json
Sounds	✓	✓		.snd.tar
Pictures	✓	✓		.img.tar
Logs	✓		✓	.haccp, .fsc(*), .alrm.json
Counters			✓	.cnt.json

(*): only electrolux

2.8.9.14 File names

When downloading files to USB, if new files are being created, the user can choose the file name, but there will be a default file name in the page, that he can confirm or modify.
The user will be allowed to edit the filename without extension. The appropriate extension will be added automatically.
The default filename will be related to the current timestamp:
<yy><mm><dd><hh><nn>.<ext>
Where .ext is taken from the type list table.

2.8.9.15 Item names

In paragraph 5 (Enter item name), the user will be prompted to edit the item name or accept directly the default name. The default name will derive from the originating item name, appending the string "_2" at the end of name, before the first dot.

2.8.9.16 Errors and Warnings:

Error and warning layout example:

The popup shown in the example above is an example for errors and warnings related to USB management. The simble above will be a yellow triangle for warnings and a red cross for errors. The icons used will be the same of the “diagnostics” section.

For Download operations, when, after entering the main download page, the green Tick is pressed but no USB key is detected yet.

For Upload operations, when pressing one of the two download buttons in the main screen, a wait of N seconds should be applied before showing the popup. If before N seconds the USB is detected, the UI should open immediately the menu selected. If the N seconds elapse, the popup should be displayed.

N should be determined performing some tests with various USB Keys, to minimize false alarms and limit the wait.

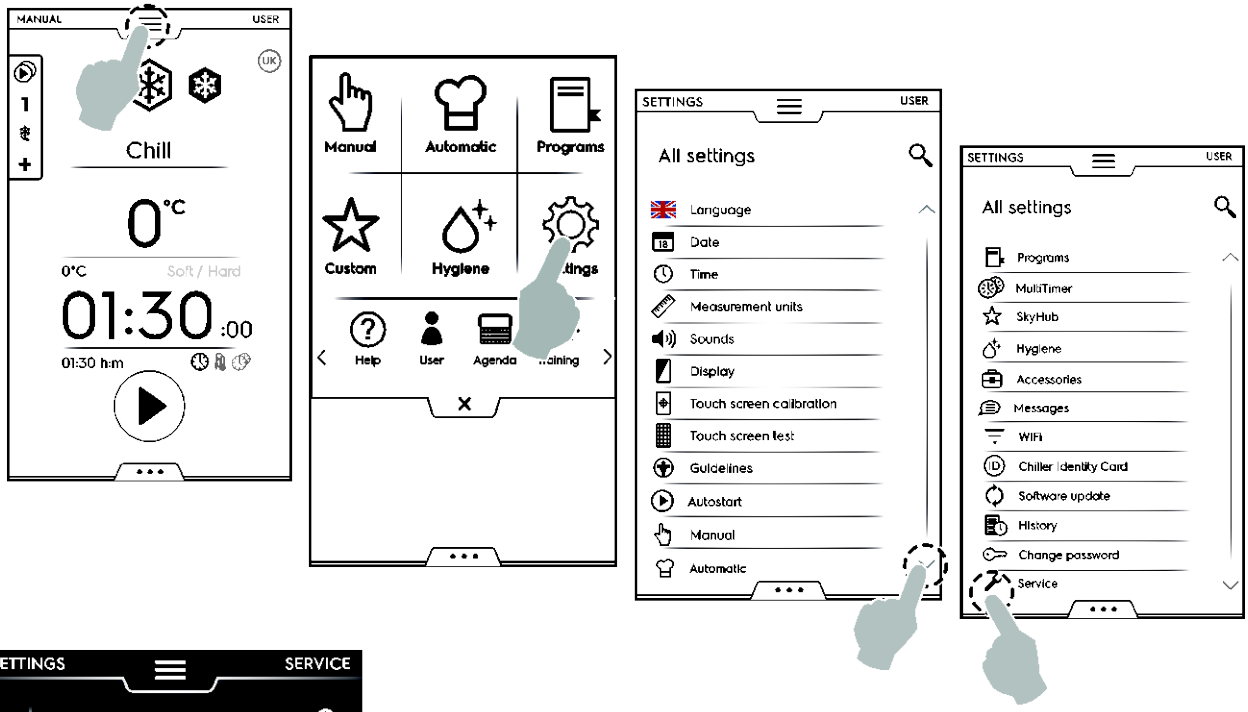
(**) <item> can be Agenda, Programs,… according to row “type” in the type list table

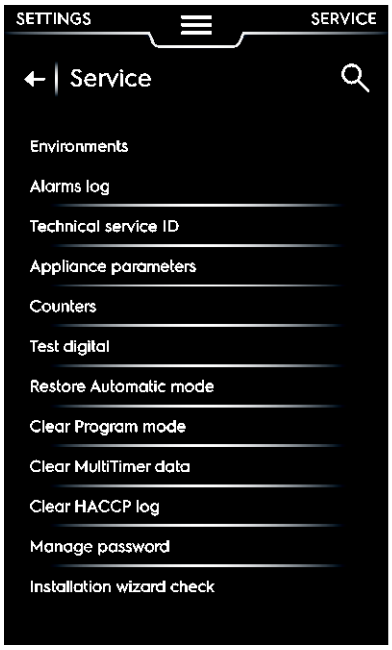
Writing operations on UI

When writing data on the UI, special care must be taken when data is being overwritten. The implementation has to manage the operation so that if it is interrupted (e.g. because of a power failure) the old data will be kept.

2.8.10 How To Acess To Service Area

Service Area





INFORMATION: Could be necessary to enter in the service area to digit a PASWORD that can guarantee to only specialized personnel access to this environment where can modify the actual setting.
The PSW IS 11235813……

The menu present in the service environment come describe in the in the following paragraphs.

- For enter on different environment menu push over the menu word!
- For can back previous menu push over the arrow on top of menu!
- In different environment of the service menu there is the scrollbar (vertical or horizontal) that help service man to select different environment in the same menu or inside to menu environment selected!
- Are present furthermore the drawer in the bottom of display or other information refer to ambient selected!

2.8.10.1 HOW TO SHOW THE "DATA MONITOR"

- Enter in the service area as show the chapter 2.8.6
- Back to the main menu window
- Select in the sub menu "data monitor"

2.8.10.2 HOW TO EXIT FROM "DATA MONITOR" and "Bypass"

- Enter in the main menu window
- Select in the sub menu "service log out"

2.8.10.3 HOW TO ENTER IN "BYPASS"

- Enter in the service area as show the chapter 2.8.6
- Back to the main menu window
- Select in the sub menu "Bypass""

2.8.10.4 HOW TO UPLOAD THE PNC AND SERIAL NUMBER

- MAKE SURE THAT YOU HAVE UPLOADED THE .JSON FILE WITH ITS PNC AND SERIAL NUMBER TO BE UPLOADED TO A USB STICK
- Enter in service area as show the chapter 2.8.6
- Select the icon "Bypass" as described the chapter 2.8.6.3
- Insert the "usb stick"
- Select in the screen of bypass the ROW "Upload PNC-SN"
- The automatic upload will start
- In the event of a load fault, which occurred as a message in the display, repeat the procedure, or check the extension of the loaded file is correct or the data entered in the file is correct.

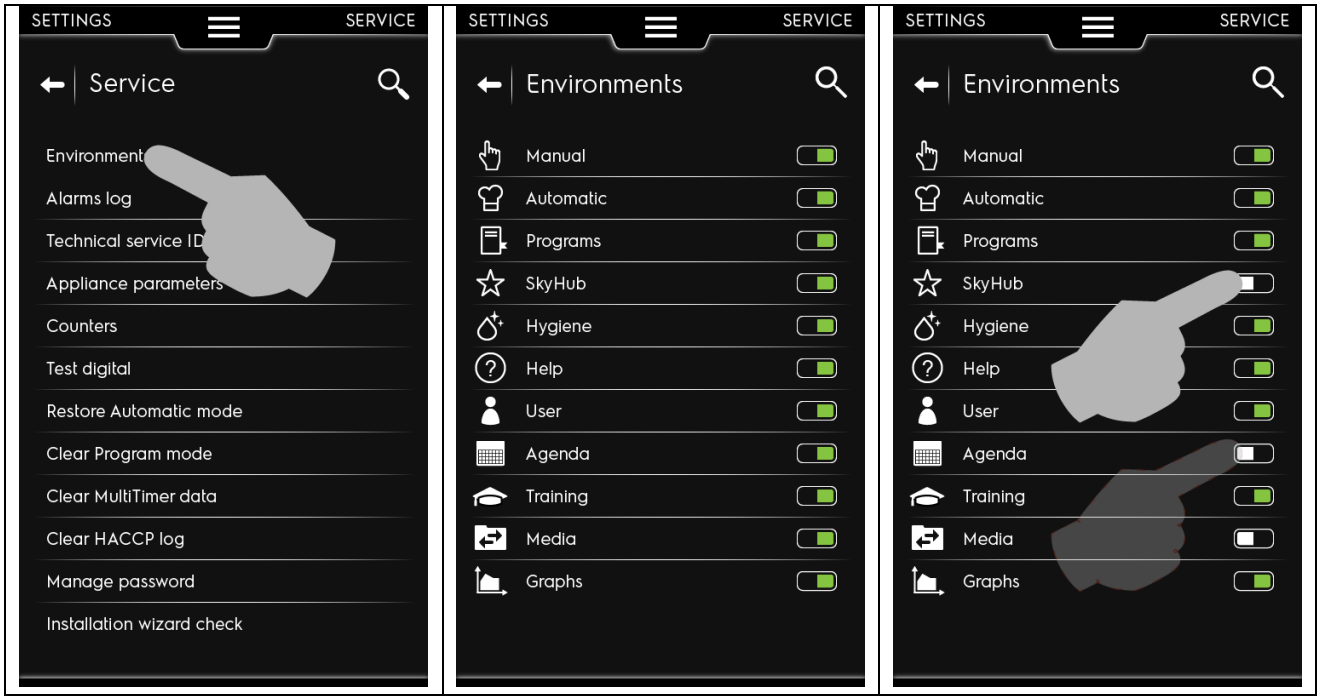
2.8.10.5 HOW TO UPLOAD THE PARAMETER and INTEROGATION

- MAKE SURE THAT YOU HAVE DOWNLOAD THE ZIP FILE .PAR FROM WEB RELATIVE TO PNC
- UNZIP THE FILE AND UPLOAD THE FOLDER IN TO A USB STICK (the folder must be contain the file – par.json and .PDF)
- **Note : the .PDF file is only used for read the parameter upload in case to interrogation manually parameters)**
- Enter in the service area as show the chapter 2.8.6
- Back to the main menu window
- Select in the sub menu "USB Transfer" as described in the chapter" 2.8.5 USB DATA TRANSFER."
- Insert the USB stick
- Select the upload selection
- Automatically the name of the folder inserted in the usb will appear in the display
- Confirm the Upload with green arrow
- After uploading remove the usb stick
- In the event of a load fault, which occurred as a message in the display, repeat the procedure, or check the extension of the loaded file is correct or the data entered in the file is correct

2.8.10.6 SERVICE AMBIENTE EXPLANATION

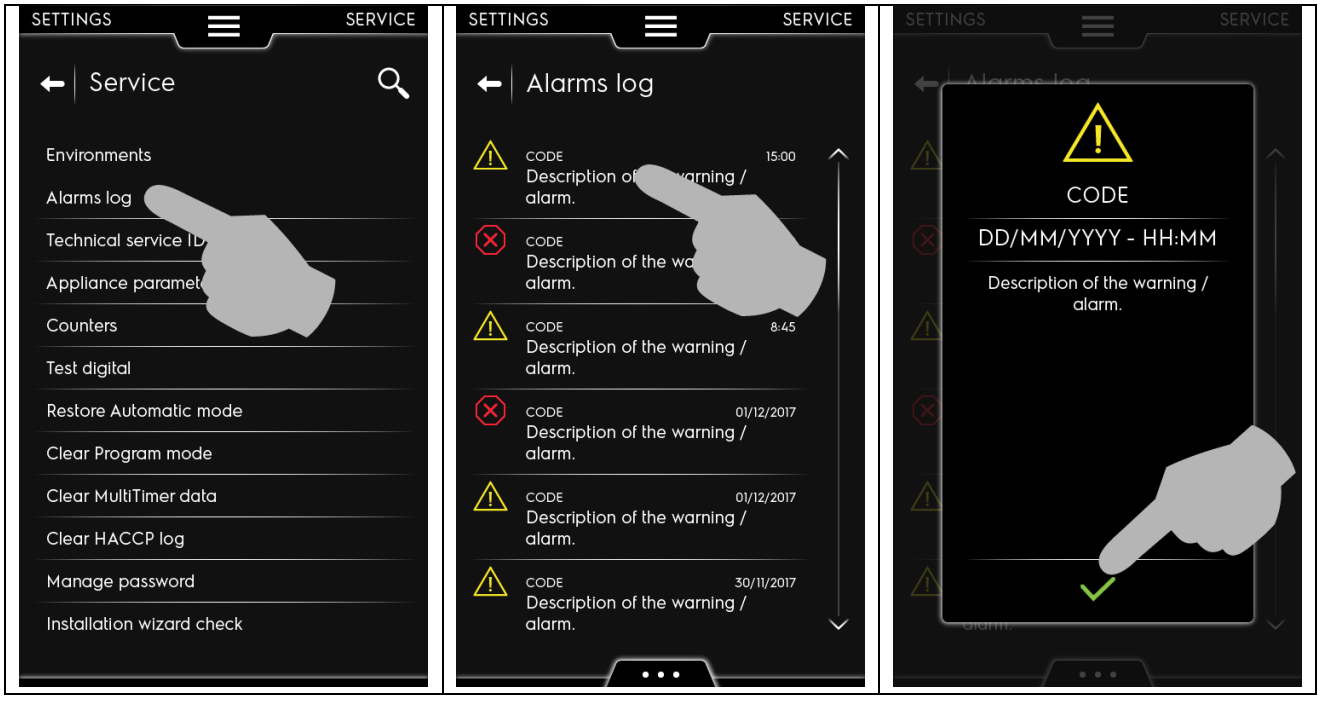
2.8.10.6.1 ENVIROMENT

Select deselect the ambient showed in the main menu



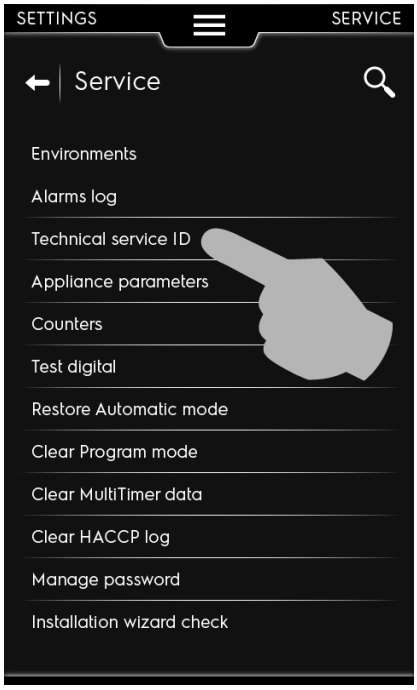
2.8.10.6.2 ALARMS LOG

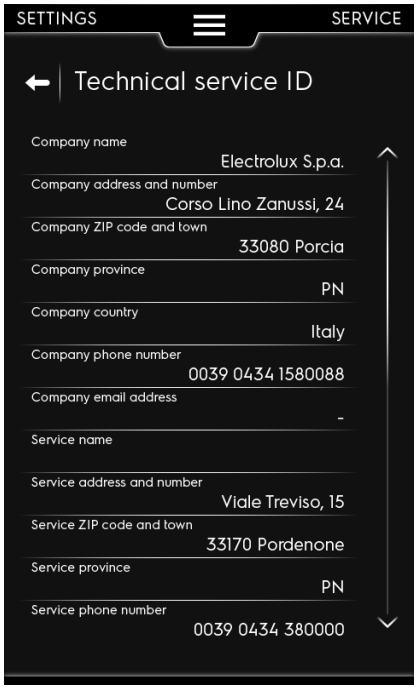
Show the history alarm

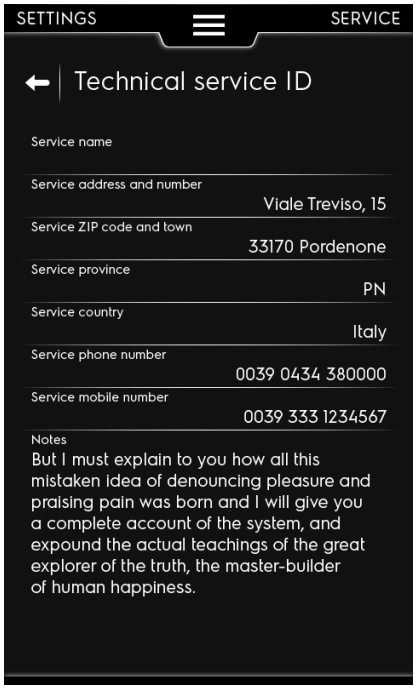


2.8.10.6.3 Technical service ID

Identification area of thecnical service and phone number

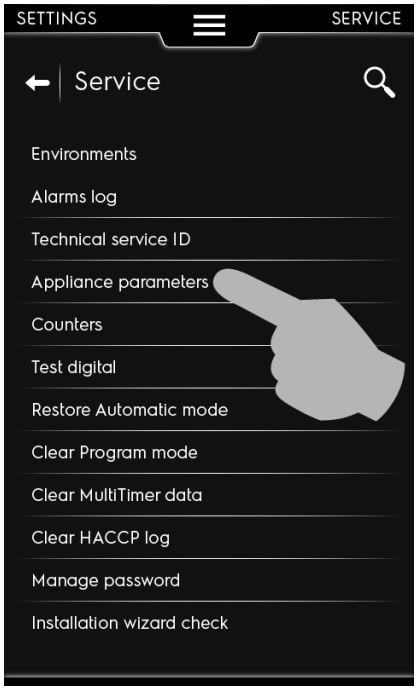


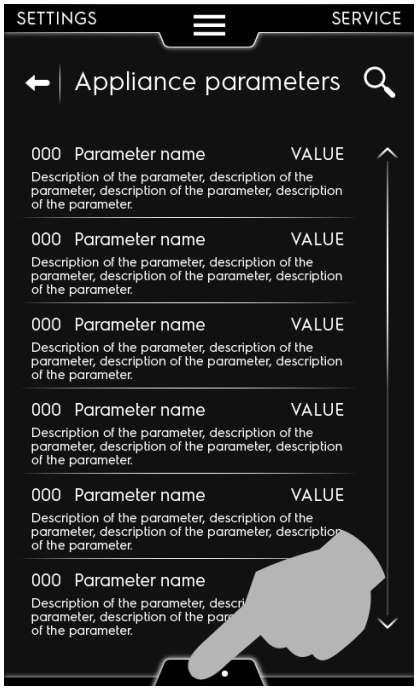


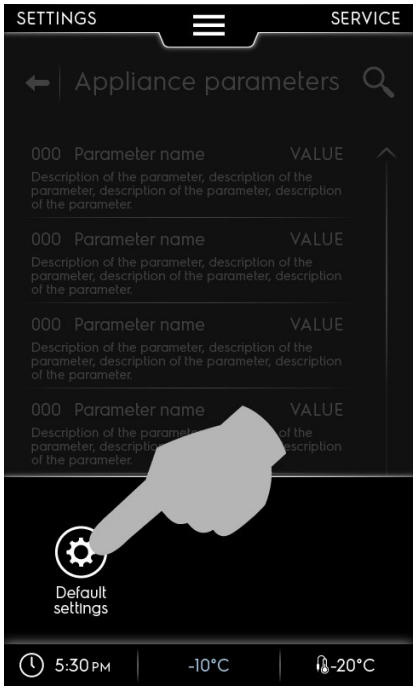


2.8.10.6.4 Appliance parameters

- Identification of parameter and value to set or change.
- Reset the default parameter setting



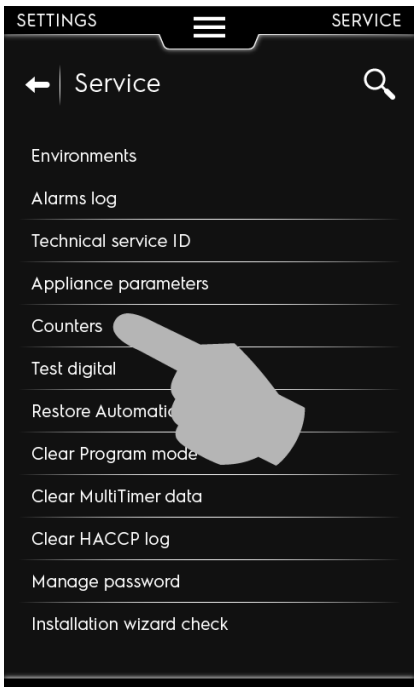


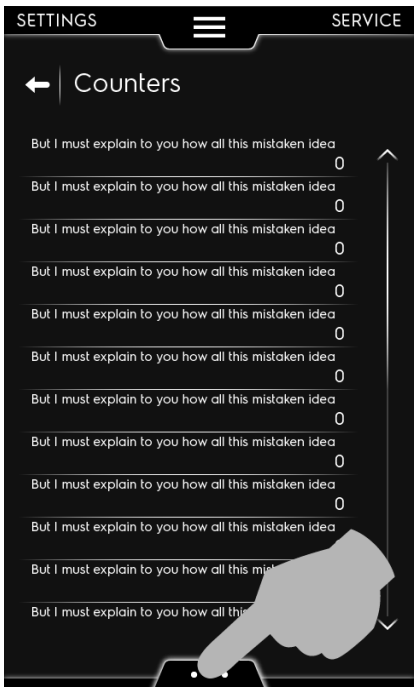


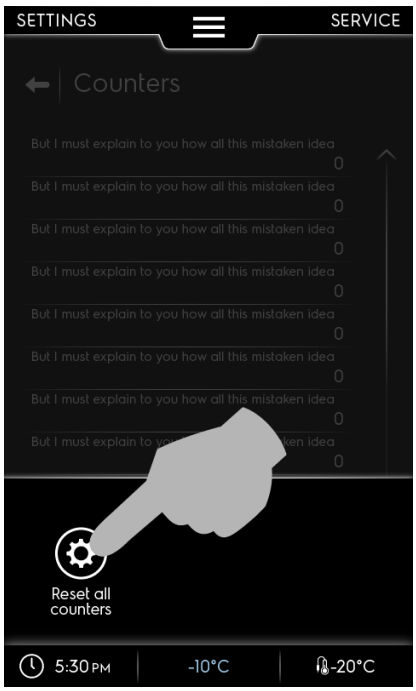
2.8.10.6.5 Counters

Here it is possible check the time and cycle used in the units, as:

- How many cycle used
- How many hours used
- Reset the counter

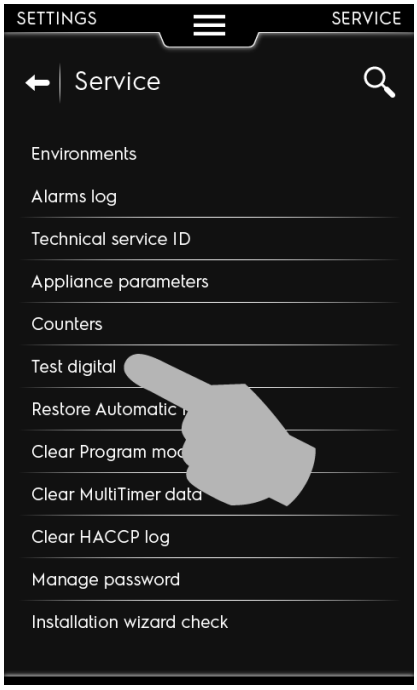


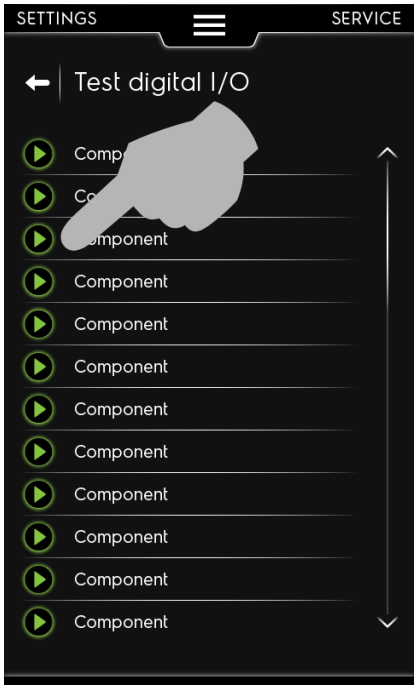


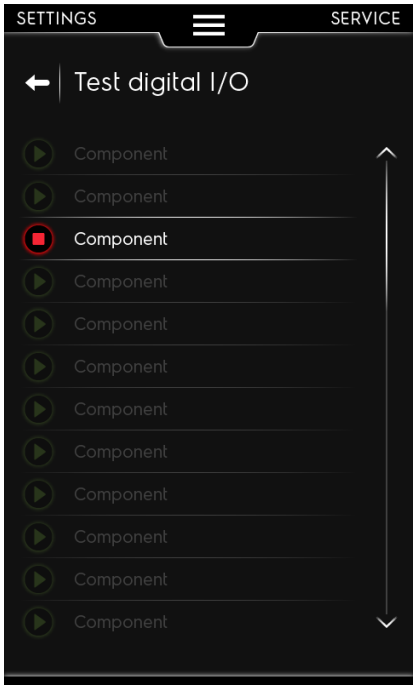


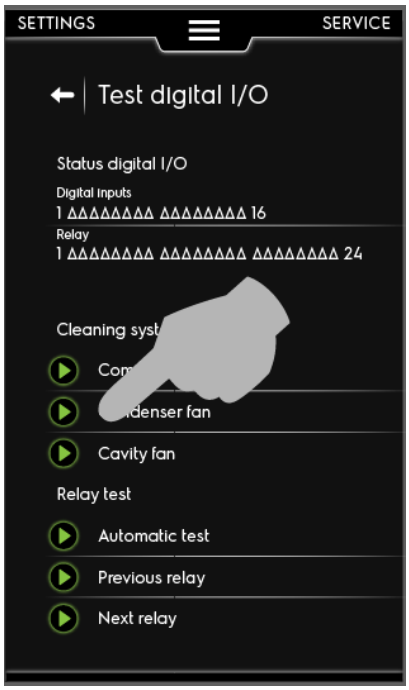
2.8.10.6.6 Test digital I/O

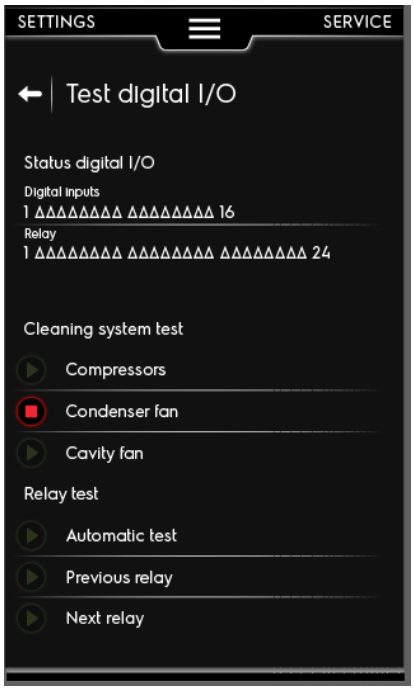
Check of the functioning for each component (ON – OFF)





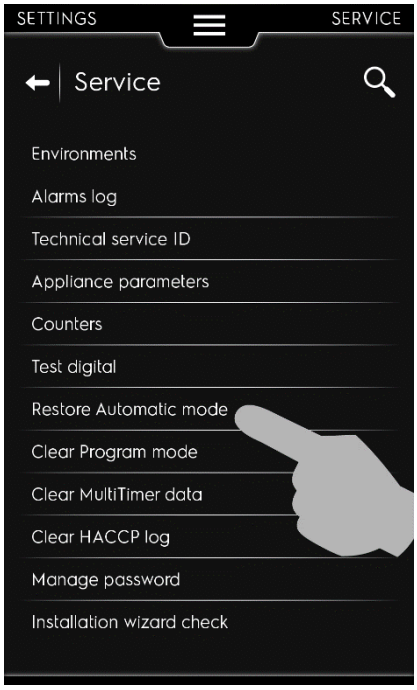






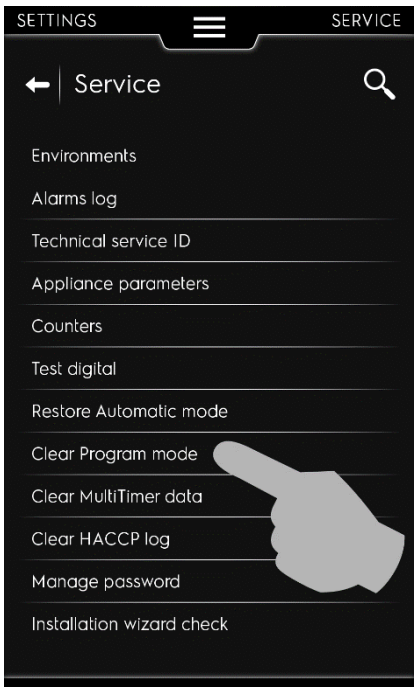
2.8.10.6.7 Restore Automatic mode

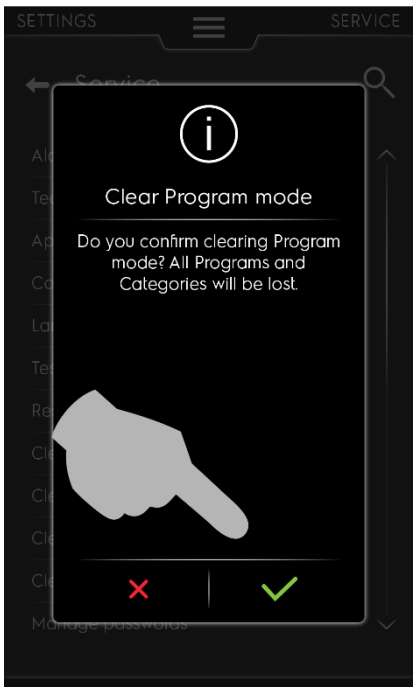
Cancel and restore the original automatic cycle factory preset. (Once selected all user presets will be lost)



2.8.10.6.8 Clear Program mode

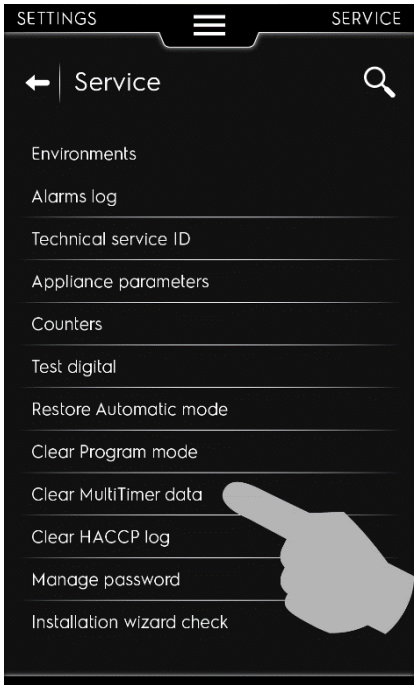
Cancel all program and categories set from user.(Once confirmed all information will be lost)





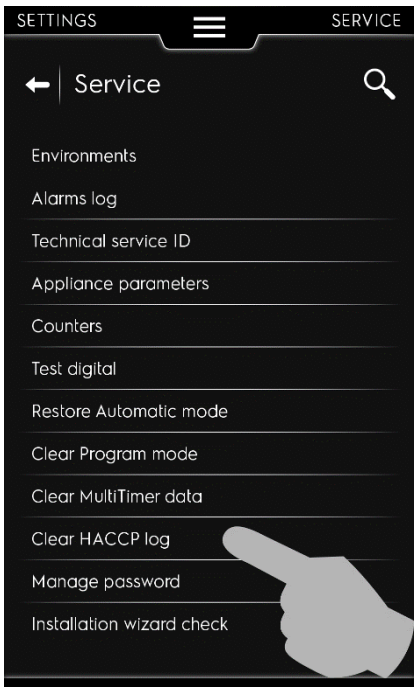
2.8.10.6.9 Clear MultiTimer data

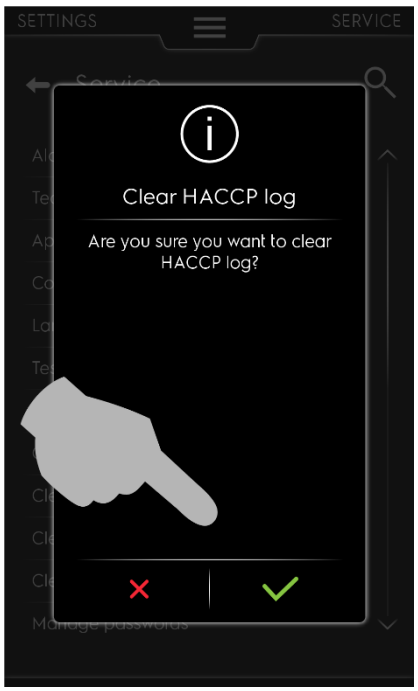
Cancel all MultiTimer data



2.8.10.6.10 Clear HACCP log

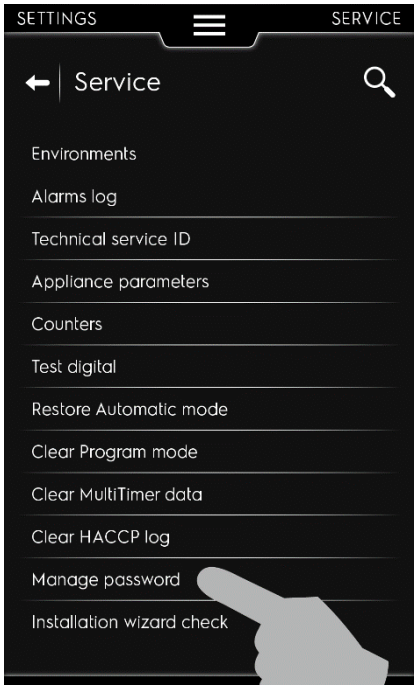
Cancel all HACCP log

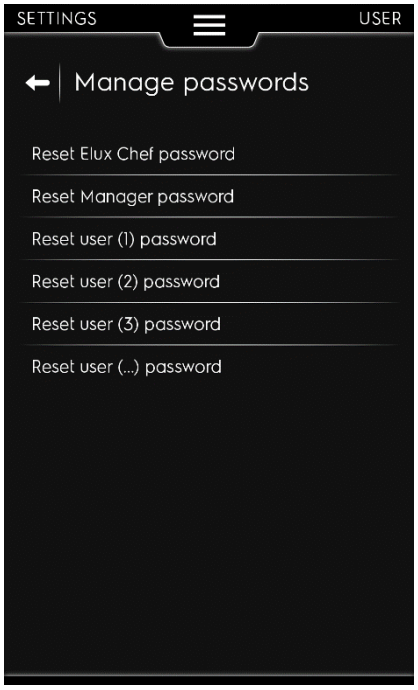


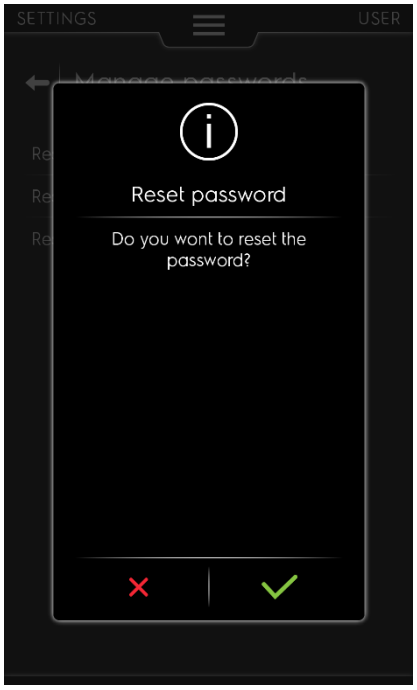


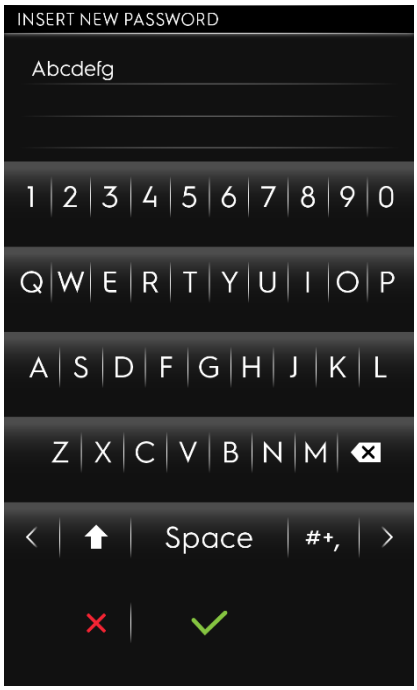
2.8.10.6.11 Manage passwords

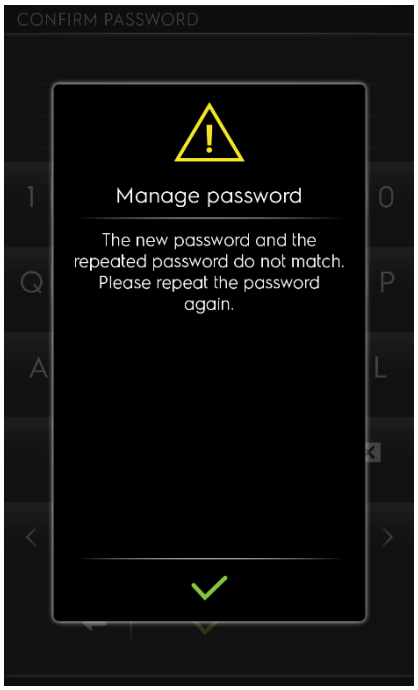
Reset the password of user in case it is lost or forgotten

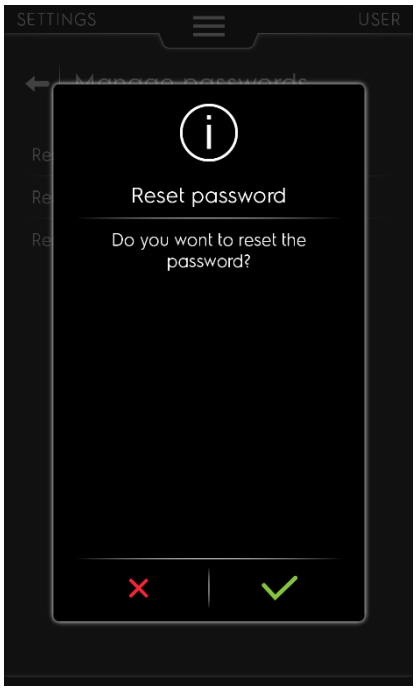








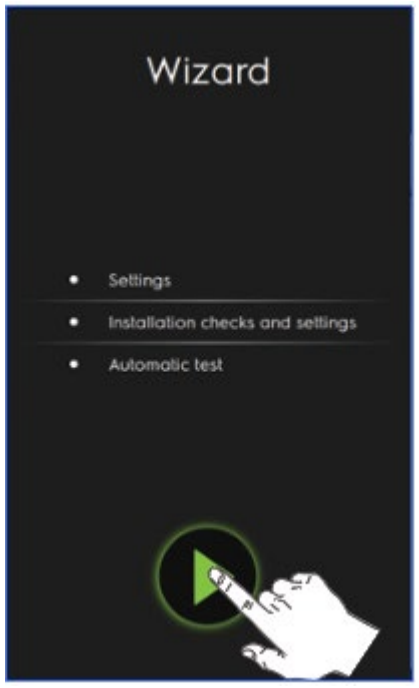
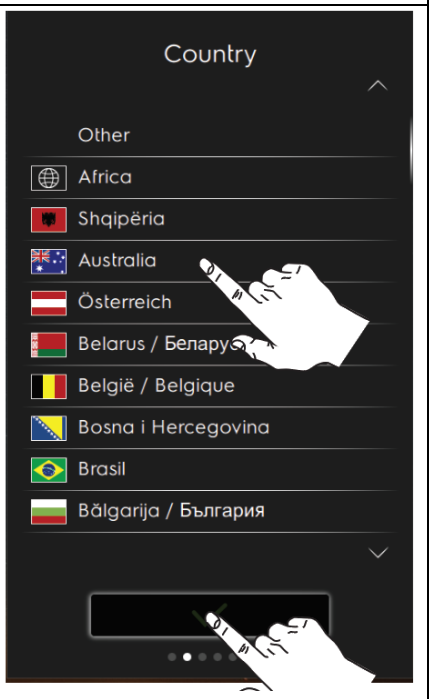


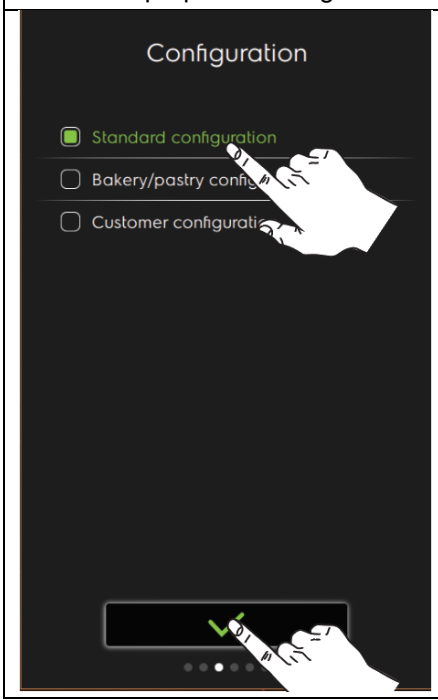
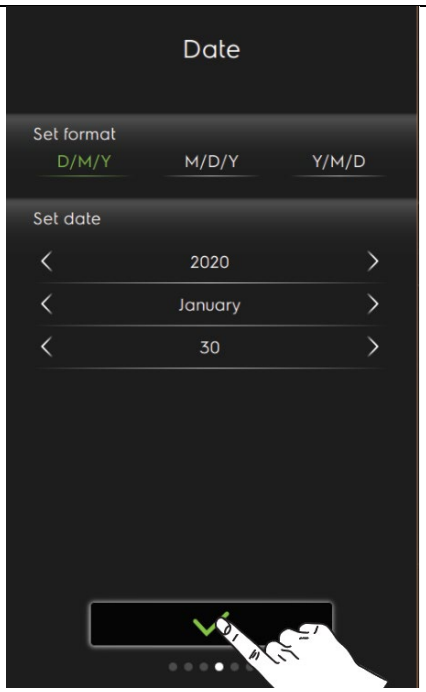
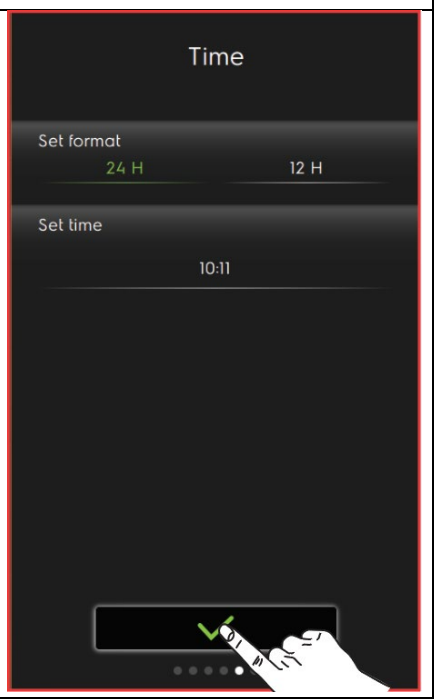


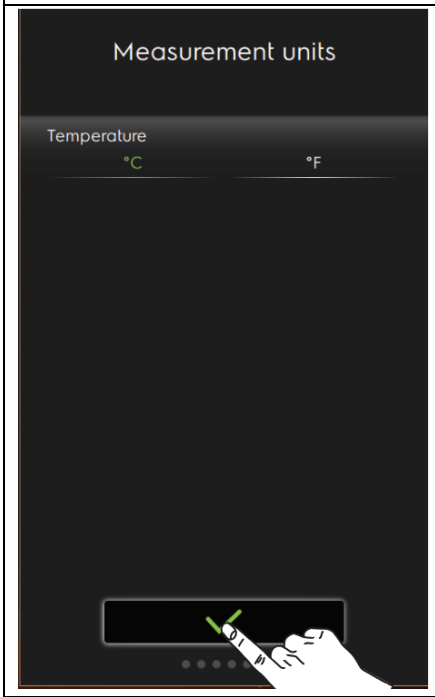
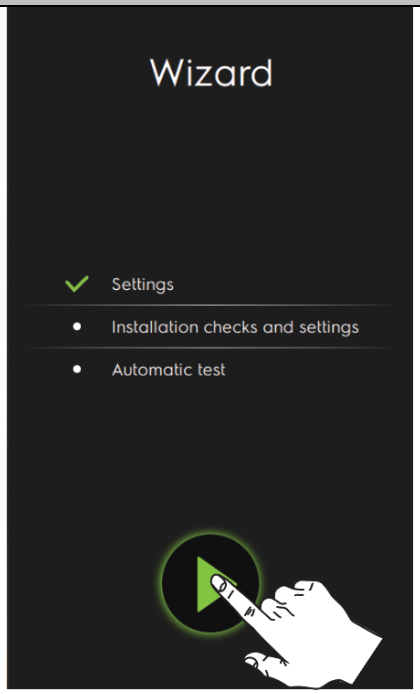
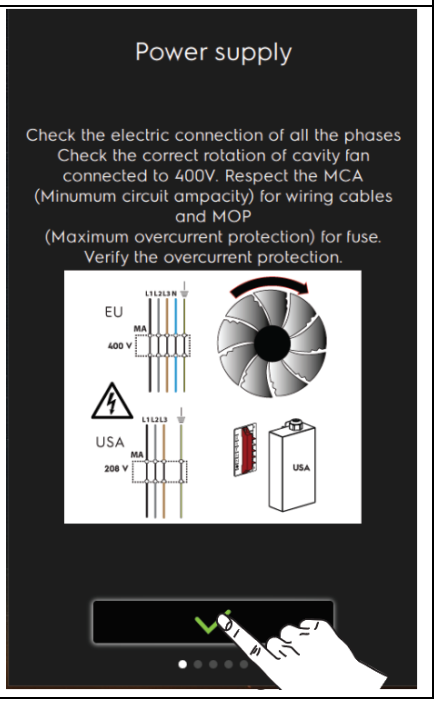
2.9 WIZARD

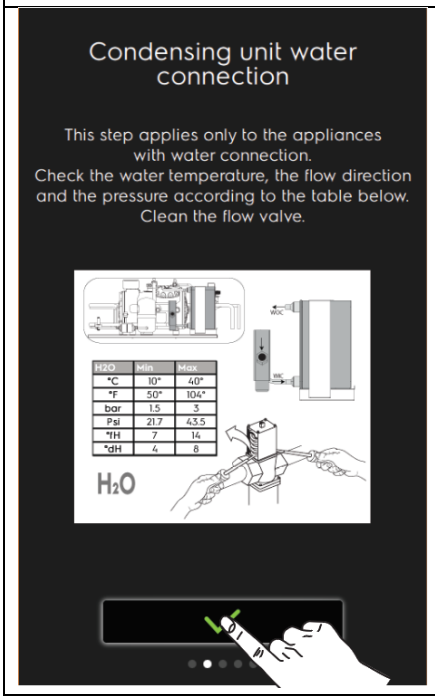
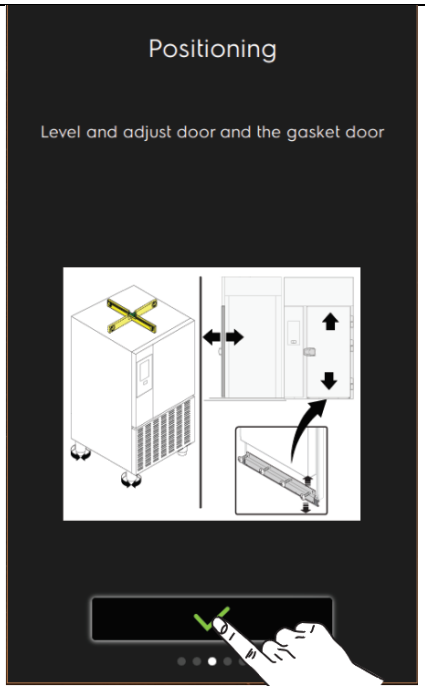
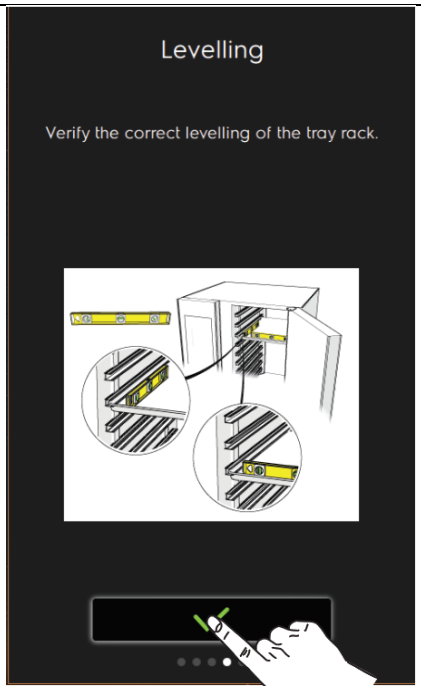
2.9.1 Installation wizard check

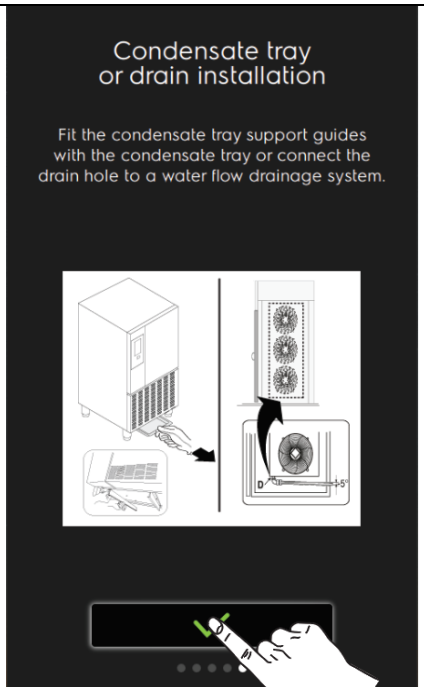
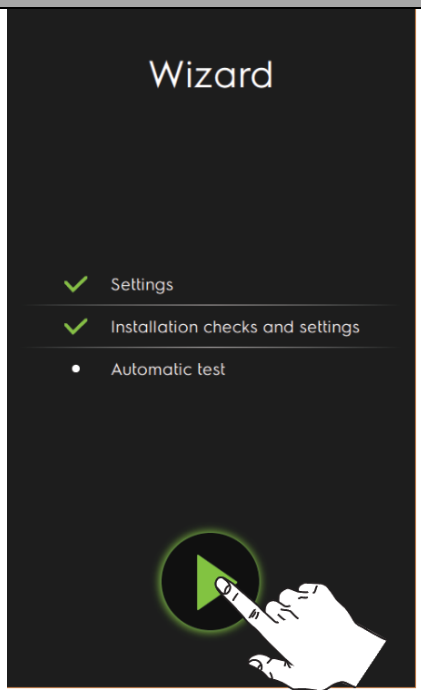
Automatic test of the unit , with relative setting of date and time and check all components and probes
If the wizard is enabled, from parameter **LAIP**, at first switch on of the unit the wizard will On .
It is mandatory for first Installation, and consecutive test of components or cycles, for further checking of components and unit. There will be 3 step mandatories to do , and they can't possible to jump. At the end of testing the unit will store the process and will be store the result on the memory of the unit.

Start first step view "**Setting**" and confirm	Select the language and confirm	Select the country and confirm
		

Select the proposed configurations	Select the Date and confirm	Select the Time and confirm
		

Select the Mesurement and confirm	Start Second step **"Installation checks and setting"** view and confirm	Control fan rotation, Amp_Volt and confirm
		

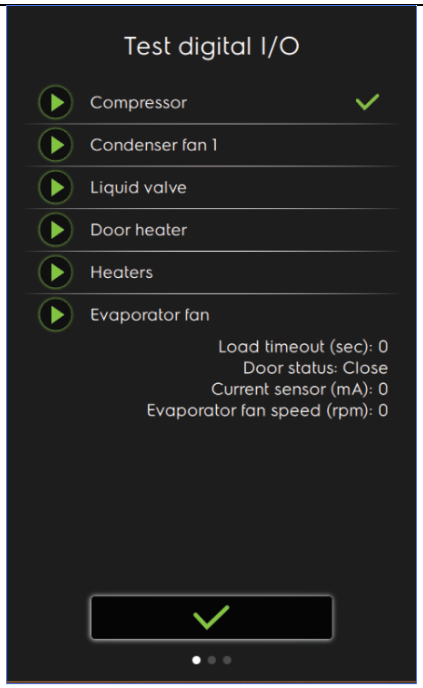
If the unit is connected to a water-cooled condensing system, check the points described, and confirm	Control the leveling of the unit and in case adjust the gasket and door, where it is possible, and confirm	Install the guides, check the correct position of the structure for pastry or gastronorm pans
		

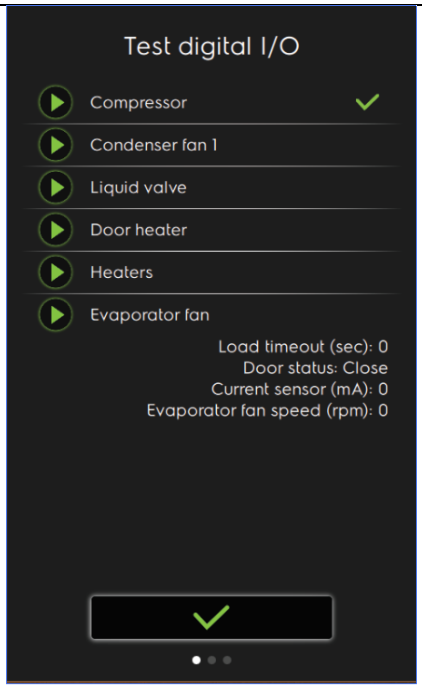
Install the condenser water tray and discharge water condensation pipe (if necessary where present), and confirm	Start Third step view "**Automatic Test**" and confirm
	

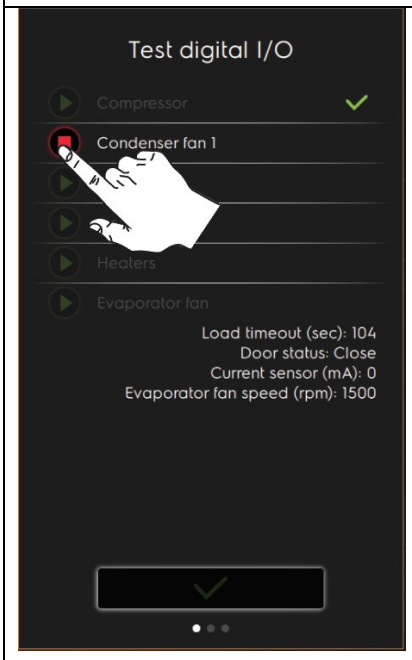
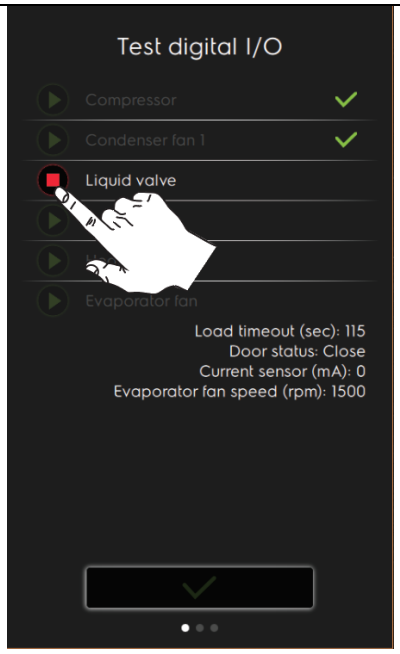
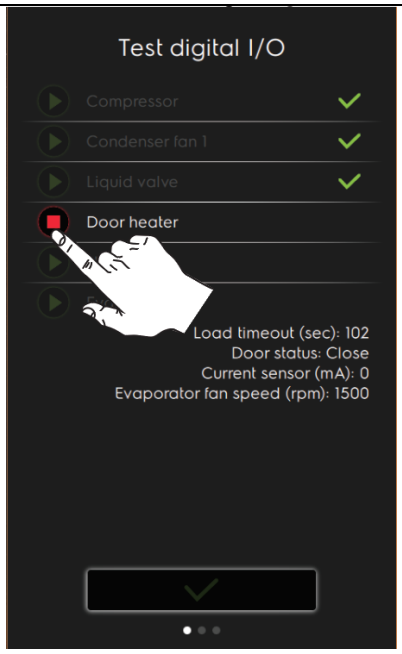
A compressor test will be activated for a specified time, if interrupted, with the stop button, it will remain inactive until the time that appears on the screen expires.(if remote check in the remote unit if compressor and fans are active)

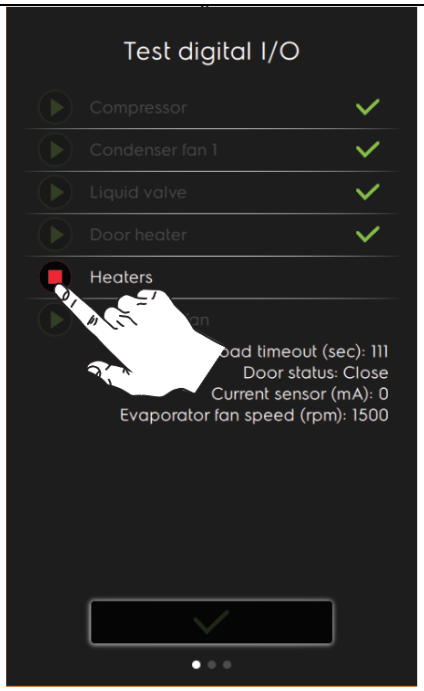
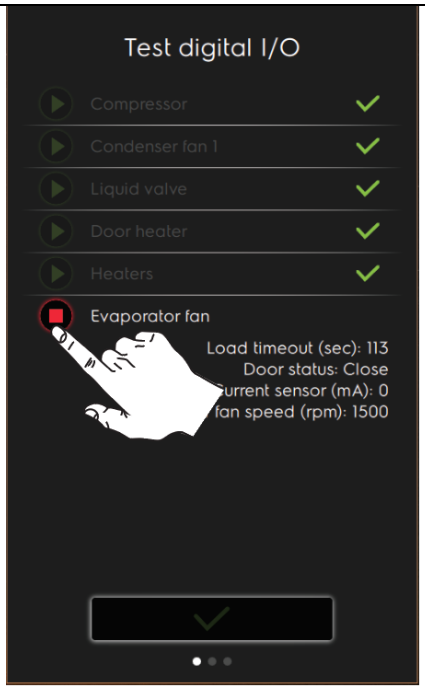
The other information available are:status of the door (opened or close),

Once the component test is interrupted, the green signal will be signaled to in the same line of the component activated. If you want to repeat the component test, just press the start button again.

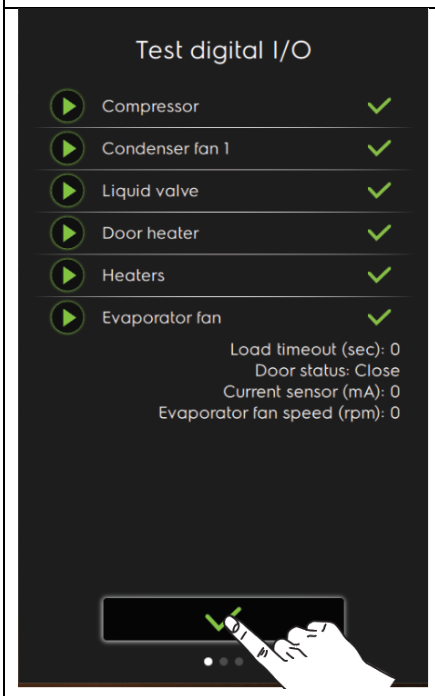


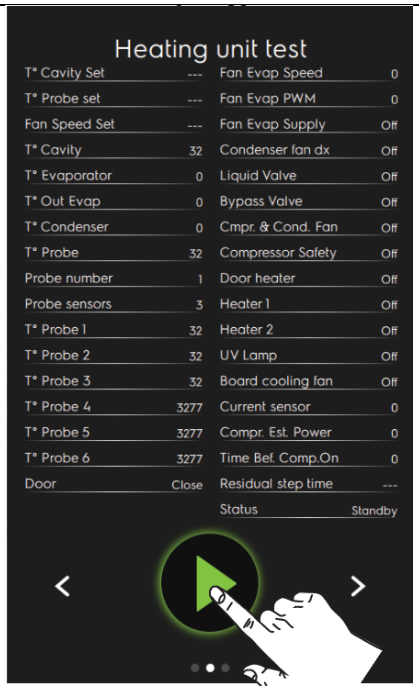


Test condenser fan 1."*This test is available only on units with condenser fan on board. The unit predisposed with remote connections this test is disabled.*"The condenser fan will be on	**Test liquid valve**: The solenoid valve will be active. " if present more solenoid valve , in the dashboard will be numerated (1,2, etc.)	**Test Door Heater:** The frame door heater will be active; it is possible test checking the current sensor, value
		

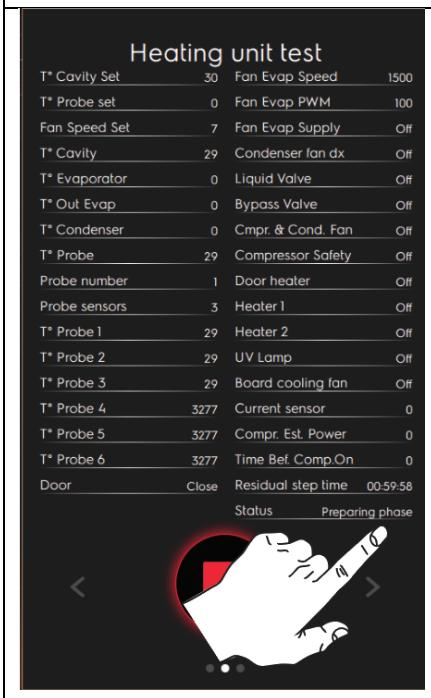
Test the Heaters: the heaters present in the evaporator, for defrost and hot cycle will be active. For correct diagnostic , check the value , "current sensor (mA); the value can change if there are one or more heaters present in the evaporator following the range of the unit. (usually one heater has 3470 mA) 800 W/230V	**Test Evaporator fan**: The cavity fan(s) will be active for maximum speed. Check for correct rotation, or any outages in the fans.
	

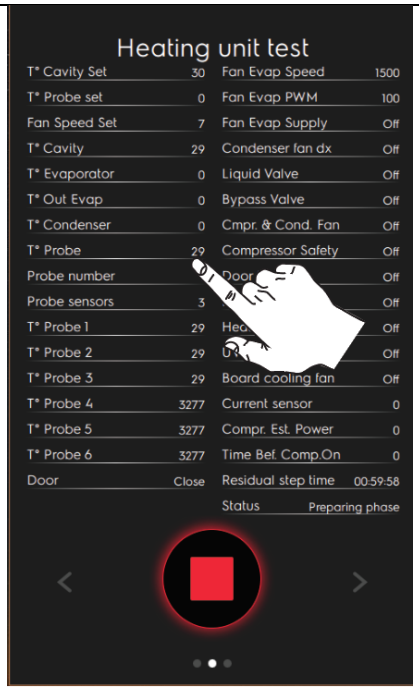
The digital test of the mechanical components has been done. Press the button to access next step (cycle testing)	**Heating Unit Test:** The hot cycle phase testing, it is necessary to check the proper cycle operation; Press the button and the cycle start.

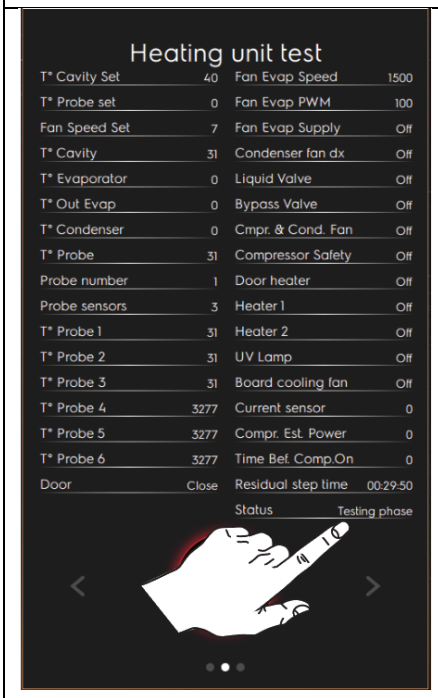
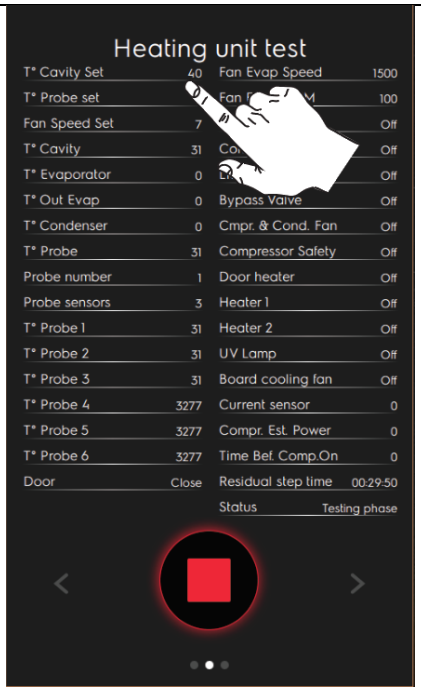
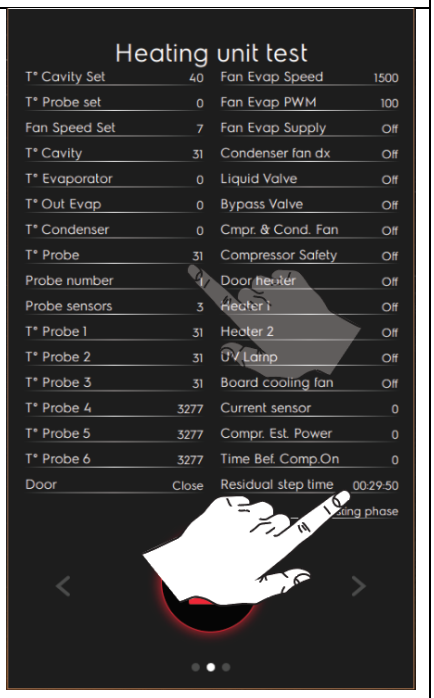
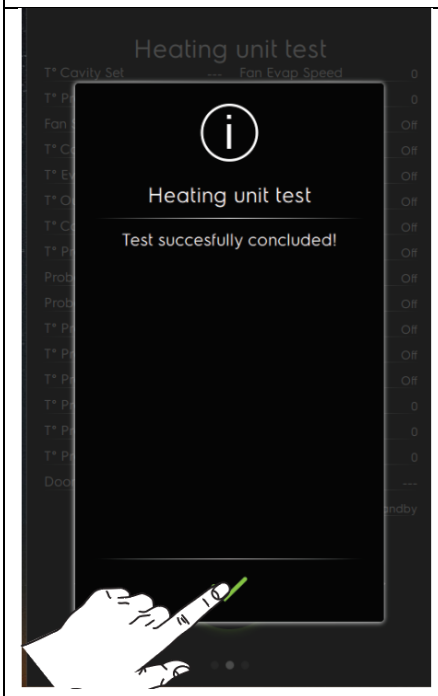
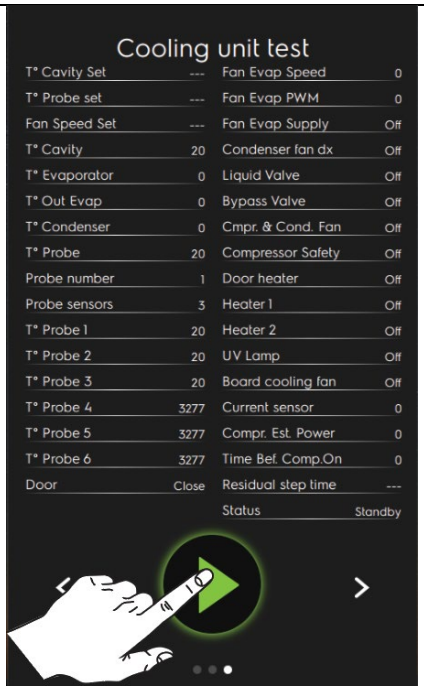


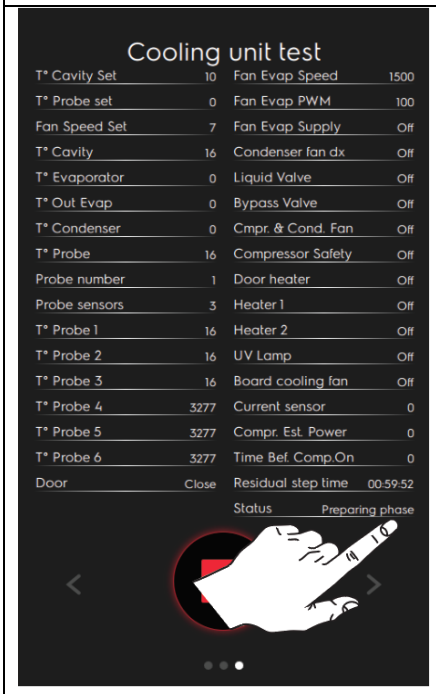
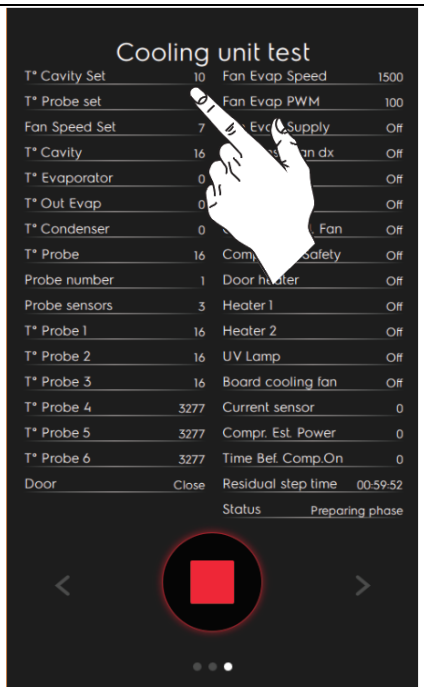
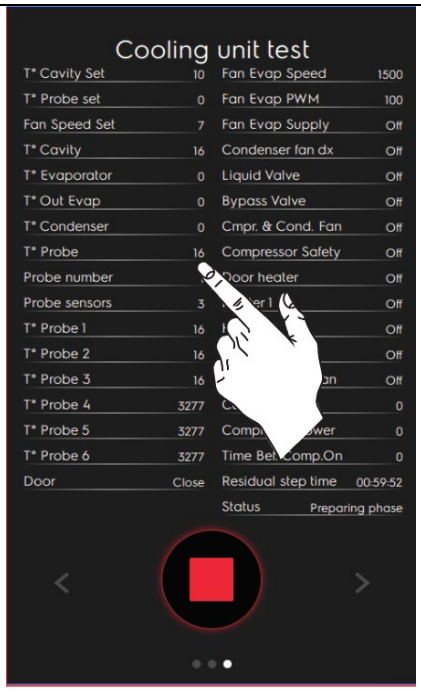
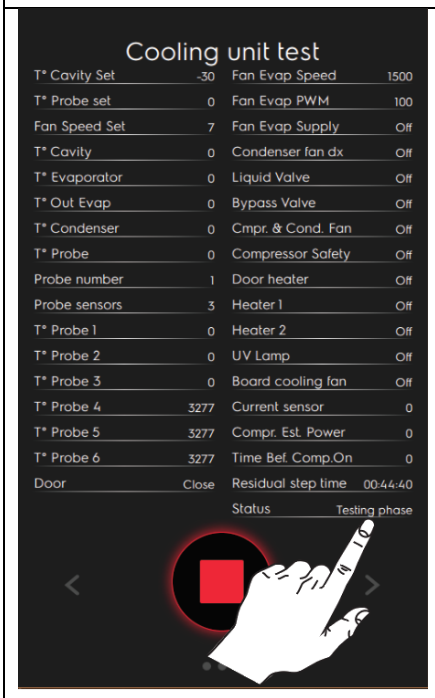
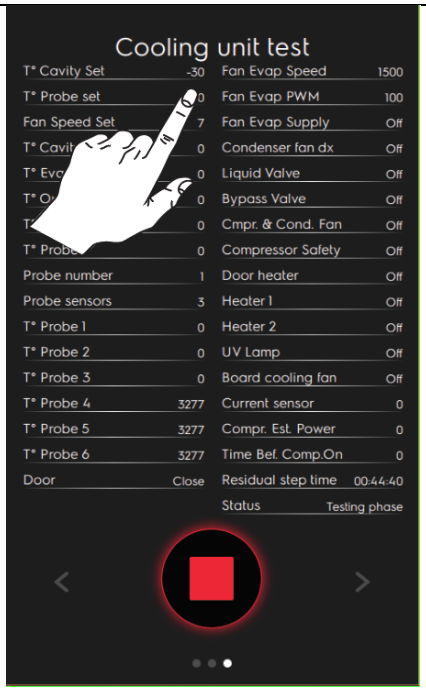


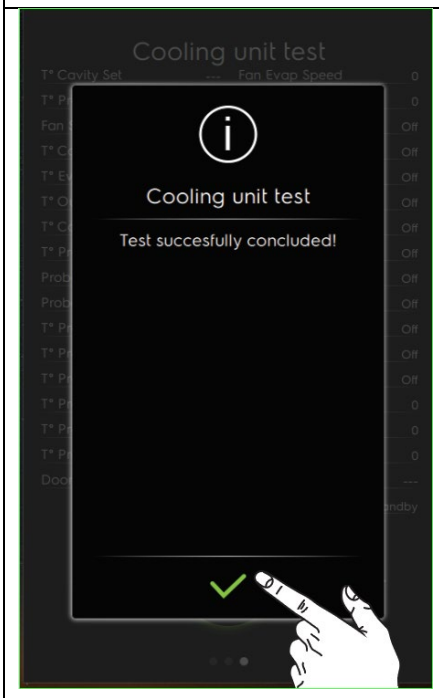
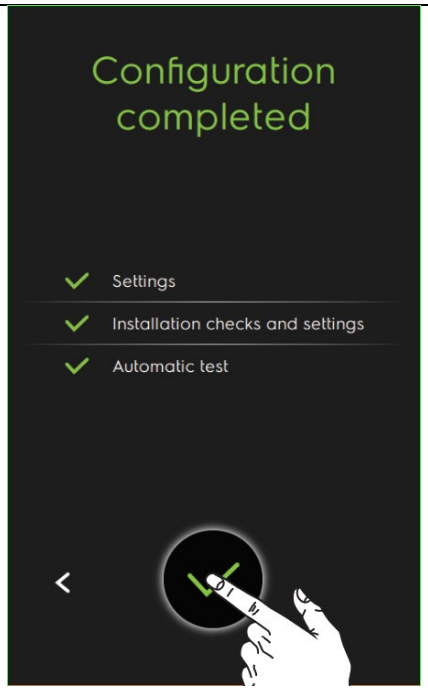
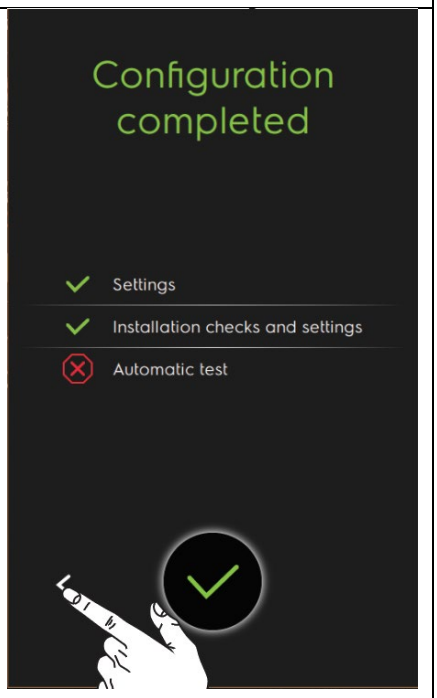
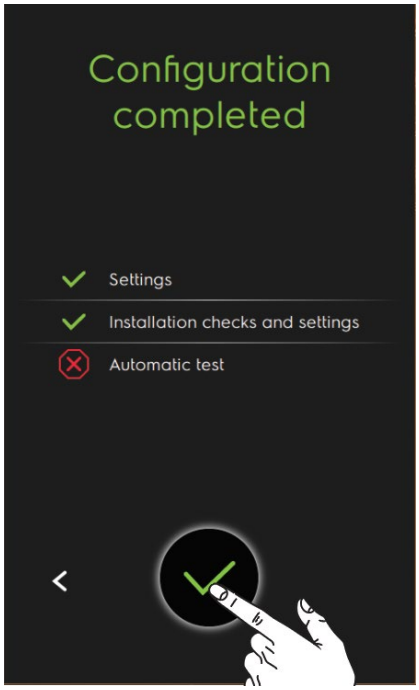
In the dashboard “Status” is indicated the first Step **“Preparing phase”**	The “**Preparation phase**” will end only when the temperature set in the “**Cavity set”** is reached.	The screenshot below shows the actual temperature of the cavity





When the temperature of the “Preparation phase” is reached, the “**Testing phase**” is activated.	The temperature that must be reached at this stage is 40°C, which is shown in the line "T° Cavity Set".	A countdown time limit will be activated, which will determine the effective duration of the test; If the cavity temperature is reached before the time expires, the test cycle will end successfully
		
The screenshot below shows the correct phase concluded.	**Cooling Unit Test:** The cooling cycle is necessary to determine the correct functioning of the thermodynamic circuit and components, and overall correct presence of the refrigerant ,where, if necessary, use the correct approach to set valves , (thermostatic, o pressostatich). Press the button and the cycle start.	
		

In the dashboard “Status” is indicated the first Step **“Preparing phase”**	The “**Preparation phase**” will end only when the temperature set in the “**Cavity set”** is reached.	The screenshot below shows the actual temperature of the cavity
		
When the “Preparation phase” temperature is reached, the “**Testing phase**” is activated.	The temperature to reached at this stage is -30°C, is shown in the line "T° Cavity Set".	A countdown time limit will be activated, which will determine the effective duration of the test; If the cavity temperature is reached before the time expires, the test cycle will end successfully
		

The screenshot below shows the correct phase concluded.	If the all configuration test are concluded with positive result, confirm with the button and the unit restart automatically.	In case some test is not performed, or interrupted, or you want to repeat it, you can go back to the previous page to repeat it
		
While if you want to continue without complete the WIZARD test in its entirety, the equipment will store in the alarm log, visible only in case of unloading with USB key, the actual performance data of the Wizard test, available in TXT format.		If you want proceed in this configuration "**not performed**" press the butto and the equipment will return to standard configuration menu for the normal use.
*** APPLIANCE INFO *** **PNC**:9F727736 01 **Serial number**: 99999999 **Appliance model:** LW 50 Kg **Appliance type:** BCF **UI App version**:1.3.3 **UI Resource version**: 1.3.0 **Brand**: Electrolux **SETTE version**: 3.3.4 **RFS version**: 201706192320 **DTB version**: NA **System version**: 3.14.52-munich-1.3.5_prod **Boot version**: NA **ACU FW version**: 0.9.1 **NIU FW version**: 1.0.0 *** WIZARD REPORT *** **Start at**: 06/02/2020 07:31 **Settings**: performed **Installation checks and settings**: performed **Heating unit test**: not performed **Cooling unit test**: not performed *** WIZARD REPORT END ***		

2.9.2 Manual Test Wizard

This is a procedure that the service can use in case automatic wizard is not enabled and where service technician can aproach the unit using some cycle and environment to test all meccanical parts and refrigerant circuit to ensure that the unit function well.

2.9.2.1 Start manual wizard

1. Connect the unit to power supply, make reference to paragraph 2.1.5 (electrical connection BCF)
2. Switch on the unit with the bottom make reference to paragraph 2.3.2 (description main display)
3. Enter in the setting mode and set:

1) language

2) data

3) time

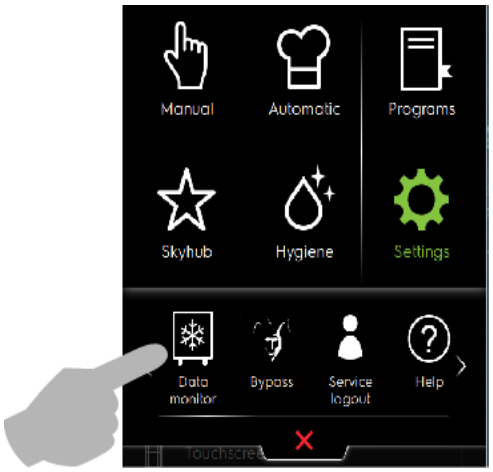
4) misurament unit

5) sound

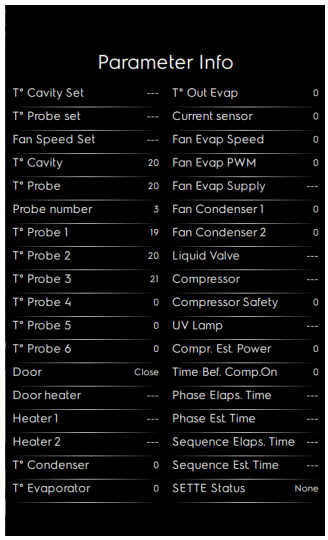
6) Touchscreen Calibration

4. Access to service area refer to paragraph 2.3.3
5. Activate the “data monitor” The “data monitor” is visible after access to service area and present in the drawer main menu

6.



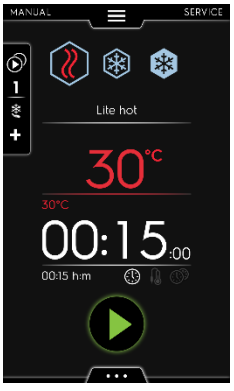
7.

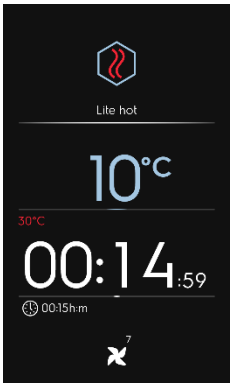


8. Set the manual environment
9. Start the LITE HOT CYCLE setting:

Cavity temperature 30°C (86F)

Time to 25 minutes





10. Check in the data monitor the value of temperature as

T° Cavity

T° Evaporator

Food probe

Warning: The values of these sensors must be more allined to the temperature present in the cavity

11. Check in data monitor the value of temperature as

T°condenser

T°out evaporator

Warning: The value of these sensors must be different from the other upper probe described (if there is some wrong value or the value does not result correct please check the correct position of connectors or replace the probe)

12. Check in the data monitor the “heater 1 and 2” are “active” (an automatic algorithmic start and stop the heaters alternatively,:the value is normaly shown active or off .This alternative ON/OFF of is more clear if the temperature is near to set of cavity stop)
13. Check in the data monitor the Current sensor (this value is mAmp.) the result should be equal to components active as, heater x2 (depend on the unit) and the fan speed if it is active I=P/V.
14. At the End of LITE HOT CYCLE (no more than 25 minutes starting to 19°C (66.5F) of cavity) setting to start a X FREEZE cycle
15. X FREEZE CYCLE set:

Cavity temperature -30°C (-22F)

Time to 13 minutes

16. Check in the data monitor the value of temperature as (could be that the impuls start are active)

T° Cavity

T° Evaporator

Food probe

T° Condenser

T°Outevap.

Compressor “active”

Cavity fan “active” (on only temp CAVITY + out evap under 20° (68F))

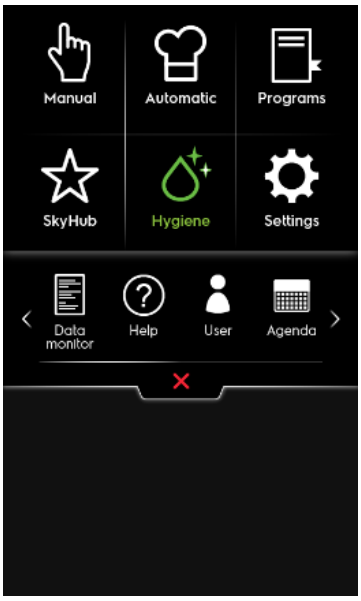
Door heater

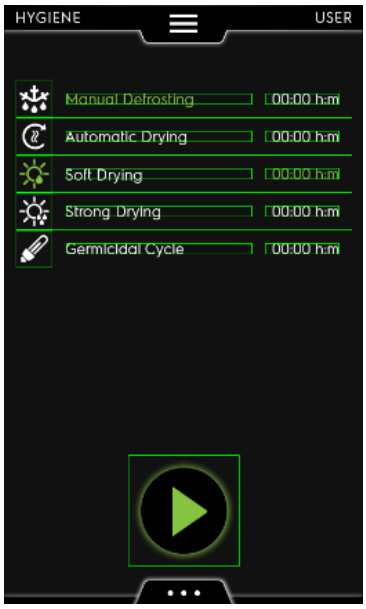
Current sensor (the value showed only by component to 220V)

Solenoid valve active (IN USA MODEL ONLY ONE OF TWO IS ACTIVE N1 IS WORK N2 IS ONLY IN START OVER -10°C (14F))

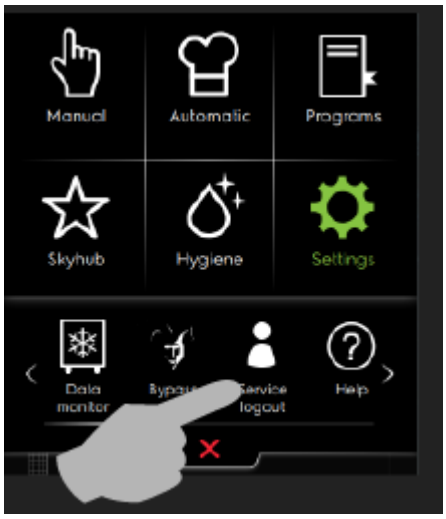
Door frame active

17. The temperature set in this cycle will arrive to set before the countdown set in the time. In case it reaches before Stop the cycle and Start a manual defrost (door open is better) The Heaters are always ON





18. The defrost lasts 30 minutes ,at the end of cycle remember to logout service
19. Enter in the drawer main menu and logout the service or switch Off the unit



3. USE OF APPLIANCE

3.1 OPERATING INSTRUCTIONS

Please refer to the Installation and Operating Manual of the appliance; the document is available for authorized technicians on the web sites (PRIDE-SERVICE PORTAL- AGELUX etc..) In case of any doubt, refer to your local country customer care.

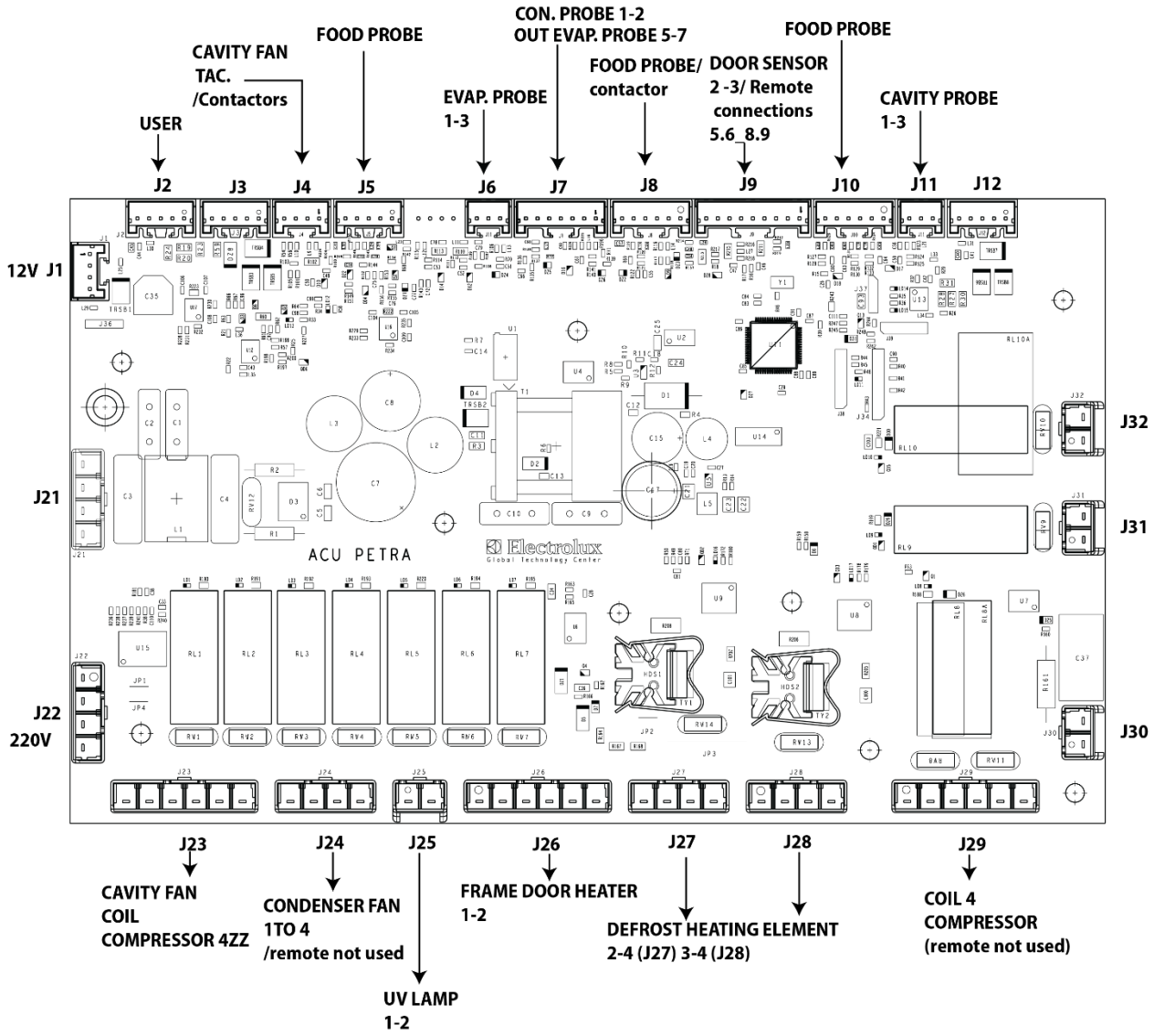
3.2 PREVENTIVE MAINTENANCE PLAN (FOR SERVICE): OPERATION FREQUENCY

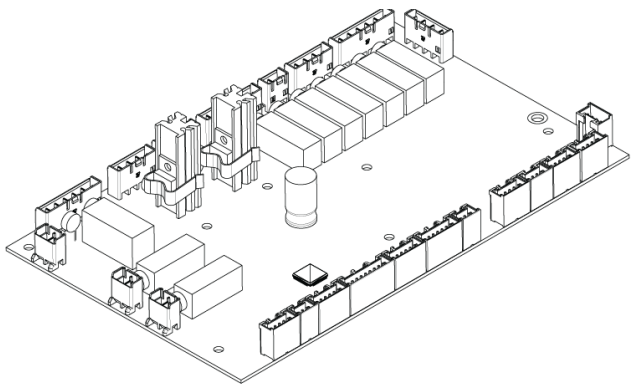
Please refer to the dedicated document available for authorized technicians on the web sites (PRIDE-SERVICE PORTAL- AGELUX etc..) In case of any doubt, refer to your local country customer care.

4. DETAILED APPLIANCE AND COMPONENTS DESCRIPTION/FUNCTIONING

4.1 MAIN BOARD “PETRA”

4.1.1 Functionality

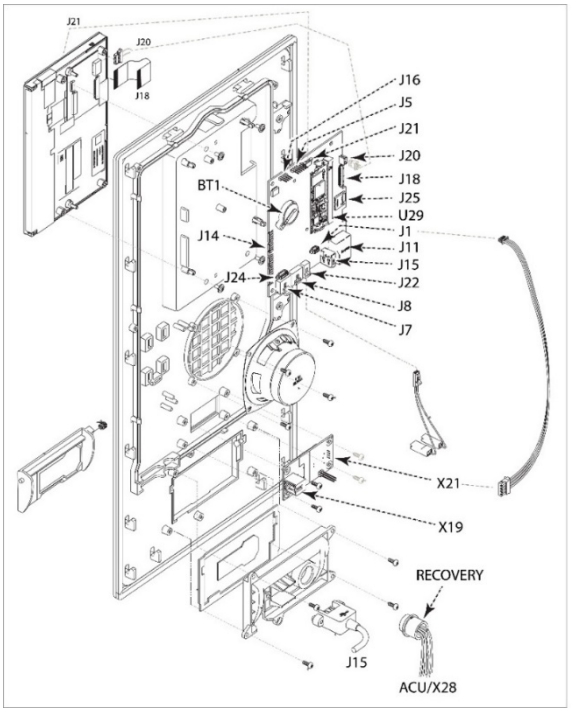


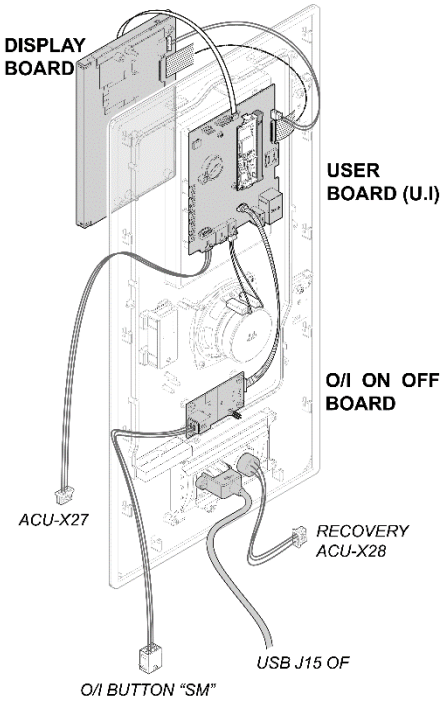


4.2 USER INTERFACE “TOUCH”

4.2.1 Functinality

The UI of the touchscreen appliances is supplied from the ACU connector X27 into contact J7/4.
If the user interface (user board) cannot comunicate with any other board for more than a determinated time (ex 15") any running cycle will be stopped. The error icon will show a message "ECom". No cycle can be launched till the comunication is established again.
DISPLAY BOARD= connects to the U.I on J18 / J20 / J21
USER BOARD (U.I)= connects to the O/I board J1 to X21 / J7 connects to the ACU X27. J15 is the usb cable
O/I ON OFF BOARD (SM)= connects into the EWD and supplys the KSM (on of relay) when turned ON





CONNECTOR	FUNCTION	NOTES
BT1	BATTERY CR2032	DATE / TIME MEMORY
J1	ON / OFF	12V AND 0/1 SWITCH STATE
J5	U9 CONTROL	NOT USED / EMPTY
J7	PMACS	CONNECTION TO ACU (POWER BOARD) X27 . PINS= J7-1= RS485 J7-2= RS485 J7-3= GND J7-4=+12V J7-5= GND
J8	PMACS	*see note
J11	ETHERNET	NOT USED / EMPTY
J14	NIU	FOR WIFI ANTENNA
J15	USB	USB PORT ON DISPLAY
J16	DEBUG	NOT USED / EMPTY
J18	LCD DISPLAY	FLAT CABLE
J20	LCD BACK LIGHT	CABLE
J21	TOUCH RESISTIVE	TOUCH SENSING
J22	SPEAKER	CABLE
J24	ADDRESS	NOT USED / EMPTY
J25	MICRO SD	MEMORY **TBD**
U29	CORE BOARD	CPU
X21	COMUNICATION CABLE	12V AND 0/1 SWITCH STATE
X19		PHASE 230V IN
RECOVERY		CONNECTION TO ACU (POWER BOARD) **X28**

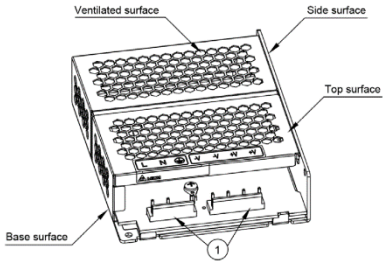
*** Note**: the J7/ PMACS can be connected to any X27 connection of the ACU. J7 vs J8 are interchangeable.
X21 & X19 are the numberings of the ON/OFF board, but also the ACU has the same numberings!!

4.2.2 PMH power supply 100-240 Vac to 12V dc

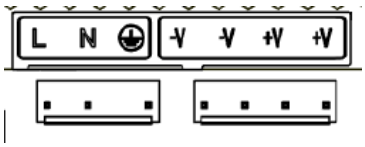
General Information:

The power supply has input from 85Vac to 264Vac with nominal output voltage of 12V. The highly efficient convection cooling construction can operate from -30°C to 70°C

INPUT Rating/ characteristics	
Nominal Input Voltage	100 - 240 Vac
Input Voltage range*	85-264 Vac
Nominal Input Frequency	50-60 HZ
Input Frequency Range	47- 63 HZ
DC Input Voltage Range **	120- 375 Vdc
Input Current	< 1.5A@ 115Vac,<0.80A@230V
Efficiently at 100% Load	>83%@115Vac & 230V
Max Power Dissipation	No load < 0.3W @ 115Vac, < 0.5W @ 230Vac
	100% Load < 11.0W @ 115Vac & 230Vac
Max In rush Current (cold start)	< 30A @ 115Vac, < 60A @ 230Vac
Leakage Current	< 30A @ 115Vac, < 60A @ 230Vac



1)Input & output terminal block connector



OUTPUT Rating/ characteristics	
Nominal Input Voltage	12Vdc
Factory Set point Tolerance	No potentiometer (11.64 to 12.36Vdc)
Output Current	0-4.5A (54W max.)
Output Power	54W
Line Regulation	< 1.0% (@ 100-264Vac input, 100% load)
Load Regulation	< 2.0% (@ 100-264Vac input, 0-100% load)
PARD**** (20MHz)	< 120mVpp
Rise Time	< 100ms @ nominal input (100% load)
Start-up Time	< 2500ms @ 115Vac (100% load), < 1500ms @ 230Vac (100% load)
Hold-up Time	> 5ms @ 115Vac, > 25ms @ 230Vac (100% load)
Dynamic Response (Overshoot & Undershoot O/P Voltage)	± 5% @ 100-264Vac input, 0-50%, 0-100%, 50-100% load (Slew Rate: 0.1A/μS, 50% duty cycle @ 5Hz to 1kHz)
Start-up with Capacitive Loads	3,000μF Max

PROTECTIONS	
Over Voltage	< 17.5V, SELV Output, Latch mode
Overload / Overcurrent	115~150% of rated load current, Hiccup mode, Non-Latching (Auto recovery)
Over Temperature	< 85°C Surrounding Air Temperature @ 100% load, Latch mode
Short Circuit	Hiccup Mode, Non-Latching (Auto-recovery when the fault is removed)
Internal Fuse at L pin	T 3.15AH
Protection Against Shock	Class I with PE* connection

4.3 SEMI-ERMETIC COMPRESSOR

4.3.1 Over view

The compressor consists of a framework hosting the electric engine inside and the mechanical part of the compression piston.
The engine, which is suitably connected to the power supply, triggers the crank gear hence moving the pistons to the bottom of the cylinder and activating the suction.
When the piston moves in the opposite direction, the refrigerant gets compressed and flows through the delivery pipes.

4.3.2 Expected use of the unit

This compressor has been designed and manufactured only for the compression of the HFC-HFO (R404A, R507, R134a, R407C, R407F, R448A, R449A, R450A, R513A, R452A) and HCFC - CFC refrigerants (when national laws allow it only) within the operational fields as described by the attached application charts, with the restrain of a delivery temperature of 130°C and overheating at the suction between 5K and 30K.
The employed refrigerant has to have a humidity content of 10 ppm.

4.3.3 What follows is forbidden:

- The use outside the operational field and the above mentioned restrains;
- The compression of a fluid other than the above mentioned ones;
- To plunge totally or partially the compressor into fluids or to subject it to strong jets of water;
- The use into places at risk of explosion;
- The use at ambient temperatures lower than -20°C or higher than 60°C;
- The use into a completely closed place (not well aired);
- The use in places where corrosive chemical agents are present;
- The storage of combustible or flammable materials in the installation area of the compressor.

IMPORTANT: The plate of each compressor reports type and quantity of oil loaded at the factory.
For any possible topping up and/or replacement of the lube, use the type indicated on the plate only.

4.3.4 Compressor identification

Each compressor is identified thanks to a serial number reproduced on the riveted metal plate, in compliance with the EN 12693 regulation; this plate specifies:

- Manufacturer's name Compressor model Serial number Manufacture date
- Max delivery running pressure (PS, in bar)
- Max pressure of the low pressure area both in the running and in the idle condition (Psi, in bar)
- Number of phases of power supply
- Nominal voltage (V), frequency (Hz), current when the rotor is blocked (A)
- Max running current (A).
- IP protection category.
- Nominal rotation speed (RPM).
- Displaced volume (m^3/h)

4.3.5 Airing of the installation room

For preventing dangerous concentrations of refrigerant in case of unforeseable leaks, it is necessary to provide a suitable airing in the room where the compressor is located.
The installation room has to be equipped with natural airing or mechanical ventilation, in compliance with the applicable technical regulations
Since possible refrigerant leaks would tend to occupy the lowest part of the surrounding space, we recommend placing the suction of the air exchange system in a lower position.

4.3.6 Pipes Connections

Before starting the installation of the compressor, discharge the pressure of pre-charge by acting on both service valves.

Warning: Do not remove any component from the compressor before having executed this operation.

Execute the installation in the following way:

1. **Remove the service valves of the compressor;**
2. **Weld the service valves to the system pipes;**
3. **Reassemble the service valves on the compressor;**
4. **Check the leaks from the pipes by means of a pressure test with N_2 or dry air following all the required safety procedures such as, for example, the use of a pressure reducer placed between the bottle and the system and leaving the compressor service valves closed**

Warning:

During this test, do not overcome the standstill pressure;

5. **Open the service valves of the compressor;**
6. **Take away the air of the system by means of the vacuum till a minimum of 1,5 mbar;**
7. **Fill up the system with refrigerant.**

Warning:

Do not use the compressor to create a vacuum

Do not power ON the compressor in vacuum conditions!

Warning:

Do not use the compressor to fill up the system with refrigerant.

Warning:

Before connecting, the service valves to the pipes be sure that all the plastic caps have been taken away.

Avoid, as much as possible, the air inlet into the compressor!

Keep the connections closed during the welding of the service valves to the pipes.

Once the service valves have been reassembled, keep them closed until the vacuum procedure is not implemented.

Make sure that all pipes and joints are perfectly clean and leak-proof.

4.3.7 Table of pipe connection of *Dorin* compressor

The table shows the standard indications regarding pipe connections (*Dorin* compressor)

Range	Model	Oil charge	Suction	Dis-charge	Net weight
		[kg]	SL [mm]	DL [mm]	[kg]
H11	H51CS	1,0	12s	12s	35
	H80CC	1,0	12s	12s	36
	H80CS	1,0	16s	12s	36
	H101CC	1,0	16s	12s	37
	H101CS	1,0	16s	12s	37
	H151CC	1,0	16s	12s	38
	H151CS	1,0	16s	12s	38
	H181CC	1,0	16s	12s	39
	H181CS	1,0	16s	12s	39
	H201CC	1,0	16s	12s	40
	H201CS	1,0	18s	16s	40
	H221CC	1,0	18s	16s	41
	H221CS	1,0	18s	16s	41
	H251CC	1,0	18s	16s	41
	H251CS	1,0	18s	16s	41
	H281CC	1,0	18s	16s	43
	H281SB	1,0	18s	16s	44
	H281CS	1,0	18s	16s	44
	H51CS	1,0	12s	12s	35
	H80CC	1,0	12s	12s	36
	H80CS	1,0	16s	12s	36
H2	H290CS	1,4	22s	16s	54
	H300CC	1,4	22s	16s	54
	H300CS	1,4	28s	16s	54
	H350CC	1,4	28s	16s	54
	H350SB	1,4	28s	16s	54
	H380CC	1,4	28s	16s	56
	H380SB	1,4	28s	16s	56
	H390CS	1,4	28s	16s	56
	H392CS	1,4	28s	16s	56
H32	H403CC	2,0	28s	16s	75
	H403CS	2,0	28s	16s	76
	H503CC	2,0	28s	16s	79
	H503CS	2,0	35s	16s	80
	H743CC	2,0	35s	16s	81
H33	H355CS	1,8	22s	16s	77
	H405CC	1,8	22s	16s	77
	H405CS	1,8	28s	16s	78
	H505CC	1,8	28s	16s	78
	H505CS	1,8	28s	18s	78
	H705CC	1,8	28s	18s	78
	H705CS	1,8	28s	18s	78
	H755CC	1,8	28s	18s	78

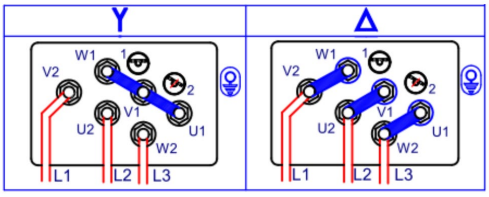
Range	Model	Oil charge	Suction	Dis-charge	Net weight
		[kg]	SL [mm]	DL [mm]	[kg]
H35	H401CS	2,0	22s	18s	89
	H451CC	2,0	22s	18s	91
	H451CS	2,0	28s	18s	89
	H551CC	2,0	28s	18s	91
	H551CS	2,0	28s	22s	91
	H701CC	2,0	28s	22s	91
	H701CS	2,0	28s	22s	91
	H751CC	2,0	28s	22s	91
	H751CS	2,0	35s	22s	91
	H1002CC	2,0	35s	22s	99
	H801CS	2,0	35s	22s	91
	H1003CC	2,0	35s	22s	99
H41	H851CS	2,5	35s	28s	125
	H1201CC	2,5	35s	28s	130
	H1001CS	2,5	35s	28s	127
	H1501CC	2,5	42s	28s	131
	H1501CS	2,5	35s	28s	127
	H2001CC	2,5	42s	28s	131
	H1601CS	2,5	42s	28s	134
	H2201CC	2,5	42s	28s	136
H5	H2000CS	3,5	42s	28s	190
	H2500CC	3,5	54s	28s	185
	H2500CS	3,5	54s	28s	185
	H3000CC	3,5	54s	28s	199
	H2700CS	3,5	54s	35s	200
	H3200CC	3,5	54s	35s	205
	H2900CS	3,5	54s	35s	205
	H3400CC	3,5	54s	35s	205
H6	H3000CS	3,5	54s	35s	235
	H3500CC	3,5	54s	35s	246
	H3500CS	3,5	54s	35s	233
	H4000CC	3,5	54s	35s	249
	H4000CS	3,5	54s	42s	244
	H4500CC	3,5	54s	42s	252
	H4500CS	3,5	54s	42s	253
	H5000CC	3,5	54s	42s	253
H7	H5000CS	8,5	66s	42s	350
	H5500CC	8,5	66s	42s	355
	H5500CS	8,5	80s	42s	350
	H6000CC	8,5	80s	42s	355
	H6000CS	8,5	80s	42s	355
	H7500CC	8,5	80s	42s	357
	H7501CS	8,5	80s	54s	355
	H8001CC	8,5	80s	54s	357
	H8000CS	8,5	80s	54s	360
	H9000CC	8,5	80s	54s	366

4.3.8 Electrical connections

The connection to the power supply has to be made by opening the box of the electric connections and by connecting the phases of power supply, the equipotential wire and the wires for the signals of the temperature sensors following the instructions provided inside the lid of the box and on the compressor plate.

Connect the carter resistance, whenever it is provided, and the other electric equipment's.

The plate positioned on each compressor shows the motor's voltage and frequency values: make sure they comply with the line's voltage and frequency.



STANDARD	380-420 50HZ / 440-480 60 HZ	Y
	220-240 50 HZ / 265-290 60 HZ	Δ

Warning:
For the dimensions of the contactors, cables and protection devices (fuses, circuit breakers) of the electrical power refer to the values of maximum working (FLA) and start-up current (LRA) shown on the unit data plate

4.3.9 Protection System

The motors are equipped with PTC internal protection or through THERMIK; as for PTC sensors, the relevant connections (indicated as T1- T2 in the wiring diagram) shall not be connected to the power supply voltage but fed only through the motor protection electronic module (REL), available for protections such as thermistor; vice versa for protections such as thermic the use of (REL) is not necessary and the contacts shall be connected in series with the other system protections.

4.3.10 Commissioning: Preliminary Works

Feed the carter resistance, if provided (start the refrigerant recharge process not below35°C÷40°C of the oil temperature).Once the indicated temperatures are reached, start the compressor.

Warning:
Before starting the compressor:

1. **Make sure the suction service valve and the discharge gas valve are open;**
2. **Do not start the compressor when high vacuum conditions occur inside it. Non-observance of this warning can have very serious consequences such as the sudden increase of the internal pressure with possibility of explosion and consequent risks for the staff operating, passing by or staying close to the machine.**

Check the oil level and verify that the oil level is between the levels clearly indicated on the oil sight glass, as shown in the following figure:

OIL LEVEL INDICATION

During the first hours of operation of the compressor, check the oil level several times.

Warning:
If oil have to be added, use the type indicated on the nameplate and do it gradually, checking his return to compressor: **Danger of liquid slugging!**

Warning:
During compressor, functioning, liquid migration from evaporator to compressor has to be avoid.
The functioning with liquid refrigerant may cause following failures:

3. **Oil with less lubricant power;**
4. **Broken of valves and consequent damage of other components**

The installer shall verify that the plant has all the solution to avoid the liquid migration from evaporator to compressor, in all possible operating conditions. This phenomenon may be identified by the following functioning failures:

5. **Ice or frost formation on the suction service valves and on suction line;**
6. **Excessive foam formation on lubricant, visible through warning light;**
7. **Low temperature of surface of oil sump**
8. **Take a sample of oil and verify its good quality (color and acidity).**
9. **Every time the oil is replaced, also the oil filter shall be verified.**

Warning:

10. **POE and PAG oils are strongly hygroscopic. Moisture binds itself chemically to the oil molecule. Carefully operate while replacing the oil. Prevent the air from entering the circuit.**

In case of refrigerant gas leak, aerate the room where the leak occurred before any operations. Do not stay in the machinery room if it has not been properly aerated; even if the gas inhaled is not harmful, the gas replaces oxygen and can therefore cause choking symptoms

4.3.11 Compressors Replacement

A particular attention shall be paid in case a compressor is replaced with another one; as a matter of fact in the circuit, a certain oil quantity could have been left such as to cause “liquid slugging” at the start. It could be necessary to remove a certain lube quantity from the new compressor. After the compressor starting check that the oil level is stabilized between the levels indicated in previous paragraph (**4.1.1.9)**

4.3.12 Compressor Disassembly

Make reference site to Dorin, for spare part catalog and instruction to disassemble.

Warning:

During operation of the machine periodically, check that the oil level is between the levels clearly marked on the sight glass. It could be useful to provide with regular oil analysis in order to check the lack of humidity and/or acidity.

4.3.13 Number of starts

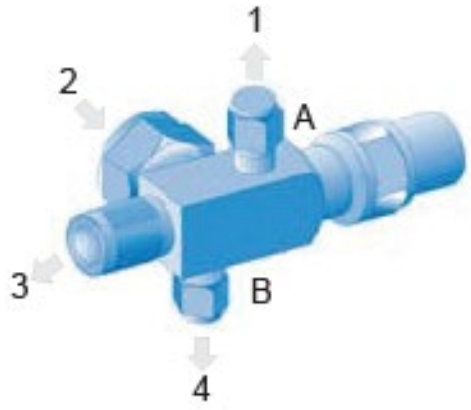
Do not start the compressor more than 8 times per hour.

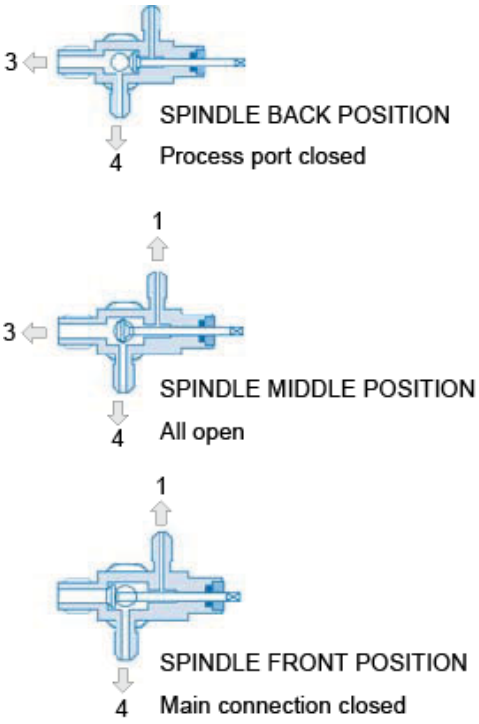
Let the machine run for at least 4 minutes for each starting.

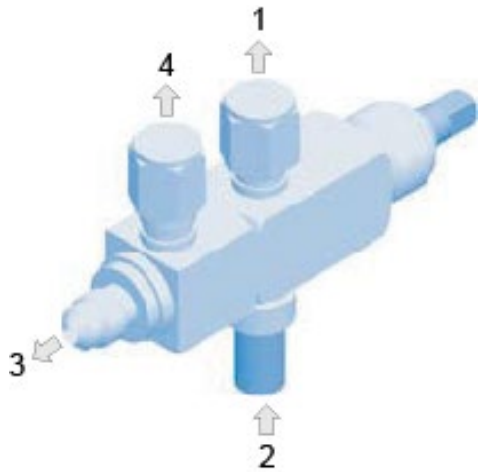
However, be sure that numerous starting do not undermine the right oil level into the case

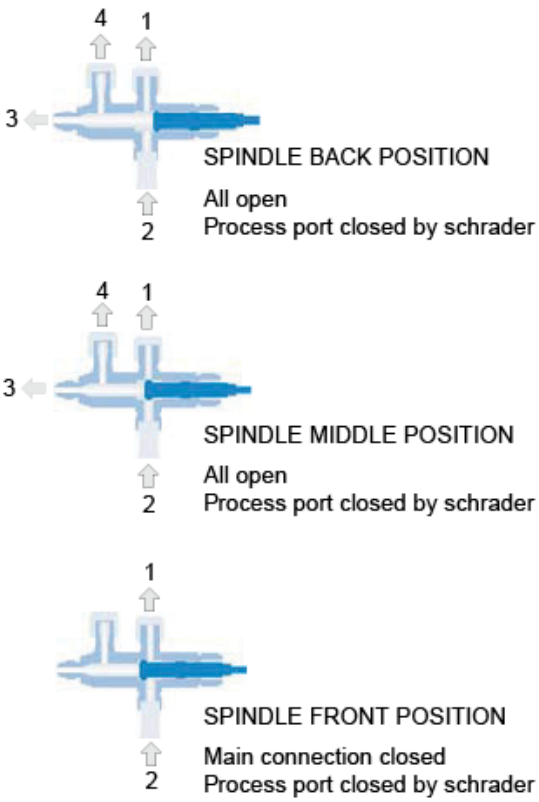
4.3.14 Rotalock Valves

UJ VALVES	
1	Process and manometer
2	Connection to compressor or receiver
3	Main connection
4	Pressostat port



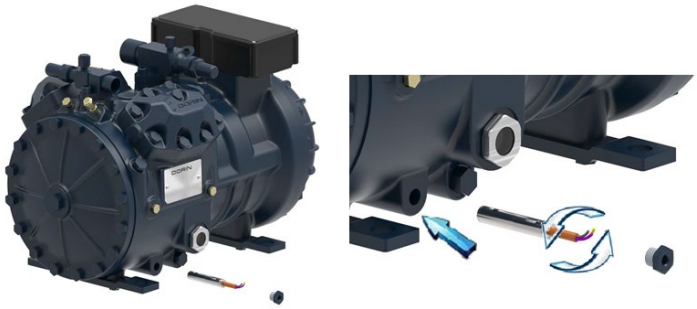
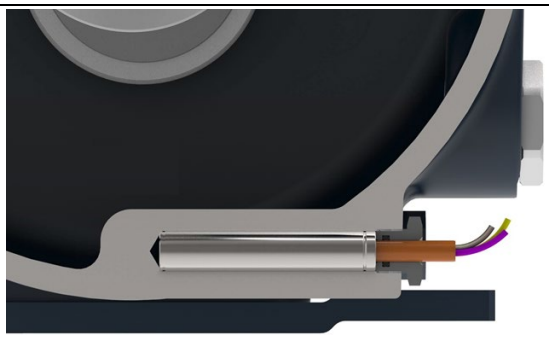






4.3.15 Crankcase heater installations

It is recommended to fit an oil heater in the compressor crankcase, because, if the compressor is stopped, there is the possible storage of refrigerant inside the crankcase. The heater reduce the dilution of liquid refrigerant with the oil. On the oil level side, the compressor crankcase is already equipped with a hole where the resistance may be applied: **See the instruction below**

	**Insert the high temperature paste in the indicated hole (3g)**
	**Insert the crankcase heater in the housing moving it back and forth and turning several times**
	**Block the heater screwing the bushing supplied (When applicable). Tightening torque of the bushing 10 Nm**
	**The use of the bushing ensures an insulation class IP67 for the crankcase heater**

The standard resistances are:

100 or 200 W based on compressor size;

Voltage 230 V.

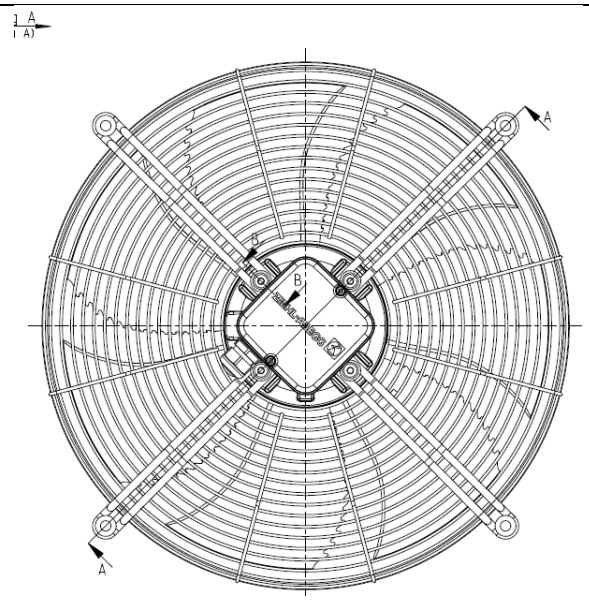
⚠Warning:

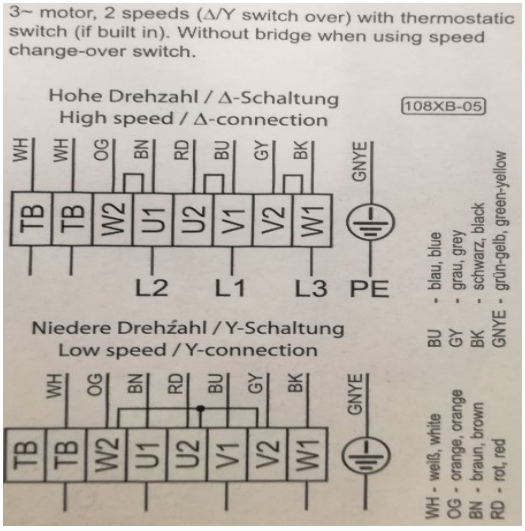
Before energizing the crankcase heater make sure, the voltage is correct and that the heater is inserted and locked inside its seat by screwing the bush supplied

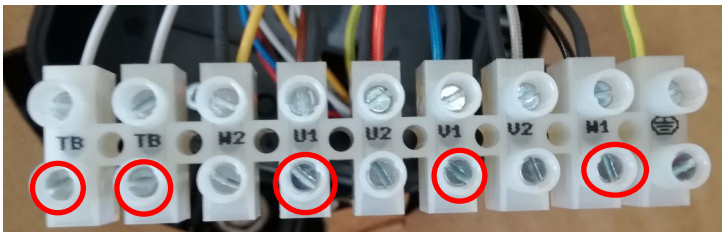
On demand the crankcase heater can be provided for different voltages or power

4.3.16 Evaporator Fan

4.3.16.1 Functionality fan 150 /200 KG



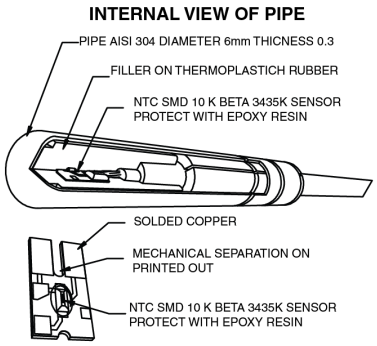




Name cable	Power /speed
TB to TK3	400V 50Hz D/Y 540W 1350Rpm
TB TO TK3	
U1 TO U1	
V1 TO V1	
W1 TO W1	

4.3.17 Probe's

4.3.17.1 Functionality



Conversion table NTC 10K BETA 3435	
TEMPERATURA	KOHM (nom)
-40	188,5
-30	111,3
-20	67,8
-10	42,45
0	27,28
10	17,96
20	12,9
25	10
30	8,313

Every cable has printed the name of component (cell/evap/outevap)

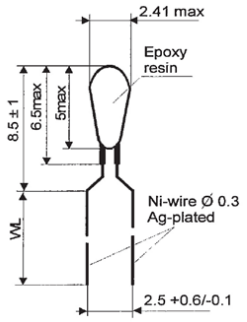
4.3.17.2 Probe functions

Descriptions	Colours	Where are positioned	Functionality
Cavity probe	Blue	Inside of the cavity on upper fan	Control logic the cavity temperature
Evaporator probe	Grey	Inside of evaporator	Control logic the defrost limit temperature
Out evaporator	Green	Out side, togheter sensor to thermostatich valve	Control logic the start stop cavity fan (+20 it is stopped togheter the logic control of the evaporator probe) + Usa model control the by pass of the solenoid valve (-10°C elv2) up to this temperature it is remain closed
Condenser probe	Black	Cooling unit in the outpipe of condenser	Control logic higt temperature of the condenser

4.3.18 Food Probe

4.3.18.1 Functionality

CLIMATIC **CATEGORY: (IEC 60068-1)**
LOWER category temperature =C° -50
UPPER category temperature =C° 125



Application
- Heating and air conditioning systems
- Industrial electronics
- Automotive electronics

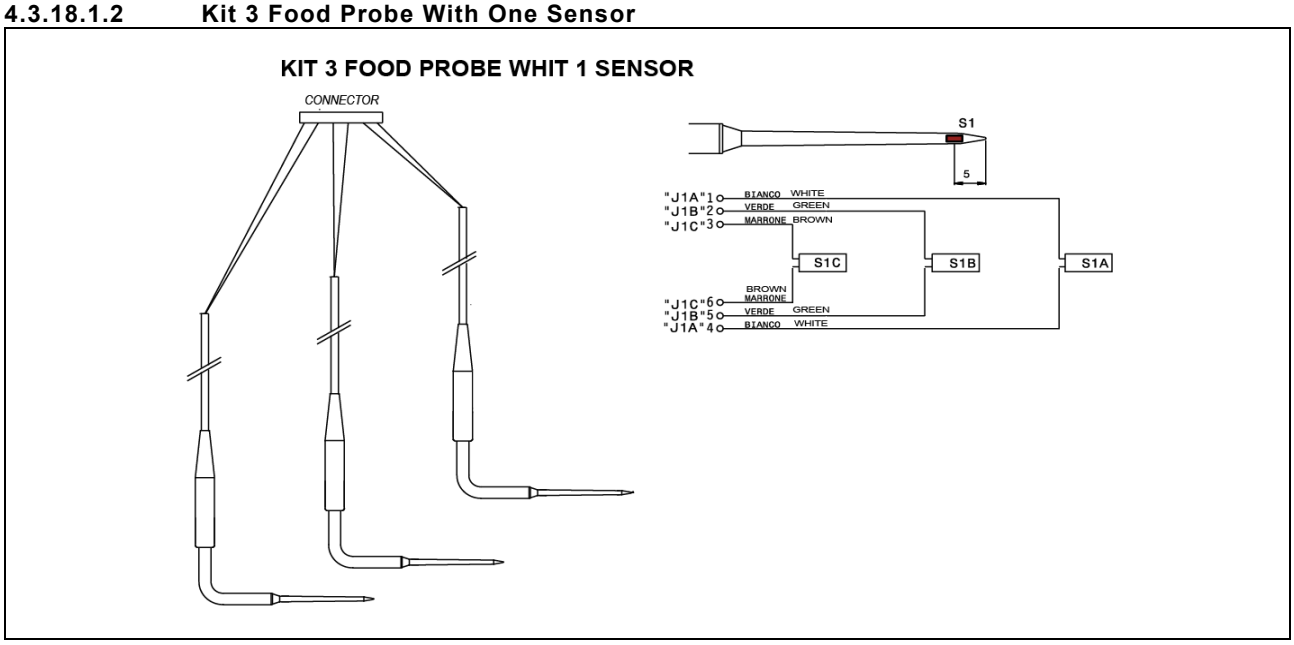
Features
- Fast response
- High measurement accuracy
- Epoxy resin encapsulation
- Ag-plated nickel leads (diam. 0.3mm)
- Kink for lead spacing 2.5mm
- WL: wire length

4.3.18.1.1 NTC Resistance Temperature Curve

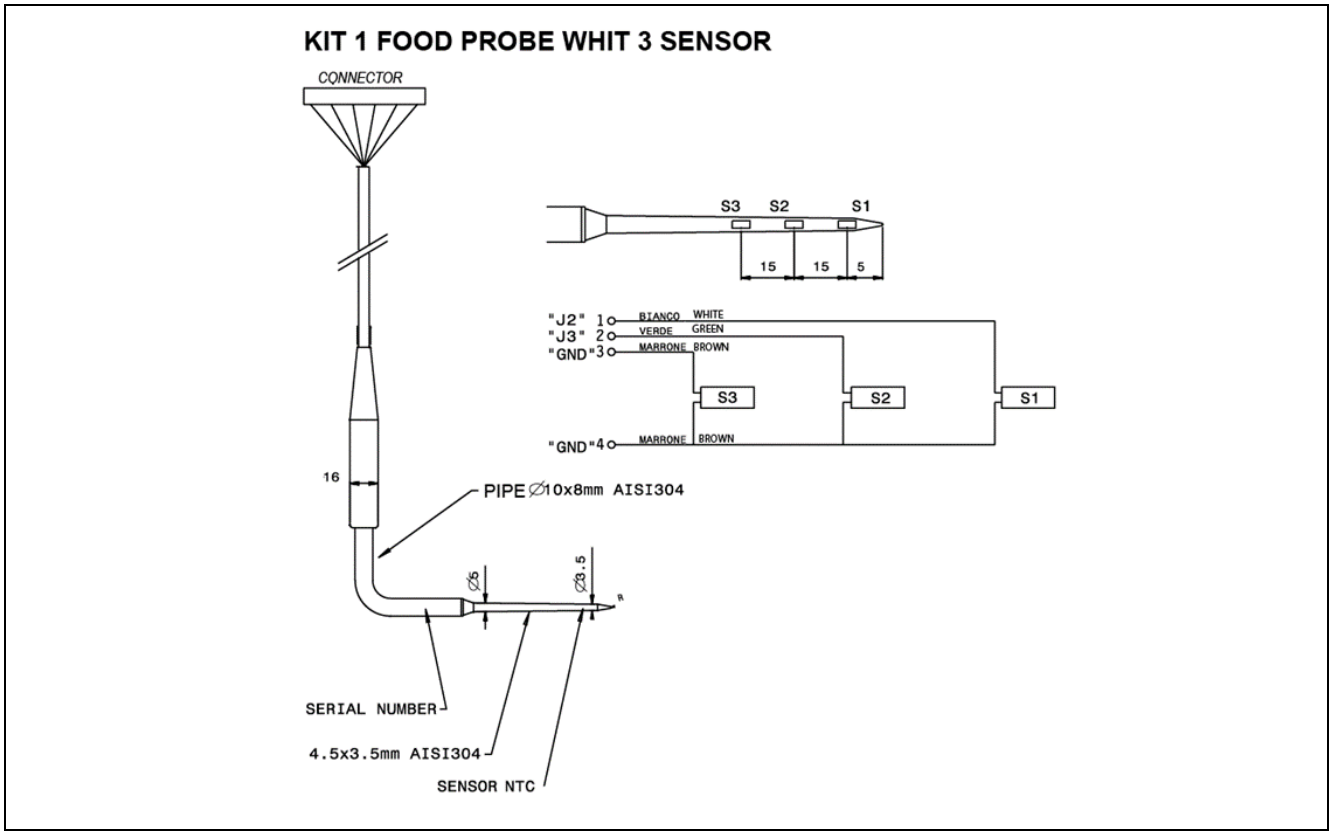
Temperatur [°C]	R_{Nom} [Ω]	R_{Min} [Ω]	R_{Max} [Ω]	ΔR [±%]
-50	337293	320596	353990	5,0
-45	253325	241646	265005	4,6
-40	191908	183684	200132	4,3
-35	146593	140768	152418	4,0
-30	112877	108729	117025	3,7
-25	87588	84620	90556	3,4
-20	68471	66339	70602	3,1
-15	53910	52375	55446	2,8
-10	42739	41631	43848	2,6
-5	34109	33308	34910	2,3
0	27396	26817	27974	2,1
5	22140	21722	22557	1,9
10	17999	17699	18298	1,7
15	14716	14502	14930	1,5
20	12099	11948	12250	1,2
25	10000	9900	10100	1,0
30	8308	8205	8411	1,2
35	6936	6837	7035	1,4
40	5819	5725	5912	1,6
45	4904	4816	4991	1,8
50	4151	4070	4232	1,9
55	3529	3454	3603	2,1
60	3012	2944	3081	2,3
65	2582	2519	2644	2,4
70	2221	2164	2278	2,6

Temperatur [°C]	R_{Nom} [Ω]	R_{Min} [Ω]	R_{Max} [Ω]	ΔR [±%]
75	1918	1866	1970	2,7
80	1663	1615	1710	2,9
85	1446	1403	1489	3,0
90	1262	1222	1301	3,1
95	1105	1069	1141	3,3
100	970,2	937,4	1003	3,4
105	854,6	824,7	884,6	3,5
110	755,1	727,7	782,4	3,6
115	669,0	644,0	694,0	3,7
120	594,4	571,5	617,3	3,9
125	529,5	508,5	550,5	4,0

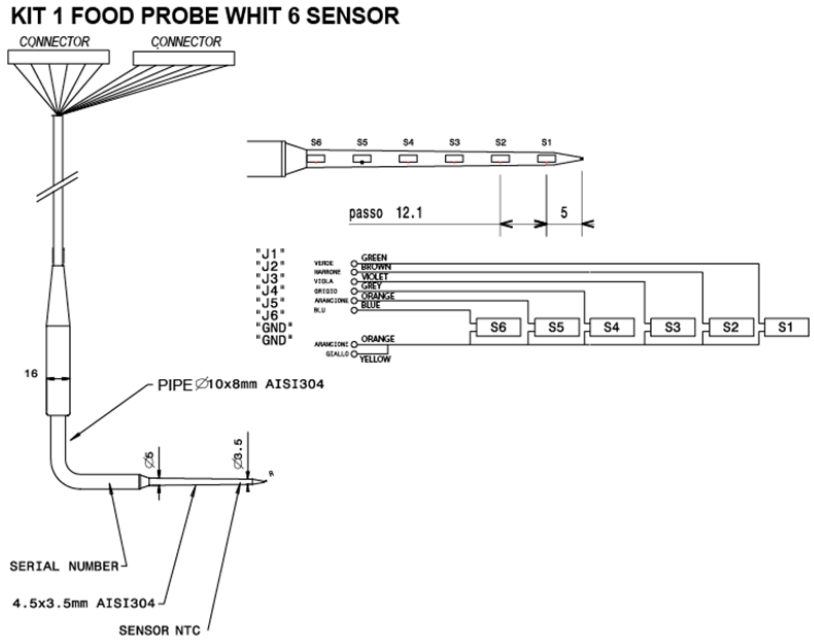
4.3.18.1.2 Kit 3 Food Probe With One Sensor



4.3.18.1.3 Kit One Food Probe With3 Sensors



4.3.18.1.4 Kit One Probe With Six Sensor



Wiring cable present on connector:	
	Color Yellow sensor n°1 Color White sensor n°2 Color Brown sensor n°3 Color green and black GND Two connectors for 6 sensors

4.3.19 Heater Evaporator (model 100 150 200 kg)

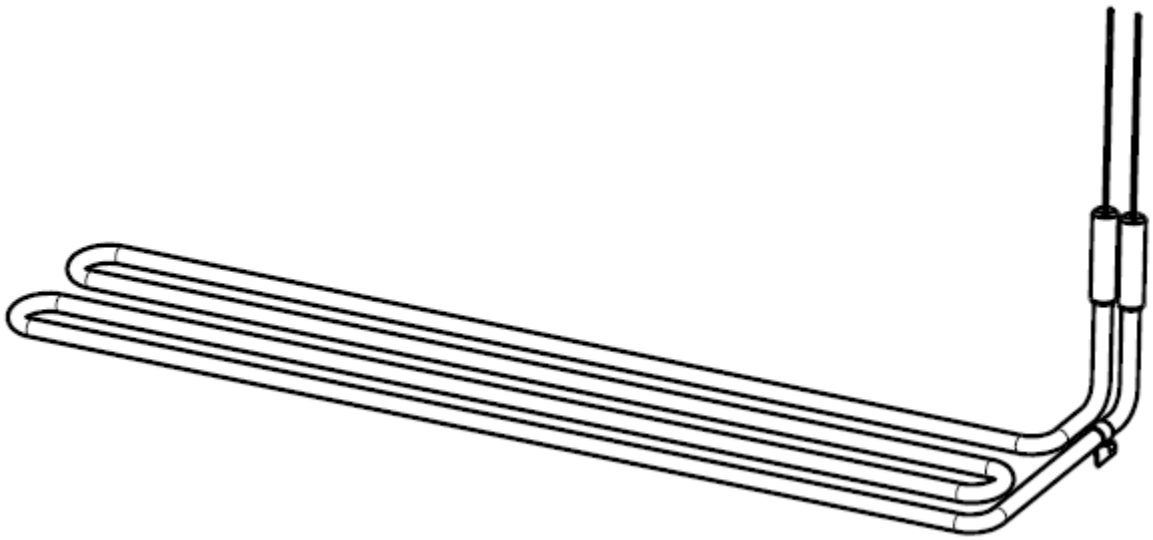
4.3.19.1 Functionality 150 200 KG

Located in the evaporator they work following different cycle:

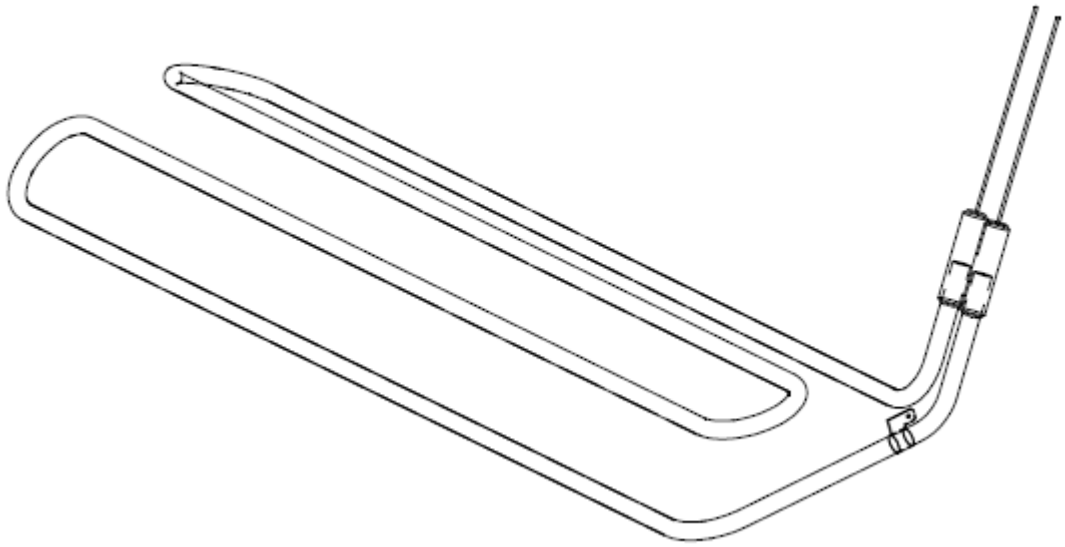
Higine (defrost etc)

Hot lite cycle

Tension V	Nominal power W	Amp	Quantity
230	1000	4,3a	3 on 20 GN 1/1(EVAP)



Tension V	Nominal power W	Amp	Quantity
230	1500	6,5a	1 on 20 GN 1/1(lower EVAP)



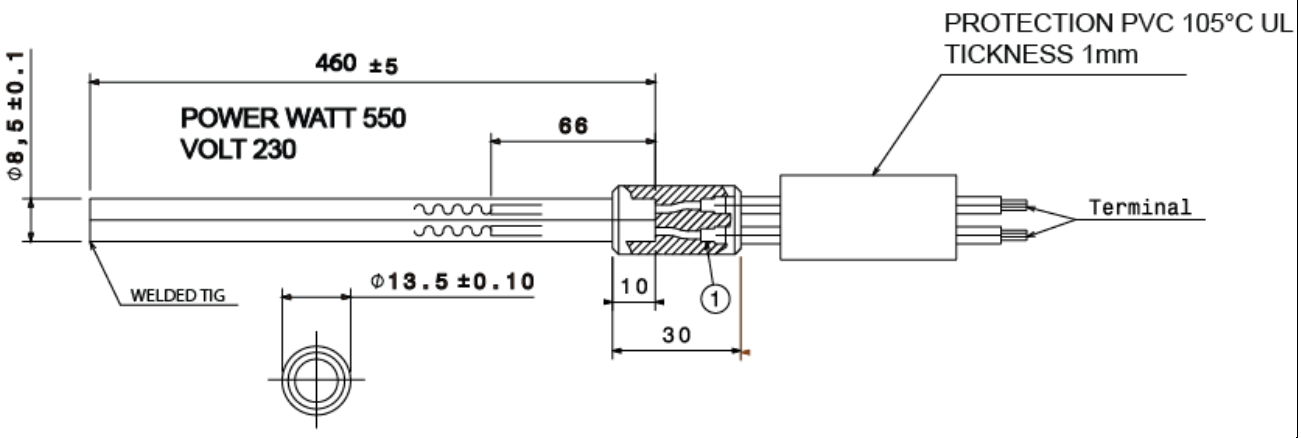
4.3.19.2 Functionality 100 KG

Located in the evaporator they work following different cycle:

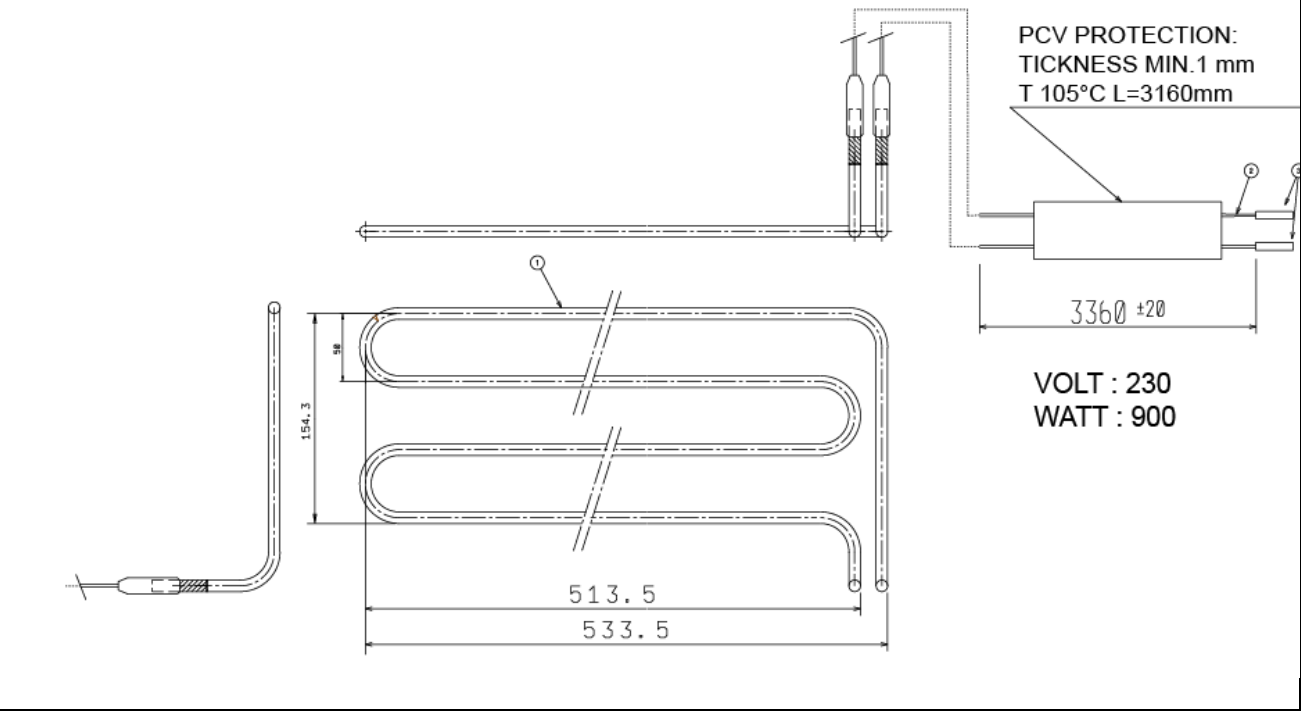
Higine (defrost etc)

Hot lite cycle

SHAFT HEATING ELEMENT USED N°4 IN THE EVAPORATOR (ONLY TO 100 KG REMOTE PREDISPOSED)



HEATING ELEMENT BOTTOM EVAPORATOR

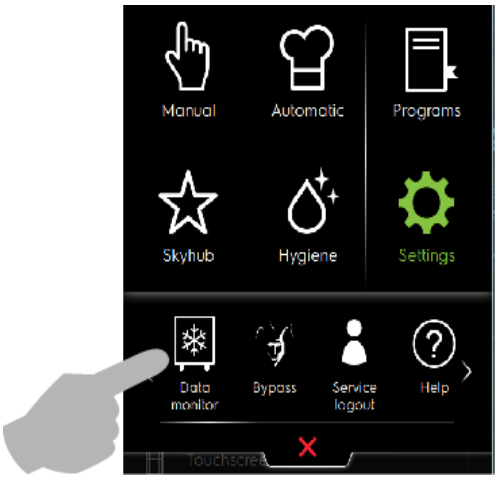


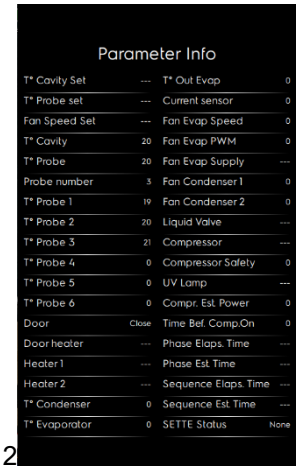
4.3.20 Test Digital I/O: Step By Step Digital Operable Components Testing

for automatich test digital refer to paragraph 2.10.3.6

4.3.21 Identify rapid“test cycles and components”

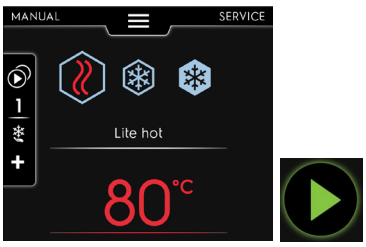
- Acess to service area refer to paragraph 2.3.3
- Activate the “data monitor” The “data monitor” is visible afther acces to service area and present in the drawer main menu.

1 

2 

- Setting a cold cycle by pressing “Manual “ X_Freeze, Start 

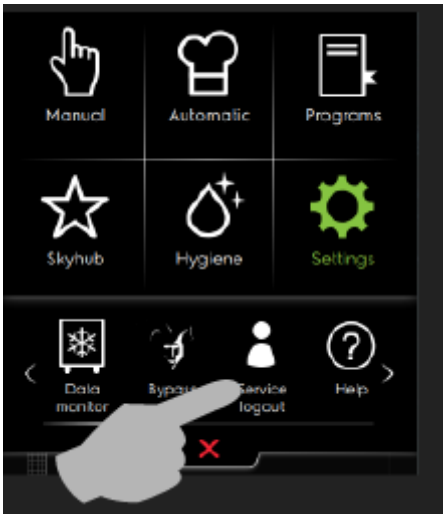
- Back to data monitor checking the value of probes (the value change follow the temperature) and the components active , as
    1. Compressor =Active
    2. Fan Condenser = Active
    3. Door= close
    4. Door heater = Active
- Stop cycle, keeping press the button 

- Setting a Hot cycle by pressing “Manual “ Lite hot, Start 

- Back to data monitor checking the value of probes and the components active , as
    1. Heater 1= active
    2. Heater 2= active
    3. T° Evaporator
    4. T° Cavity
    5. T° Probe

  Also in this case the values of probes change following the temperature.

- Stop cycle keep hold the button 

- Enter in the drawer main and logout the service 

5. TROUBLESHOOTING

5.1 TECHNICIAN TROUBLESHOOTING

Anomaly	Type of anomaly	Description	Possible causes	Instructions to User	Service Action (phase# refers to Service Manual)
swcTTm	INFO	Give information about switching operations from probe to time	Food probe not inserted in food	In case of cycles based on food temperature, insert the probe into the food otherwise the cycle will automatically switch to time	N.A.
ECoM	ALARM Blocking Machine	Communication error between boards	-Internal error -Electronic boards disconnected -Electronic board failure	Try to switch the unit OFF/On. If the problem persists, call service	-Check electronic boards connections -Replace PCB -Replace inverter (where present)
PFAC	ALARM Blocking Machine	Memorized parameters corrupted.	SW corruption	Try to switch the unit OFF/On. If the problem persists, call service	Upload SW using USB Key If the problem persists, replace UI
PdEF	ALARM Resetting Machine	Memorized default parameters corrupted	SW corruption	**The machine loses personalization. Operations can continue. If the problem shows up again, call service**	Re-upload default settings Upload SW using USB Key
EFnt	ALARM Blocking Machine on 30kg Reducing Performance on other models	Top evaporator fan failure	-parameter wrong setting -fan connector wrongly plugged – fan failure	**Call service.** **- 30kg model (1 evaporator fan): unit stops and cannot operate until fixing the problem** **-Other models (more than 1 evaporator fan): unit continues working with reduced performance** **(Cycle ongoing:** the cycle proceeds until end if there is at least one fan working. The cycle stops if no fan is working). **During STANDBY**: the alarm cannot be triggered	-Check parameters Eft and Efn fitting with the machine model; if not, reset parameters default. If problem persists, re-upload parameter settings with USB Key. -If the alarm shows up again, check fan connector(s) correct plugging and fix. -If the problem persists, replace fan.
EFnb	ALARM Reducing performance until another fan is working	Bottom evaporator fan failure.	-parameter wrong setting -fan connector wrongly plugged – fan failure	**Call service.** **- unit continues working with reduced performance until at least another fan is working** **(Cycle ongoing:** the cycle proceeds until end if there is at least one fan working. The cycle stops if no fan is working). **During STANDBY**: the alarm cannot be triggered	-Check parameters Eft and Efn fitting with the machine model; if not, reset parameters default. If problem persists, re-upload parameter settings with USB Key. -If the alarm shows up again, check fan connector(s) correct plugging and fix. -If the problem persists, replace fan.
EFnc	ALARM Reducing performance until another fan is working	Center evaporator fan failure	-parameter wrong setting -fan connector wrongly plugged – fan failure	**Call service.** **- unit continues working with reduced performance until at least another fan is working** **(Cycle ongoing:** the cycle proceeds until end if there is at least one fan working. The cycle stops if no fan is working). **During STANDBY**: the alarm cannot be triggered	-Check parameters Eft and Efn fitting with the machine model; if not, reset parameters default. If problem persists, re-upload parameter settings with USB Key. -If the alarm shows up again, check fan connector(s) correct plugging and fix. -If the problem persists, replace fan.

Anom-aly	Type of anomaly	Descrip-tion	Possible causes	Instructions to User	Service Action (phase# refers to Service Manual)
 E1	WARNING	Cavity low temperature (only during holding cycles: positive or negative.)	-Delay time set too short -Delta temperature sett too narrow -Evaporator icing	The cavity temperature is below the holding cycle temp set point for more than the set time (default time = 1hour). The cycle will continue until stopping it. Open the door for increasing the temperature inside the cavity and check it after a couple of minutes. Launch a manual defrost cycle. Call service if the problem re-occurs.	-Enter in the service area check the set of parameter and check Delay Time and Delta Temperature settings -Check KOHM cavity temperature sensor: replace if needed Check KOHM out evaporator temperature sensor: replace if needed -Check rotation direction of the evaporator fans (three phases versions): fix if needed -Check the thermostatic valve setting: fix if needed (especially in remote models)
 E3	ALARM Blocking Machine	Cavity probe failure	-Connector unplugged -Probe and/or probe wire damaged	The chiller will continue working until the end of the running cycle Not possible start other cycle till to Technical Service replace the probe Call service	-Check KOHM temperature sensor: replace if needed -Check probe connection: fix (replace if needed)
 E4	ALARM No-blocking machine	Evaporator probe failure	-Connector unplugged -Probe and/or probe wire damaged	The chiller will continue working: the defrost setting will be based on time Call service and inform about the message displayed	-Check KOHM temperature sensor: replace if needed -Check probe connection: fix (replace if needed)
 E14	ALARM No-blocking machine	Out Evaporator probe failure	-Connector unplugged -Probe and/or probe wire damaged	The chiller will continue working Call service and inform about the message displayed.	-Check KOHM temperature sensor: replace if needed -Check probe connection: fix (replace if needed)
 E15	ALARM Blocking Machine	Condenser probe failure	-Connector unplugged -Probe and/or probe wire damaged	This failure blocks also running cycle Quickly remove the load from the cavity for preventing waste of food Call Service.	-Check KOHM temperature sensor: replace if needed -Check probe connection: fix (replace if needed)
 E16	ALARM Blocking Machine	Condenser high temperature	-Position of condenser probe is not correct -Fan condenser not working -The condenser is dirt or tapped -The unit does not discharge warm air due to position too near to wall	This failure blocks also running cycle Quickly remove the load from the cavity for preventing waste of food. Using a vacuum cleaner, remove any dust/dirt from the condenser inlet-air grid. If the alarm persists call service.	-Check the installation of the unit respect the installation instruction: correct if needed -Clean condenser -Check if fan condenser run (check connectors; replace fan if needed) -Check Condenser High Temp value of the parameter list: correct if needed -Check KOHM temperature sensor: replace if needed -Check probe connection: fix (replace if needed)
 Eprb1	ALARM Blocking food probe cycles	Core probe failure sensor n°1	-Food probe misuse (for example, wire pulled or squeezed) -Connector failure -Probe failure -PCB failure	Cycle on going: the cycle goes on in probe mode if there is at least one of the food probe working. The cycle switches to time mode if none food probe is working During STANDBY: the cycle can be started Cycle start: only by time Call Service.	Check if the food probe are well connected on connectors Check if cable of sensor n°1 is well connect in the connectors Change position of sensor n°3 or n°6 (depend how many sensors has the food probe installed) instead of sensor n°1, and change parameter nFp from 3 to 2 or from 6 to 5 Replace the food probe If even replacing the food probe the alarm persists, replace the PCB

Anom-aly	Type of anomaly	Descrip-tion	Possible causes	Instructions to User	Service Action (phase# refers to Service Manual)
 **Eprb2**	ALARM Blocking food probe cycles only if the entire sensor is faulty	Core probe failure sensor n°2	-Food probe misuse (for ex-ample, wire pulled or squeezed) -Connector fail-ure -Probe failure -PCB failure	**Cycle on going:** the cycle goes on in probe mode if there is at least one of the food probe working. The cycle switches to time mode if none food probe is working **During STANDBY:** the cycle can be started **Cycle start**: only by time **Call Service.**	Check if the food probe are well connected Check if cable of sensor n°2 is well connect in the connectors Change position of sensor n°3 or n°6 (depend how many sensors has the food probe installed) instead of sensor n°2, and change parameter nFp from 3 to 2 or from 6 to 5 Replace the food probe If even replacing the food probe the alarm persists, replace the PCB
 **Eprb3**	Blocking food probe cycles only if the entire sensor is faulty	Core probe failure sensor n°3	-Food probe misuse (for ex-ample, wire pulled or squeezed) -Connector fail-ure -Probe failure -PCB failure	**Cycle on going:** the cycle goes on in probe mode if there is at least one of the food probe working. The cycle switches to time mode if none food probe is working **During STANDBY:** the cycle can be started **Cycle start**: only by time **Call Service.**	Check if the food probe are well connected Check if cable of sensor n°3 is well connect in the connectors change parameter nFp from 3 to 2 or from 6 to 5 Replace the food probe If even replacing the food probe the alarm persists, replace the PCB
 **Eprb4**	Blocking food probe cycles only if the entire sensor is faulty	Core probe failure sensor n°4	-Food probe misuse (for ex-ample, wire pulled or squeezed) -Connector fail-ure -Probe failure -PCB failure	**Cycle on going:** the cycle goes on in probe mode if there is at least one of the food probe working. The cycle switches to time mode if none food probe is working **During STANDBY:** the cycle can be started **Cycle start**: only by time **Call Service.**	Check if the food probe are well connected Check if cable of sensor n°4 is well connect in the connectors Change position f sensor n°6 in-stead of sensor n°4, and change parameter nFp from 6 to 5 Replace the food probe If even replacing the food probe the alarm persists, replace the PCB
 **Eprb5**	Blocking food probe cycles only if the entire sensor is faulty	Core probe failure sensor n°5	-Food probe misuse (for ex-ample, wire pulled or squeezed) -Connector fail-ure -Probe failure -PCB failure	**Cycle on going:** the cycle goes on in probe mode if there is at least one of the food probe working. The cycle switches to time mode if none food probe is working **During STANDBY:** the cycle can be started **Cycle start**: only by time **Call Service.**	Check if the food probe are well connected Check if cable of sensor n°5 is well connect in the connectors Change position sensor n°6 instead of sensor n°5, and change parame-ter nFp from 6 to 5 Replace the food probe If even replacing the food probe the alarm persists, replace the PCB

Anomaly	Type of anomaly	Description	Possible causes	Instructions to User	Service Action (phase# refers to Service Manual)
Eprb6	Blocking food probe cycles only if the entire sensor is faulty	Core probe failure sensor n° 6	-Food probe misuse (for example, wire pulled or squeezed) -Connector failure -Probe failure -PCB failure	**Cycle on going:** the cycle goes on in probe mode if there is at least one of the food probe working. The cycle switches to time mode if none food probe is working **During STANDBY:** the cycle can be started **Cycle start**: only by time **Call Service.**	Check if the food probe are well connected Check if cable of sensor n°5 is well connect in the connectors Change position change parameter nFp from 6 to 5 Replace the food probe If even replacing the food probe the alarm persists, replace the PCB
B4	ALARM	Supply power missing	-Power supply missing -Supply power system failure -Other electrical issues (for example current dispersions)	**Cycle on going:** the cycle restart automatically when the power is back. The machine was not in operation for a certain time: check initial and end time. -Check the plug or general electric control panel. -If the alarm reoccurs, call service.	-Check in the log -Check the mains -Check the parameter of power failure PFt is properly set (too small): adjust if needed -Check the power cable if damaged: replace if needed -Check if any current dispersions which may cause the RCI (Residual Current Interrupter) to trip: fix if needed
Ertc	ALARM	Low battery	-Battery of Ui is low -Electronic board failure	Problem with battery of internal clock. **Call service.**	-Replace the battery present in the UI -If the problem persists, replace the user interface board
ECHt	WARNING	Cavity high temperature	-Door left open -Food too hot in the cavity -Issue with parameter ady or with temperature measurement	The cavity temperature has exceeded the set limit, in additional to the signal delay time **Cycle on going:** the cycle goes on If the alarm persists even if the cavity temperature is low, call service	Check the parameter ady setting Check the value KHOM of probe Check the heater(s) is(are) OFF Check the relay heater(s) Check the Parameter HAc and afd with correct value
E11	ALARM Blocking machine	Compressor failure	-Fan condenser obstruction -compressor damage	The chiller will be blocked and only fan condenser run Check if there is some obstruction of suction air condenser **Call service**	Check if the contact of thermic protection (close compressor ON /open compressor OFF) By pass the thermic protection Change compressor Check if the fan condenser run Check is if solenoid valve is active Check if oil in the compressor Check if the compressor is ventilated Check if valves compressor are open
B2	ERROR	Door open	The door remained open beyond the time limit set whit the active cycle	-Ensure the chiller door is closed and any physical obstruction is not preventing the door closure. -Start new cycle: if either a new cycle will not start or the alarm persists even with the door closed, call Service	-Check the door micro-switch connections -Check the position of door micro switch and the door magnet -Check the door alignment -Check if the parameter of the delay time for the door is correctly set
ACUP	ALARM	ACU Protocol error	- ACU board not programmed or programmed with an incompatible SW version -Electronic boards disconnected	'Communication protocol error detected. If the problem persists, call service	-Suggest to switch the machine OFF/ON for resetting the alarm. If the alarm persists upload SW using USB Key: be sure to program both User interface and ACU board
Display is OFF while main switch button is ON			Connector to display disconnected	Switch the unit Off/On; if the problem persists call service	Check the connection on UI; if needed replace UI
Display is stuck on screen saver and does not react			Issue with the SW	Switch the unit Off/On; if the problem persists call service	Re-upload the SW
Display shows condensation inside			Infiltration of water during the cleaning	No actions required in case it is possible to continue operating with the unit. If any problem operating with the unit, call service.	Replace the control panel

Anomaly	Description	Possible causes	Instructions to User	Service Action

Type of anomaly			(phase# refers to Service Manual)
External noise/vibrations with cycle ON	Unit unlevelled Condenser water tray and guide damage Condenser panel not fix well	Level the unit with the adjustable feet Adjust the guide or remove the condenser water tray Check if the condenser panel is fixed correctly Call service if the problem persists	Check the screws of feet are fixed Check if the water tray guide are bended, in case replace them Check the screws of panel are fixed and the panel are inserted on its position
Internal noise/vibrations with cycle ON	The shelf guide is not allied The rack support is not well positioned Obstruction of cavity fan Carter/deflector evaporator fan not fix well	Check if the right/left guide are well positioned Check if the right/left rack support is well fixed , top and bottom Check if the cavity fan working well without any obstructions Check if present the screws on carte evaporator If the problem persists call service	In the staking kit with oven over the BCF, check if side, frontal , panel are well installed Check if the cavity fan are fixed to the fan protection grid, and that inside of carter are not obstruction Check all components in the back side of the unit are well fixed or some pipe does not touch other components
The unit needs too much time to arrive at set temperature	- Excessive food loaded in the cavity - Refrigerant gas leakage - Cavity fan with 3 phase has wrong rotation or not connected - Thermostatic valve not set - Compressor damaged valve - Relay of heating element stuck - Insulation of pipes and wires on the rear side is missing or damaged	- Reduce the amount of food loaded in the cavity and/or use different pan types. - If the problem persists call service	-Check that the lack of performance is not due to excessive or wrong load of the food in the cavity. -Identification leakage with gas detector -Check the connection power of the fan and in case change the phase in the main control power connection -Adjust the valve following chapter of “thermostatic valve” -Check the pressure HP and LP, and if they are equal change compressor -Check the relay/contactor, and in case replace the components -Check the back insulation on pipe and wiring cable, if result insufficient add other coibentation
The compressor does not start	-No electrical power -Oil safety switch open or current safety switch open -Electrical connections loose or defective -Motor burnt	Call service	-Check phases, connections and switches: fix if needed -Manually reset -Check the connection with the correct diagram and tighten the connections if needed -Check and replace the compressor if needed
Switch Button ON_OFF not working	Electric supply issue Hardware issue Wiring issue	Switch the unit Off/On; if the problem persists call service	Check main electric supply and if any issue due to external spikes or fluctuations Check electric connections and wires: fix if needed Replace the fuse if needed Replace the UI if needed Replace the PCB if needed

Anomaly Type of anomaly	Description	Possible causes	Instructions to User	Service Action (phase# refers to Service Manual)
The compressor oscillates intermittently		Suction service valve closed Discharge service valve closed Refrigerant load insufficient Wrong operation of the low pressure switch Condenser insufficient or dirty Air in the circuit Intervention motor protection	Call service	Open the service valve Add gas Check the setting and the assembly of the low pressure switch Check the flow rate of air or water to the condenser. Clean the condenser Make a total vacuum Check that the quantity of refrigerant is sufficient. Check electrical connections
The compressor oscillates continuously		Defective pressure switches Refrigerant load and discharge pressure too high Blocked dehydrators filters	Call service	Repair or replace Remove excess refrigerant Replace filters
Decrease in compressor efficiency		Leakages from the valves or dirty valve plate; breakage of valves Leakage from internal safety valve Leakage from the gasket of the head Piston rings wear	Call service	Disassemble the heads and check the valve plate and the valves Replace the safety valve Replace the gasket Replace the compressor
Leakage from the gasket of the head		Heads bolts not enough tighten	Call service	Replace the gasket and tighten bolts again
Presence of liquid in the carter		Piping not properly designed The defrost cycle does not work correctly Wrong calibration of the expansion valve The evaporator does not work	Call service	Correct piping Check the defrost cycle Replace the valve or change the calibration Check the evaporator condition
High pressure too low		The discharge valve are not gastight Crankcase heater does not work The piston rings are worn	Call service	Disassemble the heads and check the valve plate and the valves Replace the heater Replace the compressor
Low suction pressure		Quantity of refrigerant insufficient Problems with evaporator fans Dehydrators filters dirty	Call service	Add gas Check Replace filters

Anomaly Type of anomaly	Description	Possible causes	Instructions to User	Service Action (phase# refers to Service Manual)
Compressor noises		Beats due to excess of oil inside the compressor Beats due to liquid in the compressor Bearings and/or other components worn	Call service	Remove the excess of oil See the failure : Presence of liquid in the carter Replace the compressor Compressor not assembled properly
Insufficient oil pressure or low oil level		Lack of oil Oil pump broken Bearing too worn Piping does not guarantee enough return oil return Oil filter dirty	Call service	Add oil Replace it Replace the compressor Check the layout pipes Replace the filter
Intervention of the protection of the compressor		Too high discharge pressure Relay defective High suction temperature Low suction pressure Power or control circuit connections loosened Defective motor	Call service	Check the condenser is working properly Replace it Reduce the suction temperature See the failure : Low suction pressure Check all connections Replace the compressor
The compressor run with locked rotor amps		Low power supply or mistake in the connections The compressor is blocked The motor is defective Lake of one phase	Call service	Check the supply tension Replace it Check the windings Check the tension on the terminals
Motor burnt out		Check the welded power and/or control contacts to identify the burnt out parts	Call service	Replace the defective parts and the compressor
The temperature of the compressor is too high		Compression ratio too high	Call service	Check the pressure switches, that the condenser is clean and motors fans

6. SERVICING THE APPLIANCE

6.1 LIST OF NEEDED TOOLS

List of needed tools Please, refer to the Electrolux Professional Universal Spare Parts Catalogue [usp]..

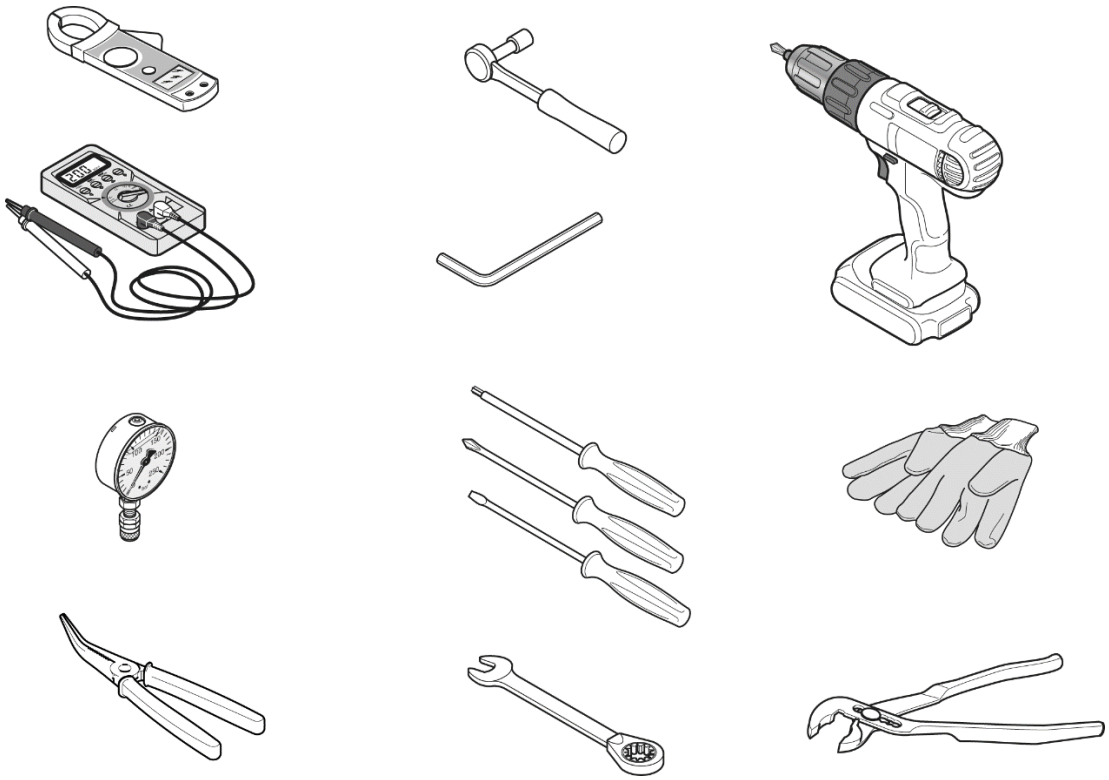
6.1.1 Ordinary Tools

The following tools take part of the Kit of assorted tools [usp #0S1288] contained in the Tool trolley case [usp #0S1980]

6.1.2 Special Tools: List, Description And Spare Part Code Per Each Special Tool

In addition to the normal instrumentation, to do the maintenance of this unit the following tools are raccomanded:

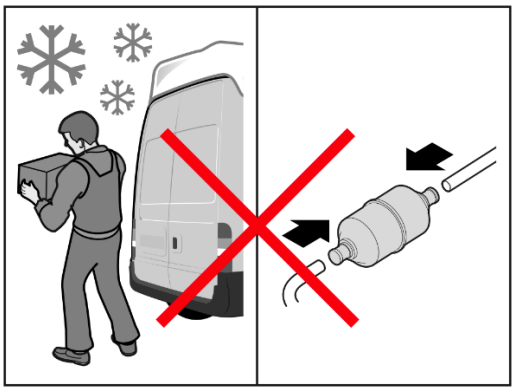
- Drill screwdriver
- Digital multimeter [usp #0S1282]
- Current clamp [usp #0S1456]
- Digital manometer gas pressure and temperature [usp #0S1127]
- Refrigerant gas leakage HFC
- Pipe for digital manometer gas pressure and temperature
- Nitrogen kit clean and pressure
- Welding torch
- Evacum pump with manometer
- Keys for discharge and suction service valve compressor



6.2 IMPORTANT PROCEDURES FOR INSTALLATION

ATTENTION!

When performing the procedures to replace the components of the cooling circuit, pay attention to some important precautions, so as to avoid the contamination of the refrigeration systems.



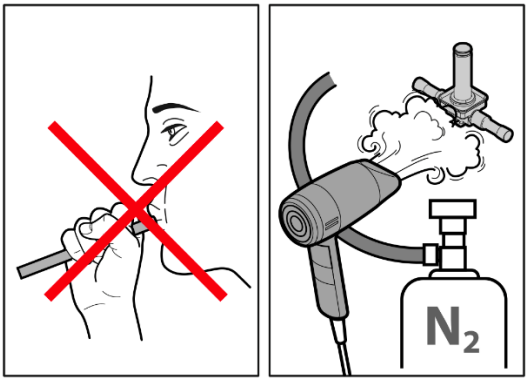
6.2.1 Storage of components

The temperature of all components, before their removal from the packaging and installation, must be no lower than the ambient temperature. This prevents the formation of condensation in the components.
These, for example, must not be installed immediately after being transferred from a cold service vehicle to a room with a higher temperature.

6.2.2 Cleaning the pipes

Very damaging impurities:

- Humidity
- Atmospheric air
- Brazing residues
- Rust, copper oxide, slag
- Metal shavings
- Unstable oils
- Some fluorinated solutions
- Impurities and dust of all kinds.



As to cleaning, blow a strong blast of dry compressed air or nitrogen into the pipe.
Never use normal compressed air, due to its high moisture content. Never blow into the pipe with your mouth.
The presence of small amounts of moisture in the components can be eliminated by proceeding simultaneously with the heating and introduction of dry nitrogen.

6.2.3 Installation of refrigeration system components

In installing the system components it is advisable to proceed as quickly as possible, in order to minimize the action of humidity.
During the breaks in the installation, it is absolutely necessary to hermetically close all the openings of the refrigerating system in order to prevent air from entering and humidity from forming.

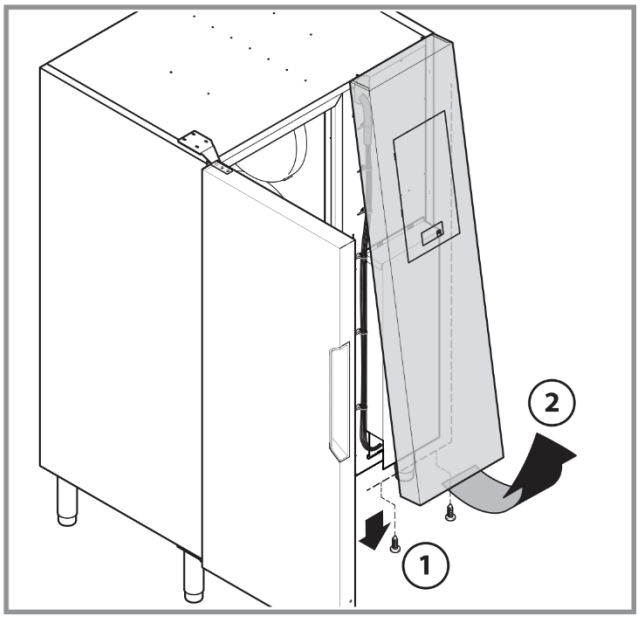
6.3 REPLACING EQUIPMENT COMPONENTS OF 100 KG

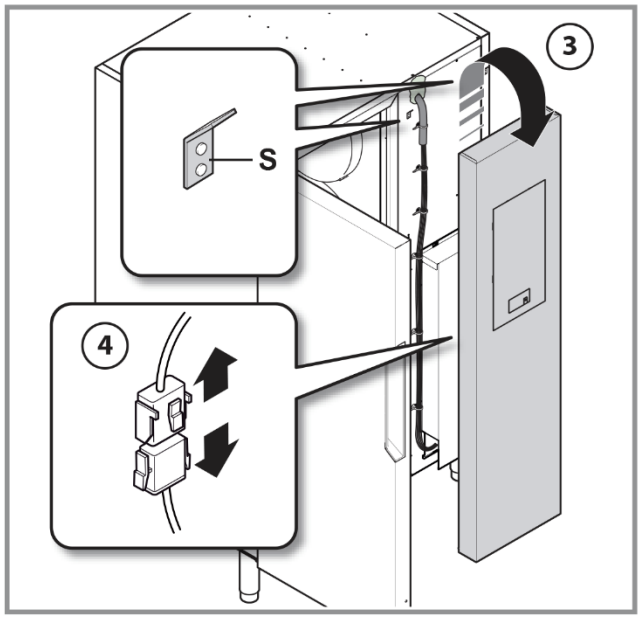
Disassembly/Reassemble Of Components. This chapter introduces the operations to perform when dismantling every single component graphically highlighted.

6.3.1 Control Panel

Steps for replacing the Control Panel:

1. Remove the front panel by removing the 2 lower screws.
2. Lift the panel and unhook it from the support brackets (**S**).
3. Disconnect the display connectors.

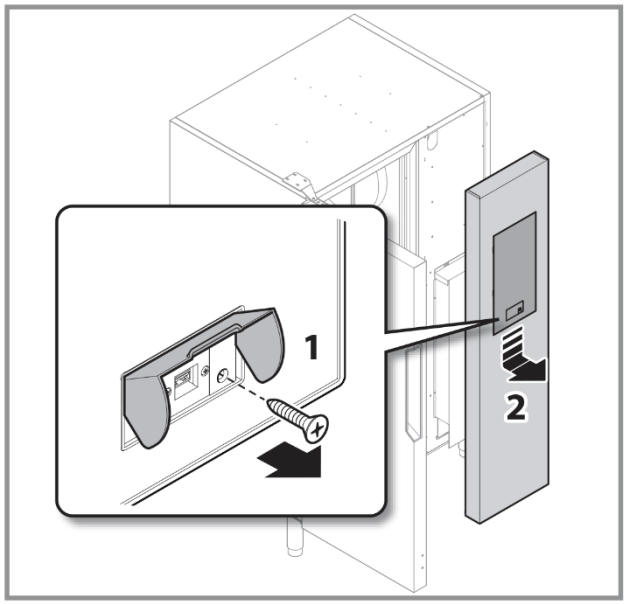


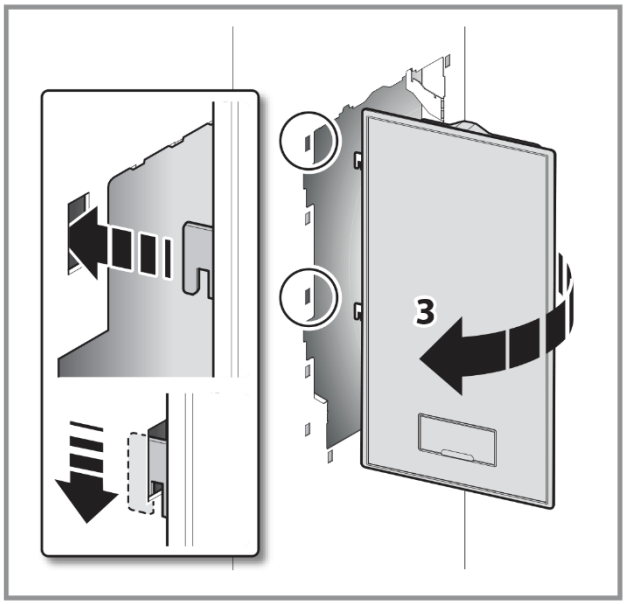


6.3.2 Command Panel

Steps for replacing the Command Panel:

1. Open the flap of the USB port and unscrew the screw shown in figure 1.
2. Push down and pull out the Command Panel carefully to prevent any damage to the wiring (Fig. 2).
3. Use the two hooks on the left side of the Command Panel to hang it on the Control Panel (Fig. 3).



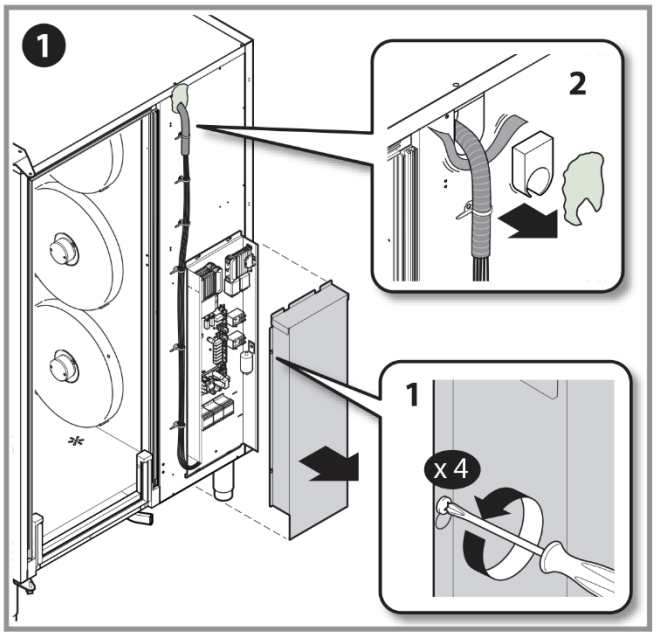


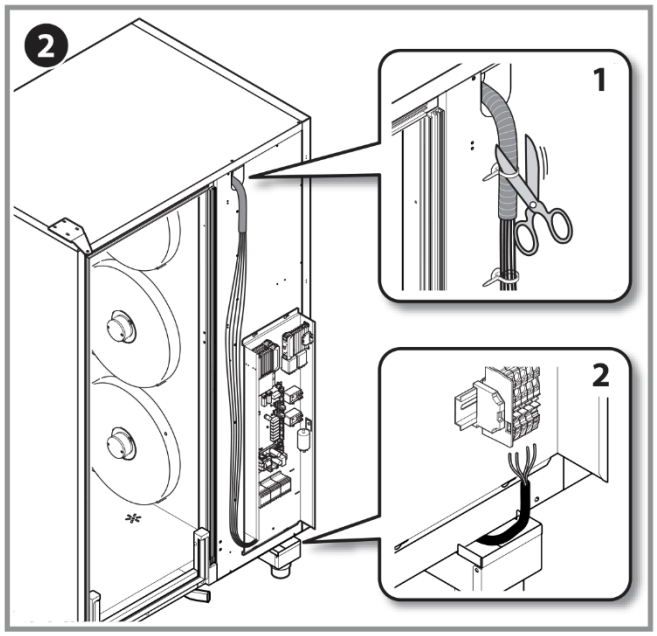
6.3.3 Front panel

Phases to access the components of the electrical box and the components below.

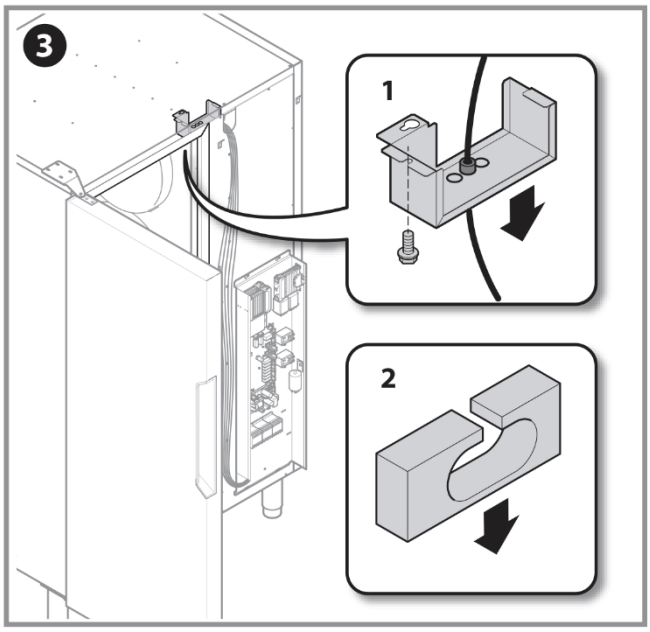
After removing the control panel as specified in the "Control Panel" paragraph:

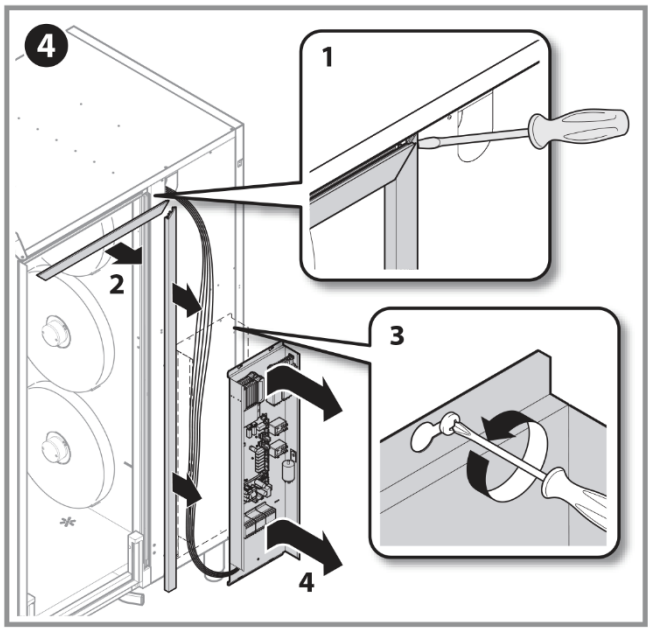
4. Remove the electrical box cover by loosening the 4 side screws (Figure 1 phase 1).
5. Remove the insulating paste and respective insulation below (Figure 1 phase 2).
6. Cut the sealing clamps of the mass of connection cables (Figure 2 phase 1).
7. Disconnect the blast chiller power cable (Figure 2 phase 2).



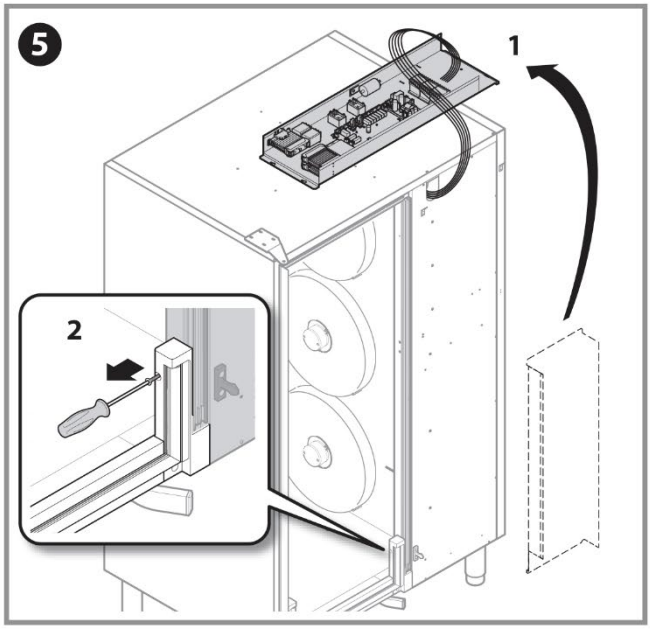


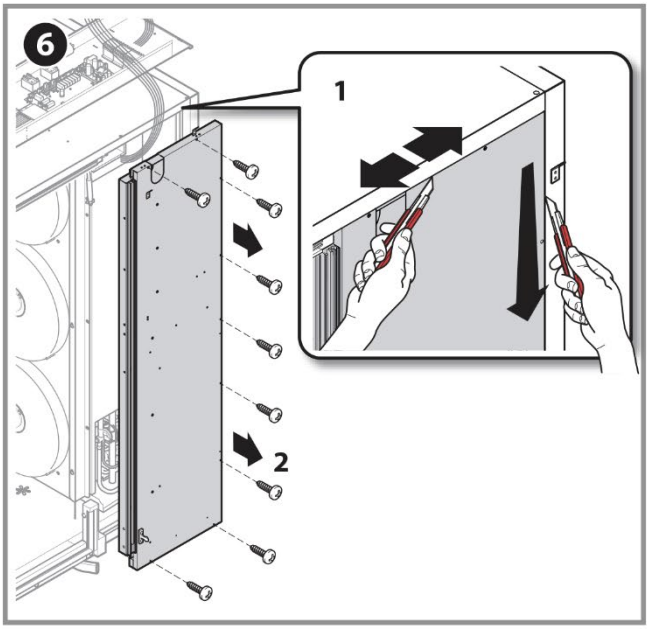
8. Remove the cable cover inside the blast chiller (Figure 3 phase 1), removing the insulation inside it.
9. Remove the two covering profiles of the heating cables as shown in Figure 4 phase 1, paying attention to the insulating paste which must then be reapplied in the reassembly phase. Loosen the 4 screws securing the electrical box (Figure 4 phase 3).





10. Place the electrical box on top of the blast chiller (Figure 5 phase 1). Unscrew the upper screw of the gasket support as shown in Figure 5 phase 2.
11. Use a cutter to remove the silicone along the entire perimeter of the covering panel (Figure 6 phase 1).
12. Remove all the screws along the perimeter of the panel and pull it out applying a bit of force to get it out of its seat.





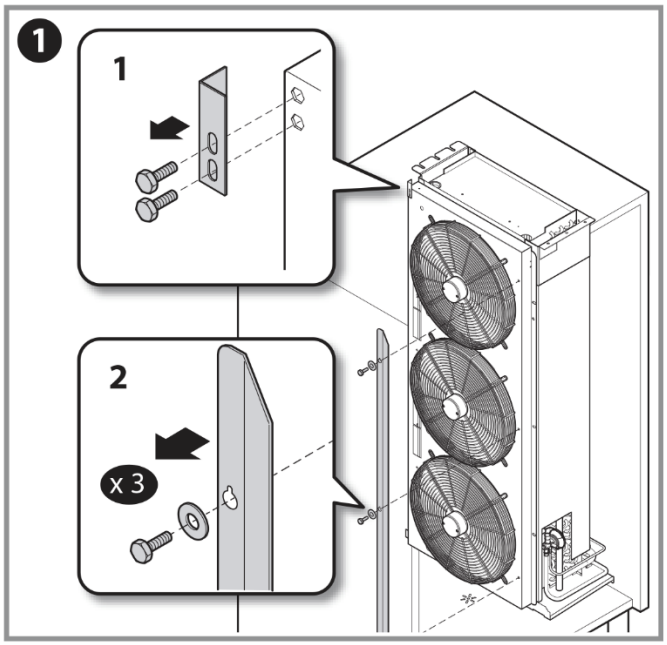
ATTENTION!

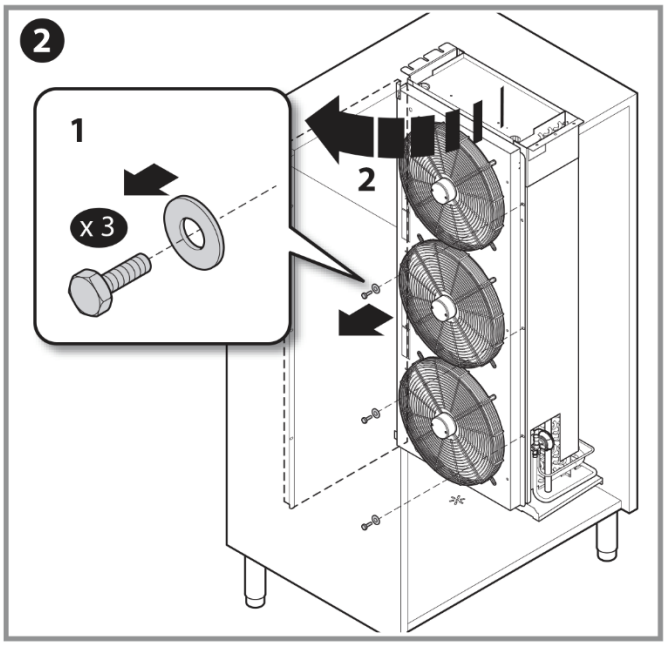
During reassembly, the previously removed insulating paste and silicone must be reapplied so as to seal the housing slot. Non-compliance compromises thermal insulation.

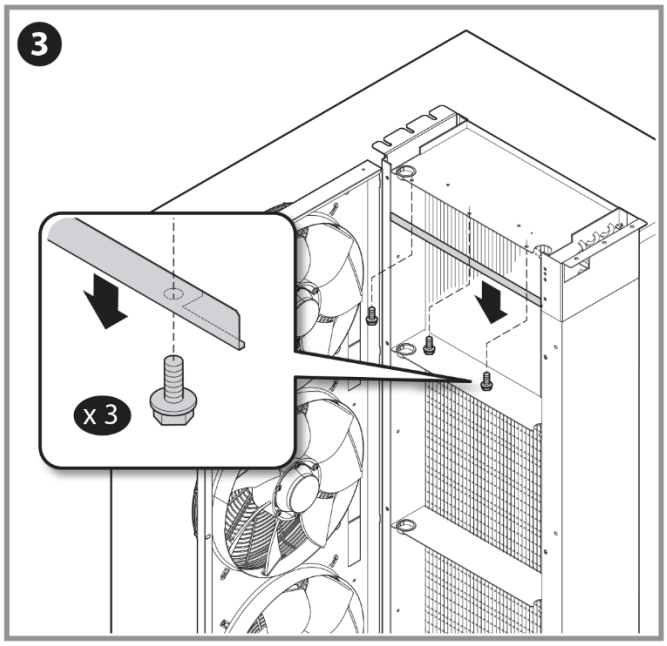
6.3.4 Opening the fan casings

Phases to disassemble and access the components below the fan casing:

13. Remove the casing fixing bracket (Figure 1 phase 1).
14. Remove the side deflector by loosening or removing the three sealing screws (Figure 1 phase 2).
15. Remove the three casing fixing screws (Figure 2 phase 1).
16. Remove the three screws that hold the cover of the cables connecting the components inside the casing.



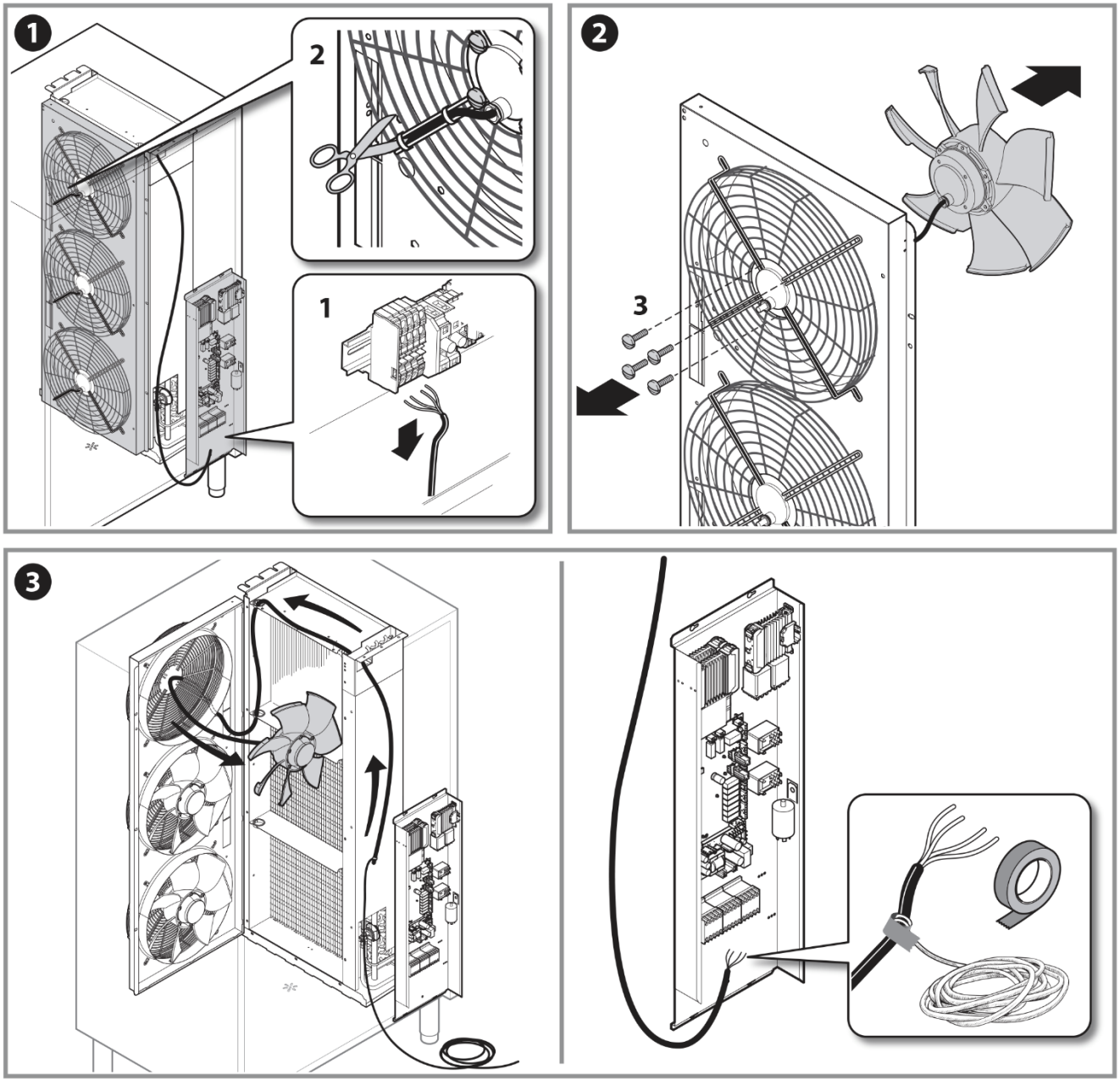




6.3.5 Evaporator fan

Steps for replacing the Evaporator fan:

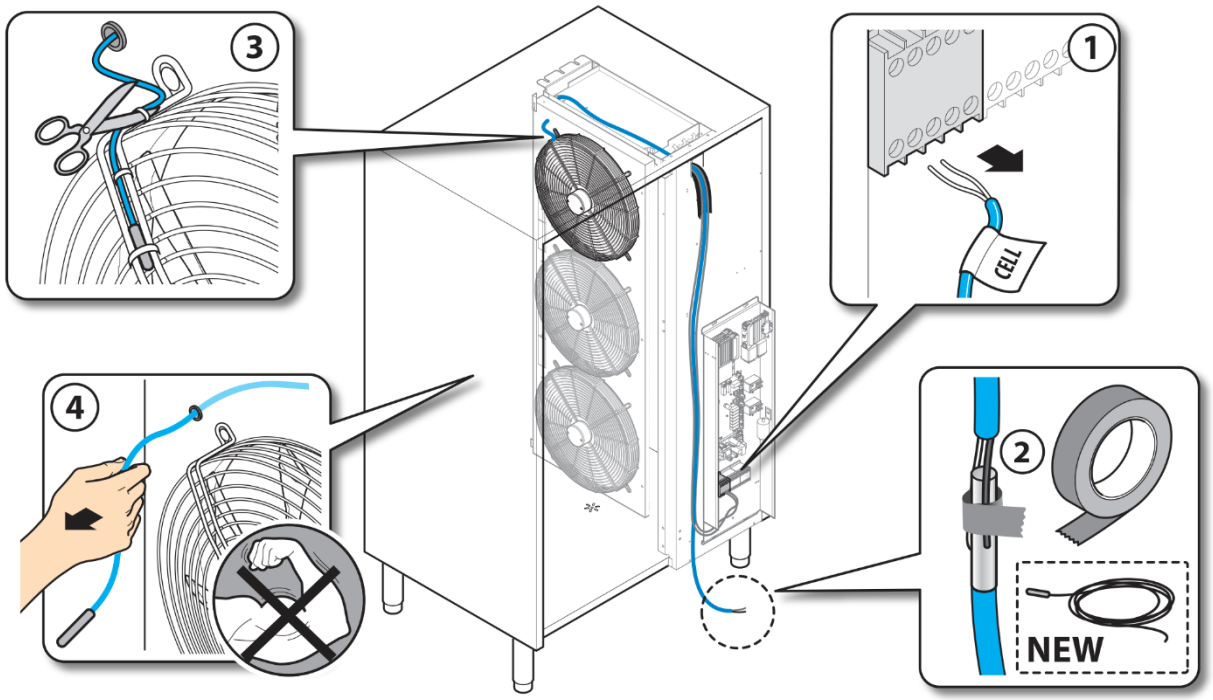
17. Follow the procedure in the paragraph [*Opening the fan casing*].
18. Open the electrical box following the procedure described in the paragraph [*Front panel*] and disconnect the cable.
19. Cut the clamps that secure the fan power cable (Figure 1 phase 2).
20. Remove the 4 fan retaining screws (Figure 2).
21. With adhesive tape, tie a wire (called messenger) to the cable end so that it can be used as a guide for the new fan cable (Figure 3).



6.3.6 Cell probe

Steps for replacing the Cell probe:

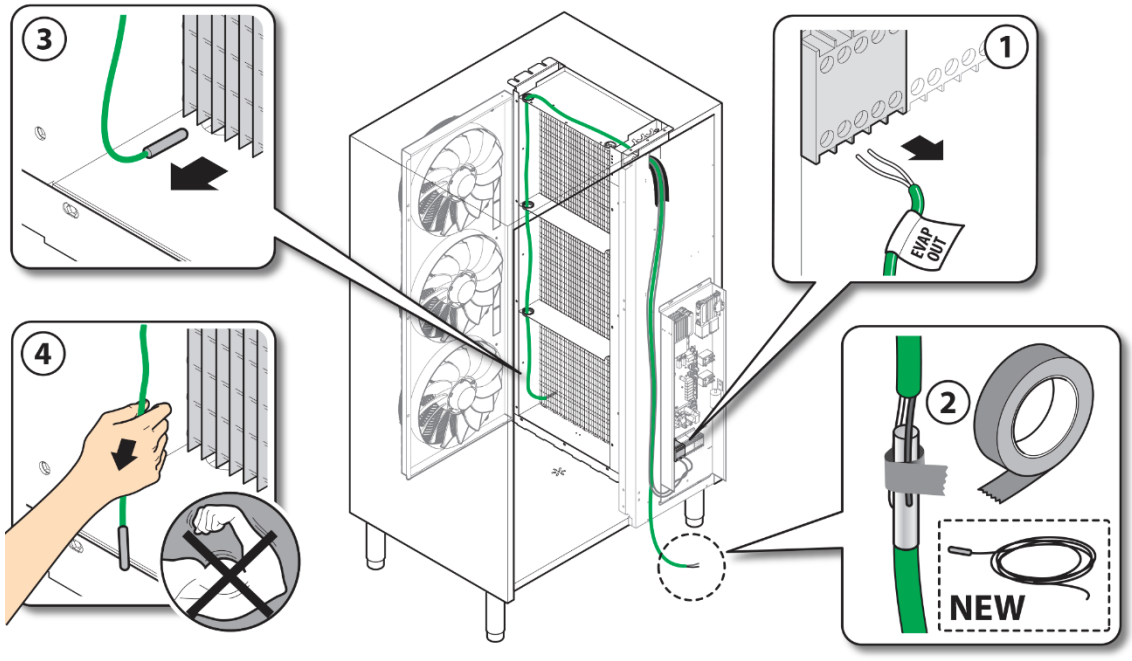
22. Open the electrical box following the procedure described in the paragraph [*Front panel*] and disconnect the cable.
23. With the adhesive tape, tie the new probe to the cable end (Step 2).
24. Follow the procedure in the paragraph [*Opening the fan casing*].
25. Cut the clamps that secure the probe cable (Step 3) and pull, accompanying the new cable.



6.3.7 Evaporator probe (out)

Steps for replacing the Evaporator probe:

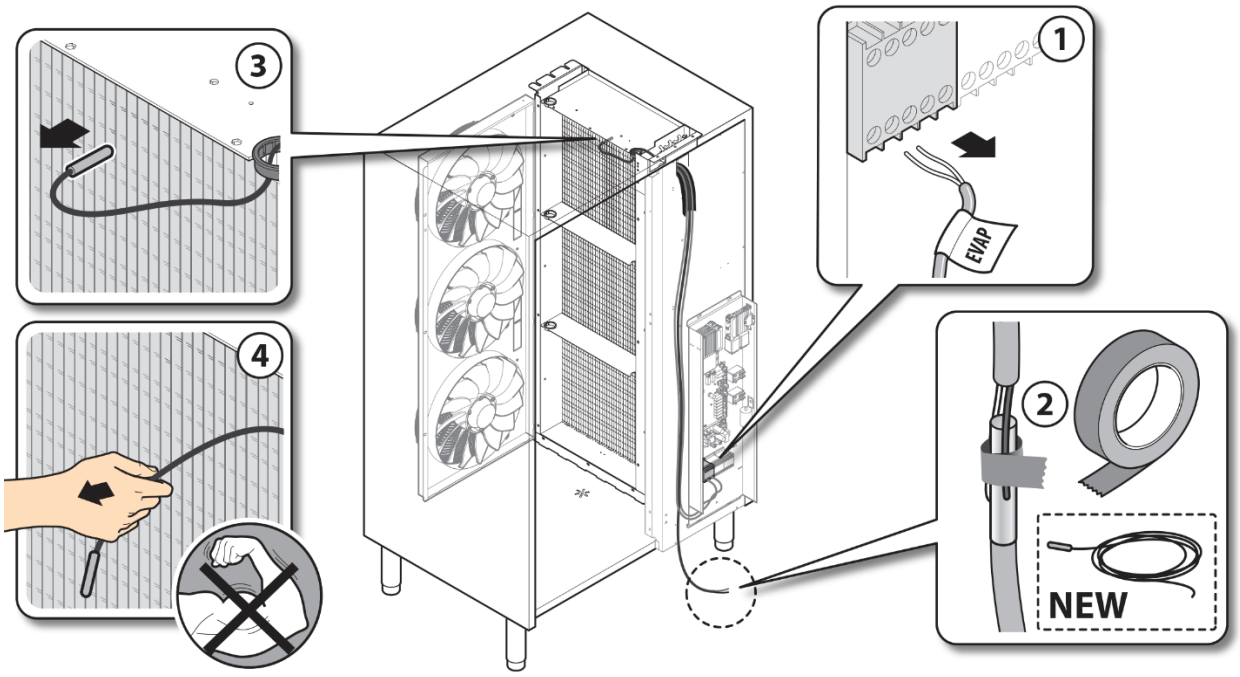
26. Open the electrical box following the procedure described in the paragraph [*Front panel*] and disconnect the cable.
27. With the adhesive tape, tie the new probe to the cable end (Step 2).
28. Follow the procedure in the paragraph [*Opening the fan casing*].
29. Cut the clamps that secure the probe cable (Step 3) and pull, accompanying the new cable.



6.3.8 Evaporator probe

Steps for replacing the Evaporator probe:

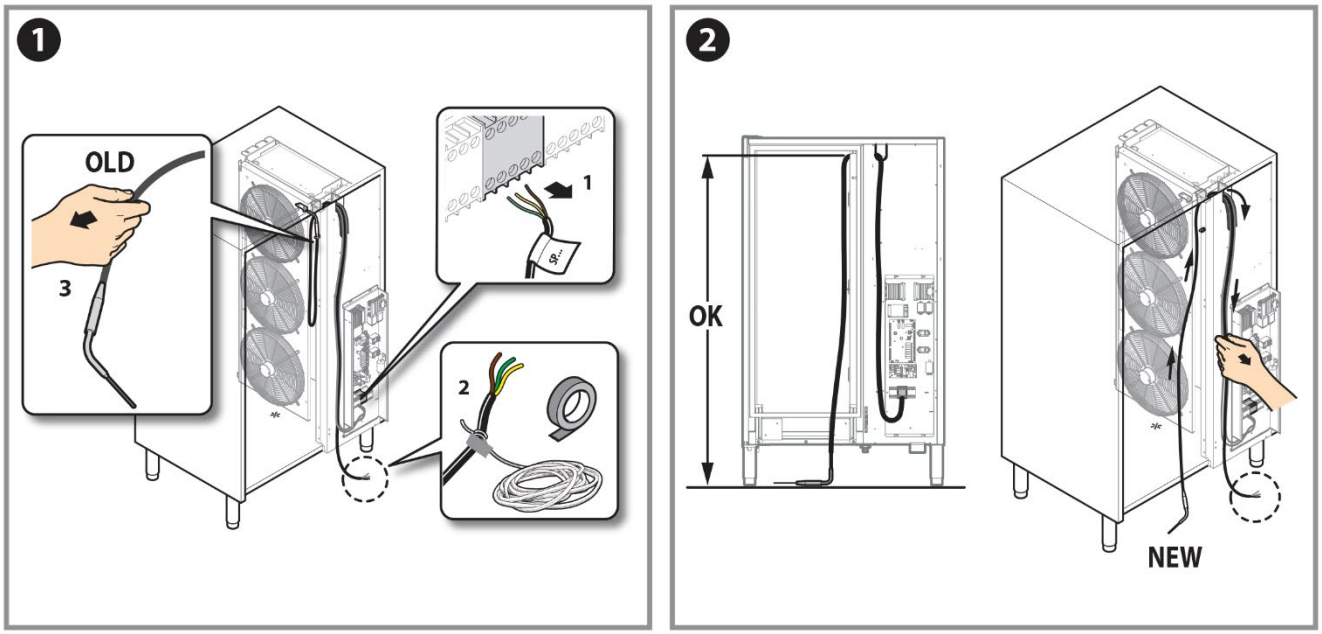
30. Open the electrical box following the procedure described in the paragraph [*Front panel*] and disconnect the cable.
31. With the adhesive tape, tie the new probe to the cable end (Step 2).
32. Follow the procedure in the paragraph [*Opening the fan casing*].
33. Cut any cable ties that block the probe cable (Step 3) and pull, accompanying the new cable.



6.3.9 Food probe

Steps for replacing the Food probe:

34. Open the electrical box following the procedure described in the paragraph [*Front panel*] and disconnect the cable.
35. Tie a wire (called messenger) to the cable end with adhesive tape, so that it can be used as a guide for the cable of the new probe (Figure 1 Step 2).
36. Pull the messenger cable paying attention to the length of the probe cable that remains inside the machine, the ideal measurement is shown in figure 2.



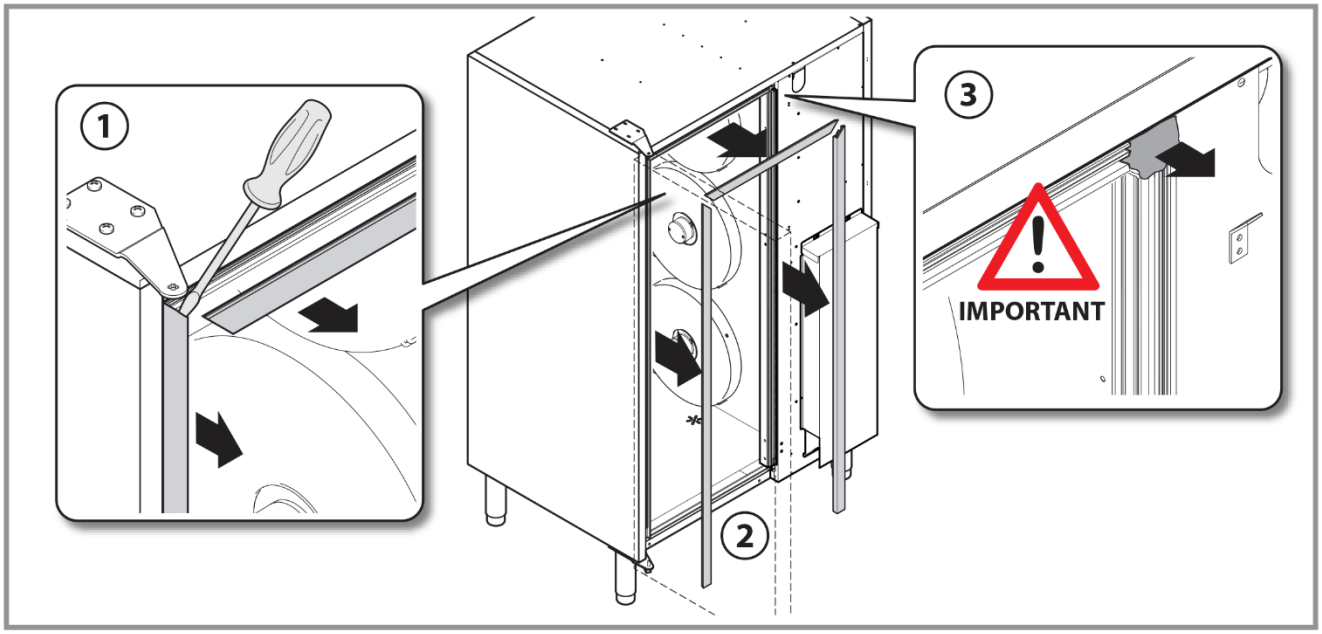
6.3.10 Door frame heating cable

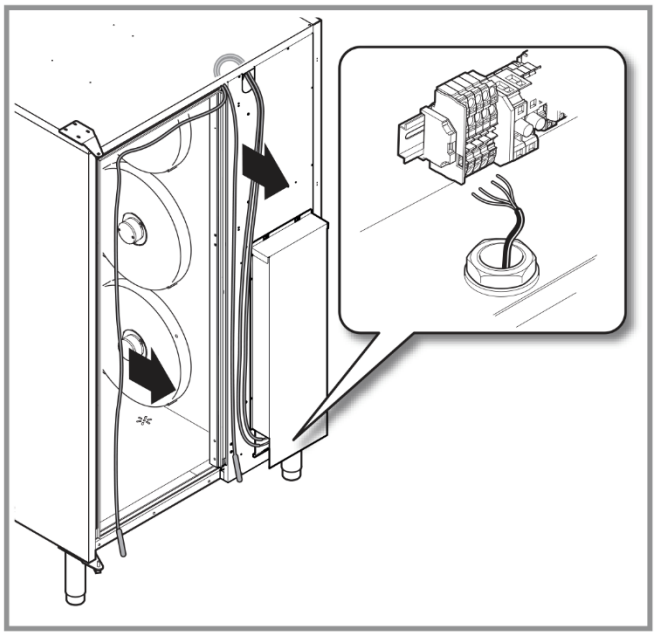
Steps to replace the heating element cable:

37. Use a flat-blade screwdriver to remove the three perimeter covers of the heating cables.
38. Disconnect the heating cable connectors.

ATTENTION!

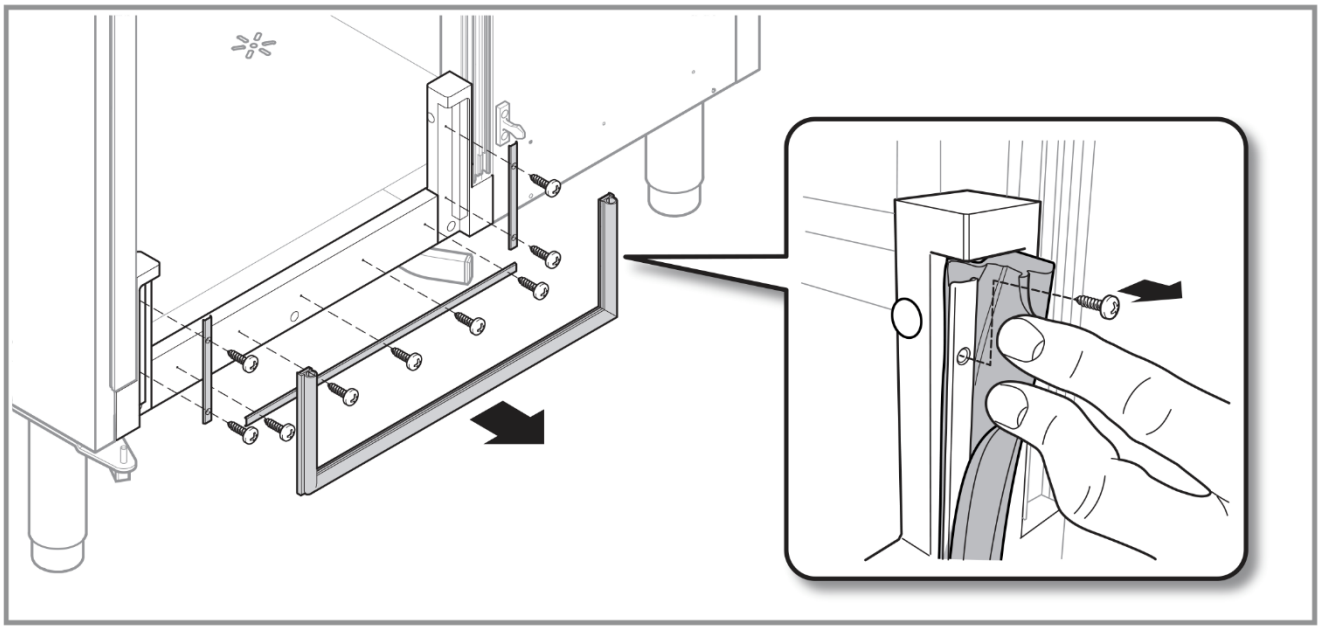
During reassembly, the Bostomia paste must be reapplied so as to seal the housing slot of the heating cables. Non-compliance compromises thermal insulation.





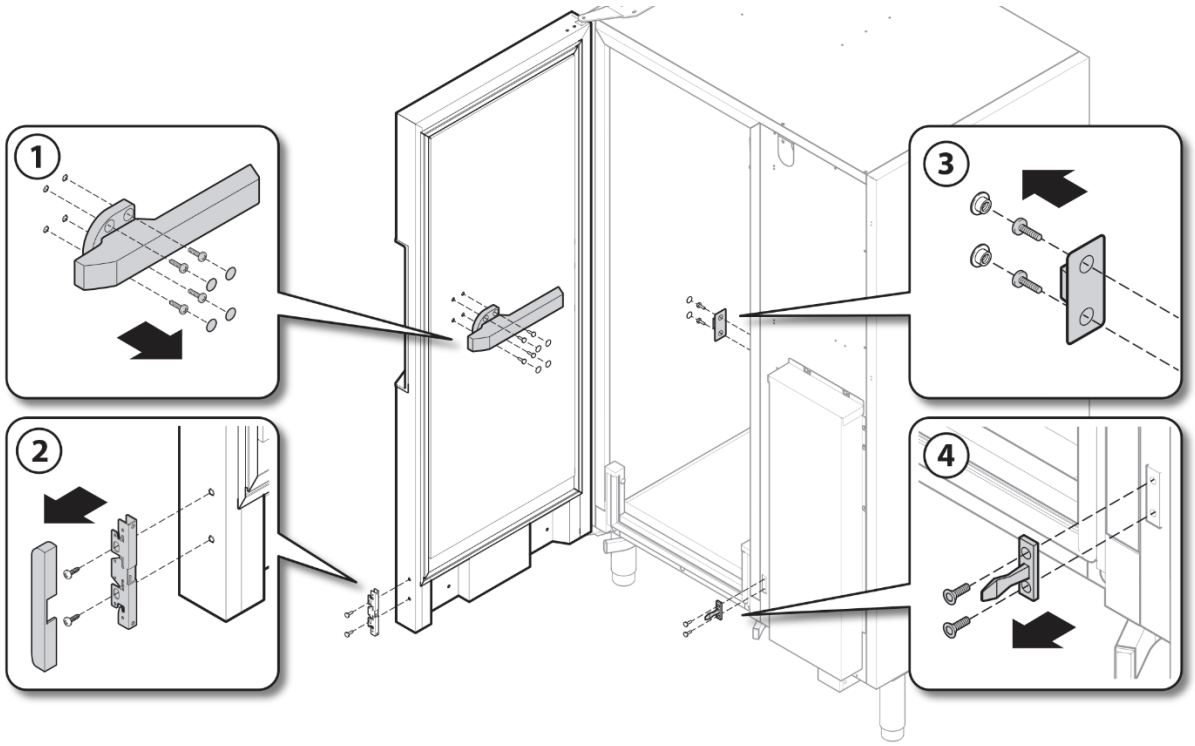
6.3.11 Door seal

39. Remove the screws located under the gasket as shown in the detail in the figure.
40. When refitting the new gasket, make sure that the gasket locking plates are positioned correctly.



6.3.12 Handle

41. Handle: remove the 4 screw caps with a small flat-head screwdriver.
42. Door latch:
43. Handle lock:
44. Door closing pin:



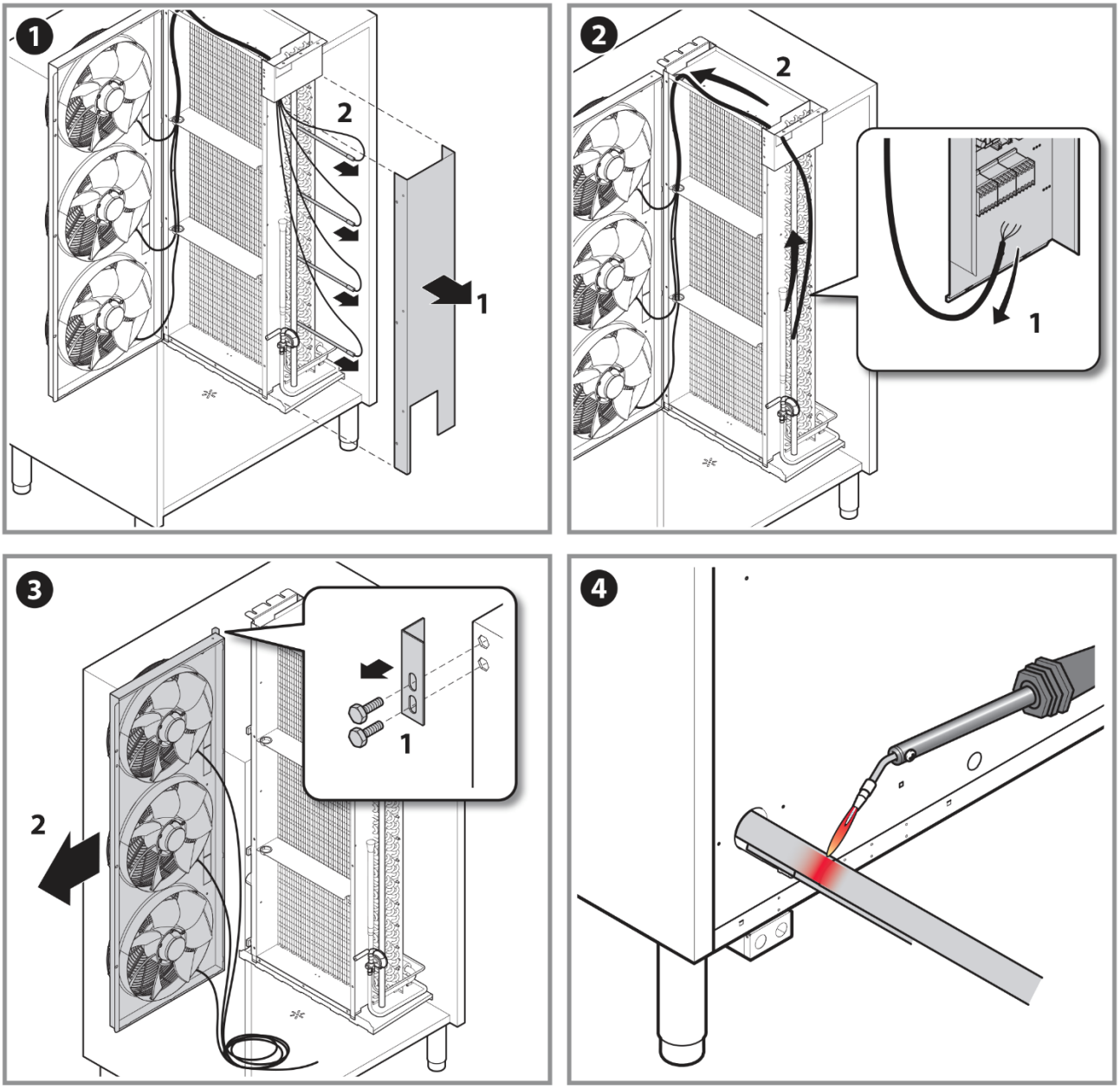
6.3.13 Evaporator

Steps for replacing the Evaporator:

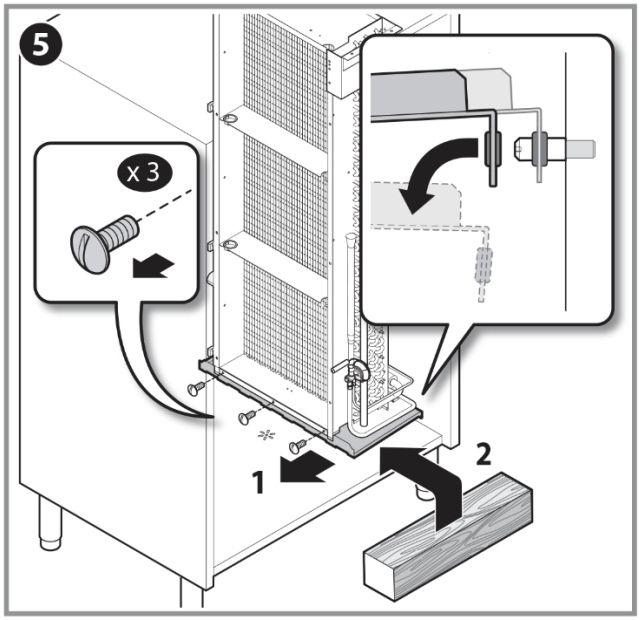
ATTENTION!

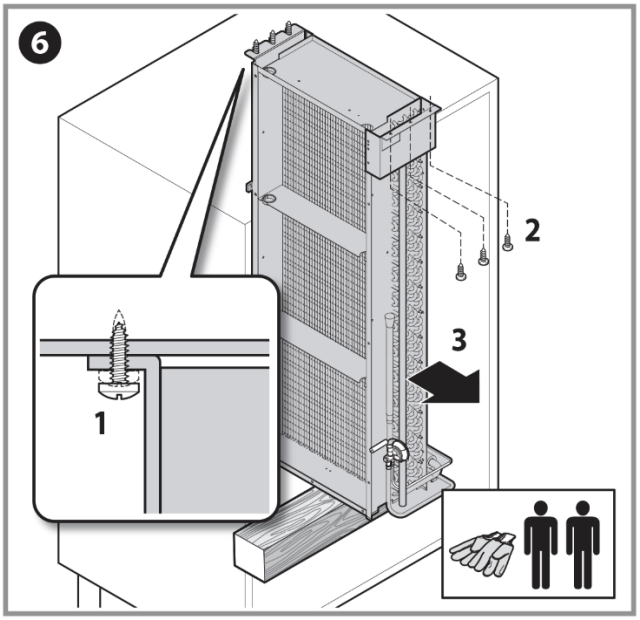
Before replacing the evaporator, make sure that the suction valve and the exhaust gas valve are closed and then follow the important procedures shown on page 103.

45. Perform the phase [*Opening the fan casings*] (page 107).
46. Remove the side protection (Figure 1 phase 1) and take out all the resistors (Figure 1 phase 2).
47. Disconnect all the fans, probes and resistors from the electric box (Figure 2 phase1).
48. Remove the fan casing (Figure 3 phase 1-2).
49. Desolder the connection pipes to the outdoor unit (Figure 4).



50. Remove the lower tray (Figure 5 phase 1) and place a support block (Figure 5 phase 2).
51. Loosen the three rear screws on the evaporator (Figure 6 phase 1) and remove the three front screws (figure 6 phase 2). For the evaporator extraction, the presence of two operators is strongly recommended.

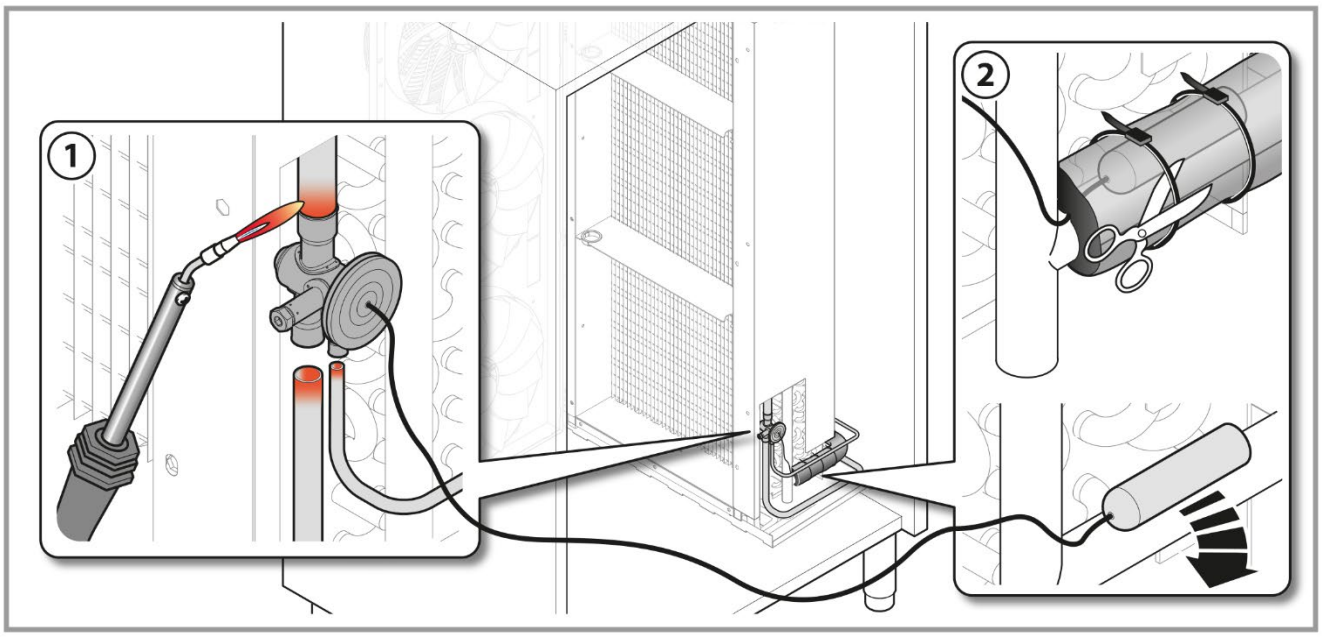




6.3.14 Thermostatich valve

Steps for replacing the Thermostatich valve:

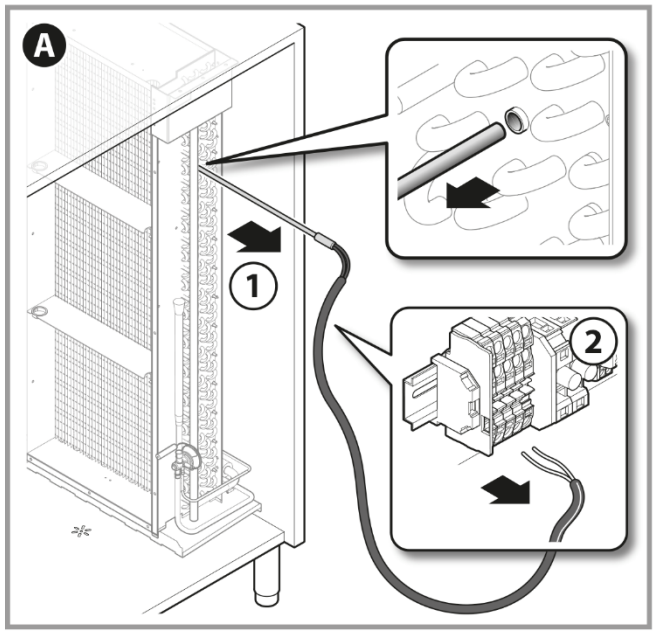
52. Follow the procedure described in the paragraph [*Front panel*].
53. Desolder the valve (phase 1)
54. Remove the insulation tube to reach the probe (step 2).
55. Reassemble everything using the reverse procedure. Carefully restore the insulation and use a clamp to fix the insulation and the probe.

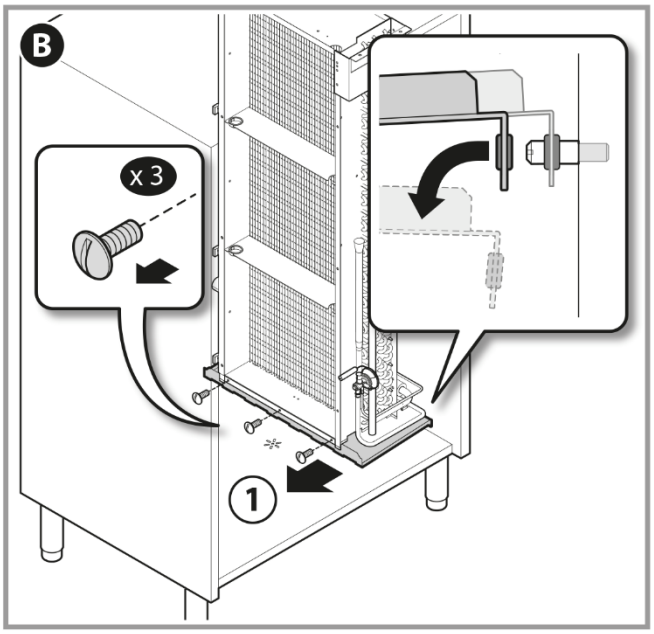


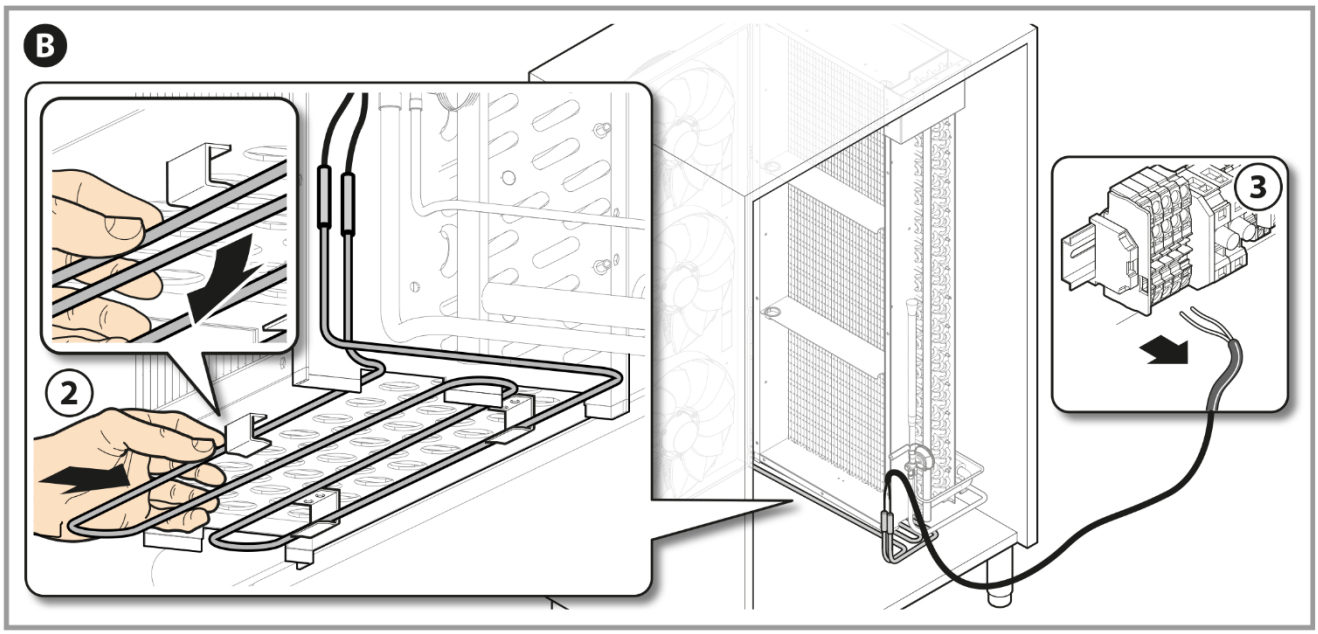
6.3.15 Resistors

Steps for the replacement of the resistors:

56. Follow the procedure described in the paragraph [*Front panel*].
57. Remove the resistor from its seat and disconnect the cable from the electrical box (Figure A phase 1-2)
58. Remove the three screws of the tray and pull it out (Figure B phase 1).
59. Remove the lower resistor by releasing it from the support brackets (Figure B phase 2). Disconnect the cables from the electrical box (Figure B phase 3).
60. Reassemble everything following the reverse procedure.







6.4 REPLACING EQUIPMENT COMPONENTS OF 200 KG

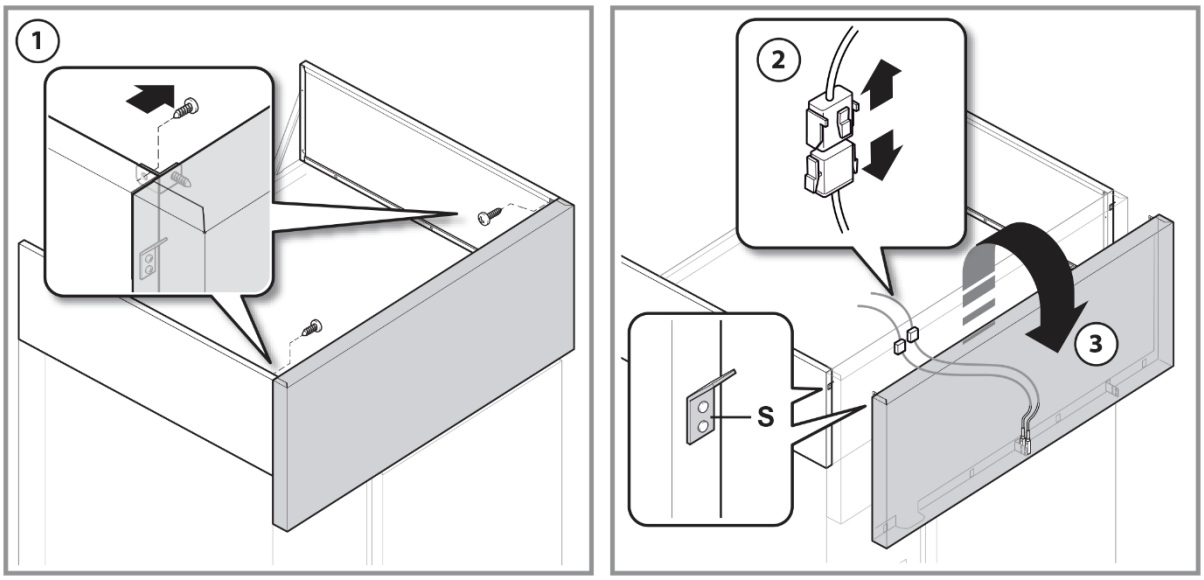
Disassembly/Reassemble Of Components.

This chapter introduces the operations to perform when dismantling every single component graphically highlighted.

6.4.1 Upper Panel

Phases to access the components of the electrical box and the components below:

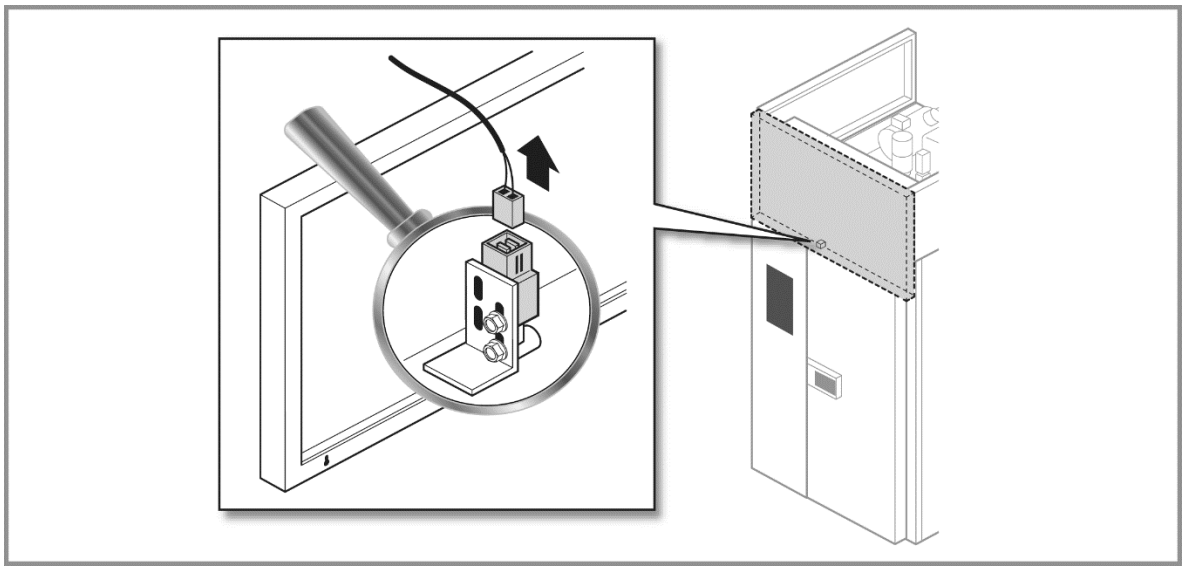
61. Remove the front panel by removing the 2 side screws.
62. Disconnect the door sensor connectors.
63. Lift the panel and unhook it from the support brackets (**S**).



6.4.2 Magnetic switch door

Steps for replacing the magnetic switch door:

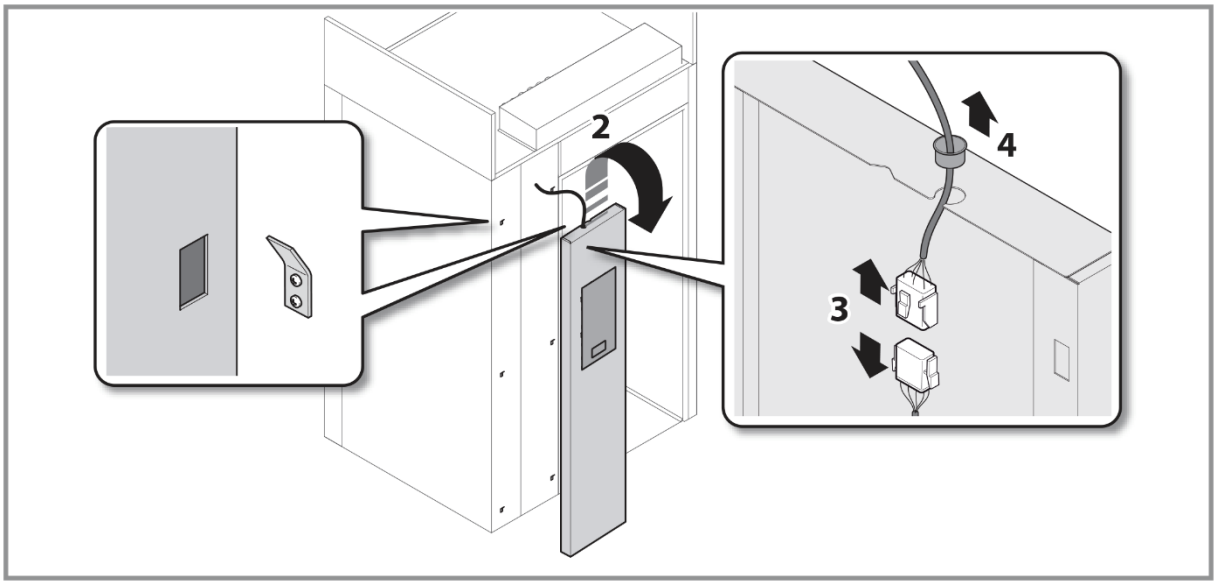
64. Remove the front panel as explained in the paragraph [*Upper Panel*].
65. Disconnect the connector.



6.4.3 Control Panel

Steps for replacing the Control Panel:

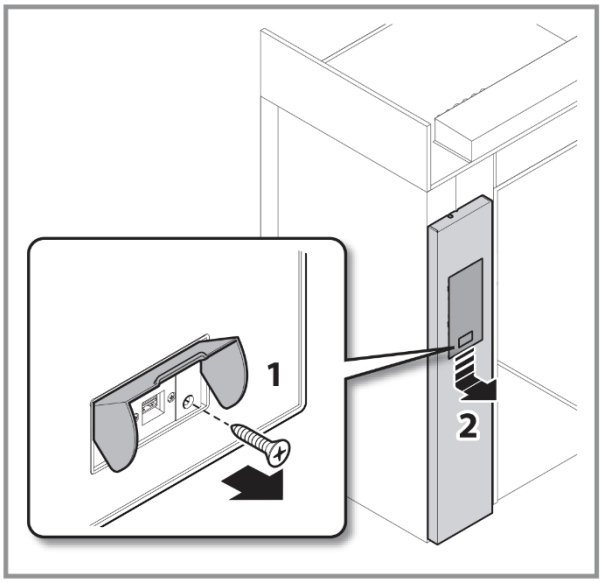
66. Remove the front panel as explained in the paragraph [*Upper Panel*].
67. Lift the panel and unhook it from the support brackets.
68. Disconnect the connectors.
69. Push the fairlead upwards.

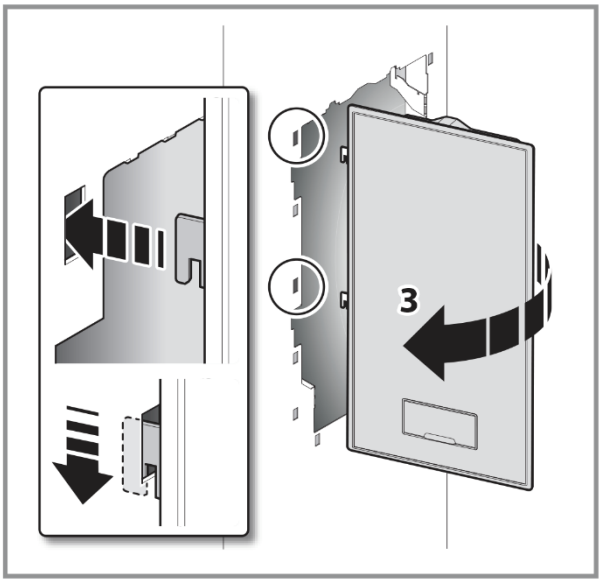


6.4.4 Command Panel

Steps for replacing the Command Panel:

70. Open the flap of the USB port and unscrew the screw shown in figure 1.
71. Push down and pull out the Command Panel carefully to prevent any damage to the wiring (Fig. 2).
72. Use the two hooks on the left side of the Command Panel to hang it on the Control Panel (Fig. 3).





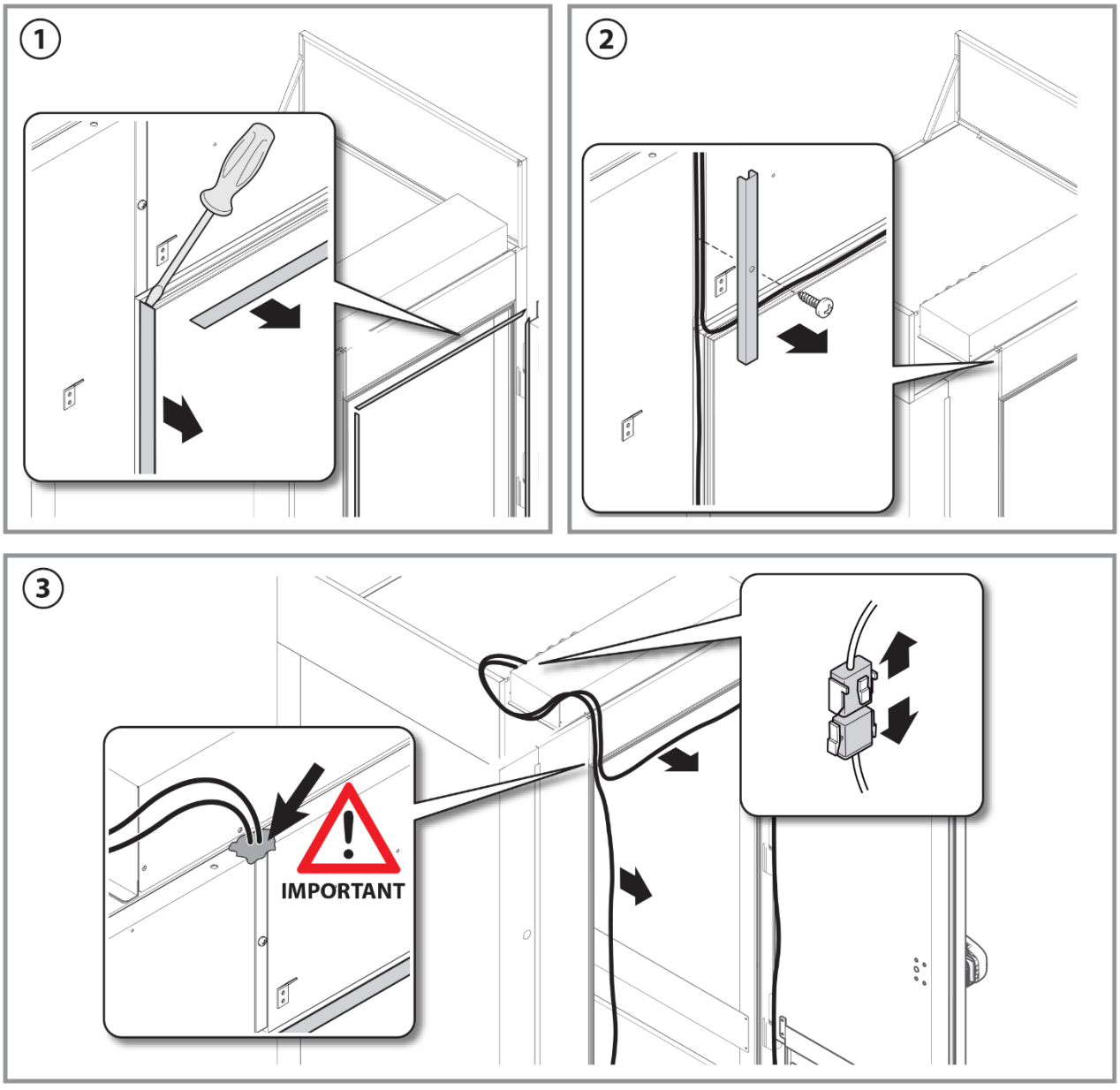
6.4.5 Door frame heating cable

Steps for replacing the heating element cable:

73. Remove the front panel as explained in the paragraph [*Upper Panel*].
74. Use a flat-blade screwdriver to remove the three perimeter covers of the heating cables.
75. Remove the top cover by unscrewing the central screw.
76. Disconnect the heating cable connectors.

ATTENTION!

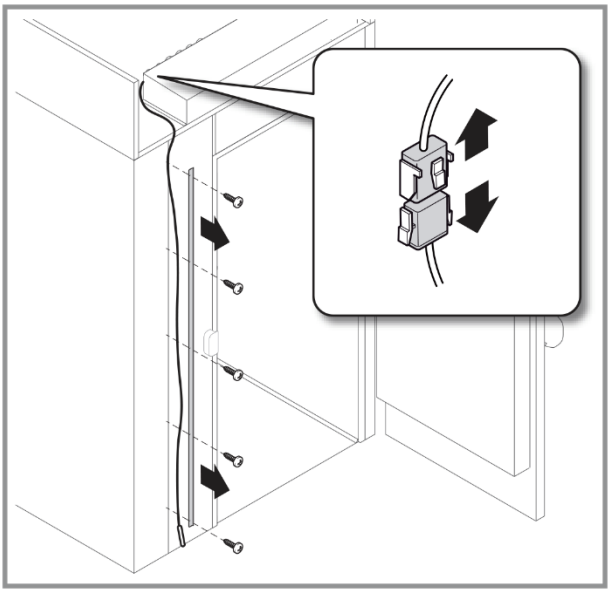
During reassembly, the Bostomia paste must be reapplied so as to seal the housing slot of the heating cables. Non-compliance compromises thermal insulation.



6.4.6 Heating cable behind the control panel

Steps for replacing the heating element cable:

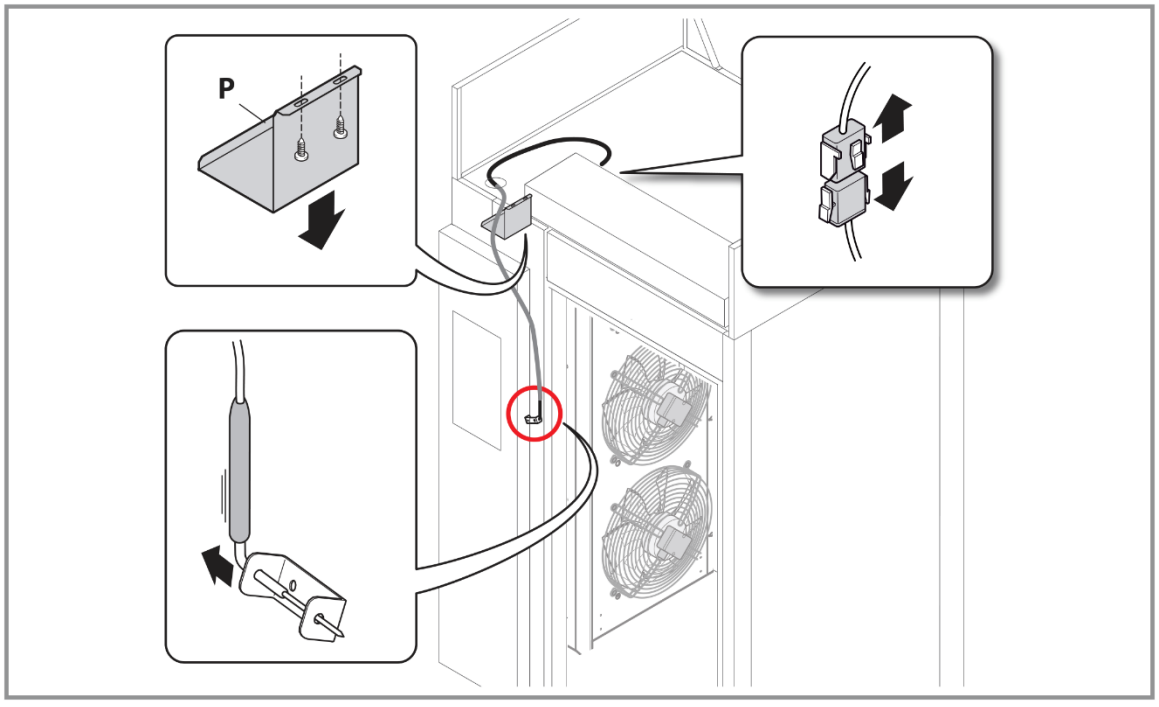
77. Remove the front panel as explained in the paragraph [*Upper Panel*].
78. Remove the control panel as explained in the paragraph [*Control Panel*].
79. Remove the securing screws of the cable protection bracket (see figure).
80. Disconnect the heating cable connector.



6.4.7 Food probe

Steps for replacing the Food probe:

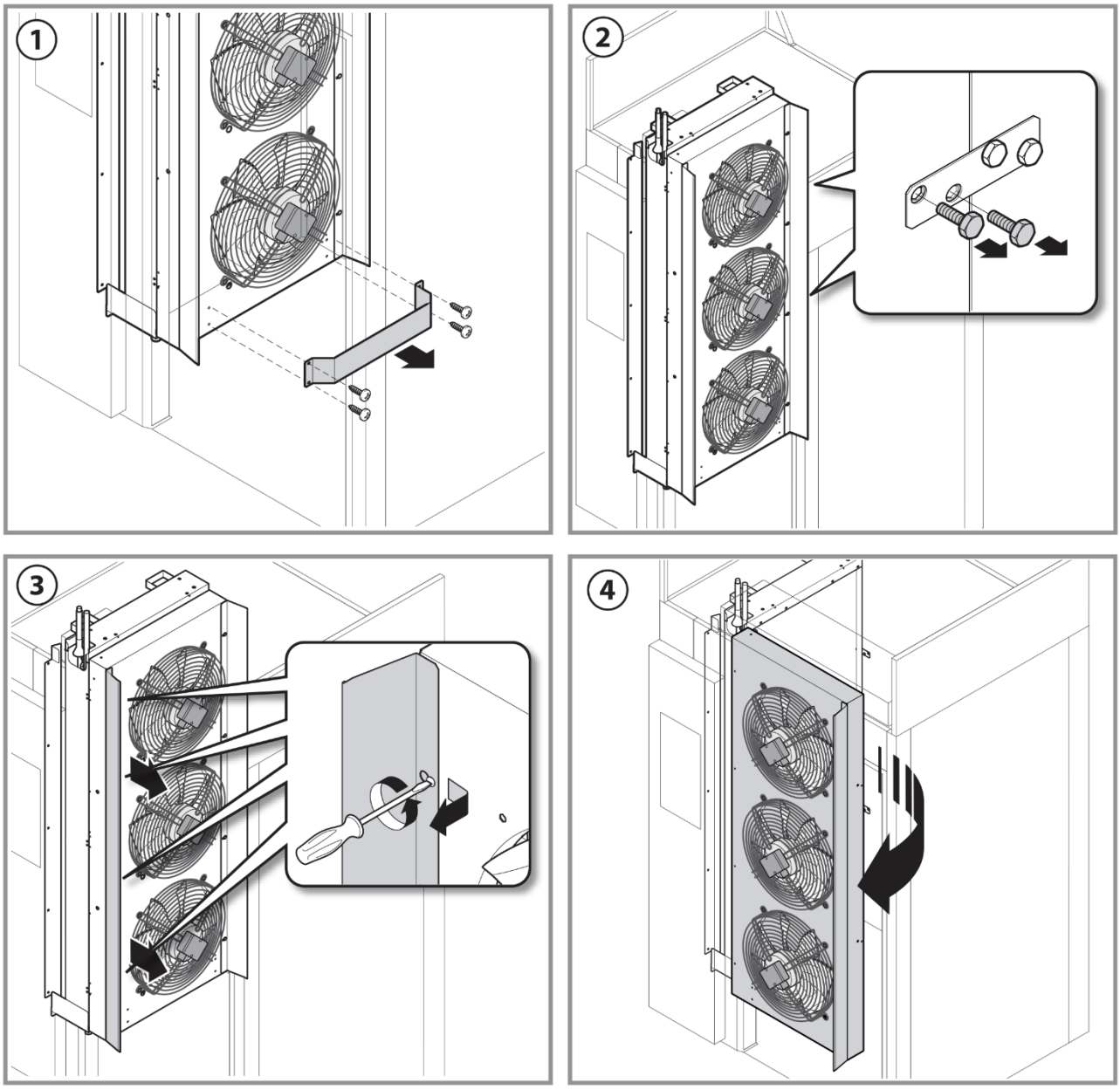
81. Remove the front panel as explained in the paragraph [*Upper Panel*].
82. Remove the covering panel (**P**) by unscrewing the two screws.
83. Disconnect the probe connector.



6.4.8 Opening the fan casing

Steps to open the casing:

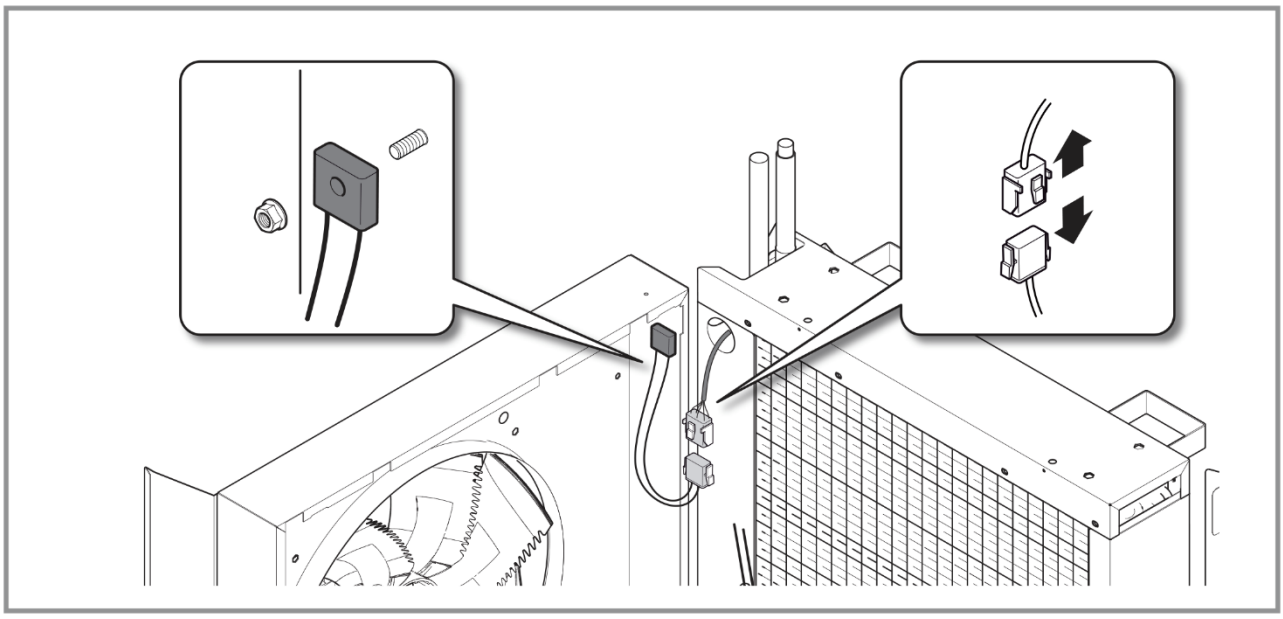
84. Remove the bumper bracket located under the evaporator (figure 1).
85. Remove the 4 side screws, two above and two below, which hold the casing in place (figure 2).
86. Loosen the retaining screws of the left side deflector and take it out by releasing the heads of the screws from the slots of the deflector (figure 3)
87. Open the casing to access the components below (figure 4)



6.4.9 Thermostat

Steps for replacing the Thermostat:

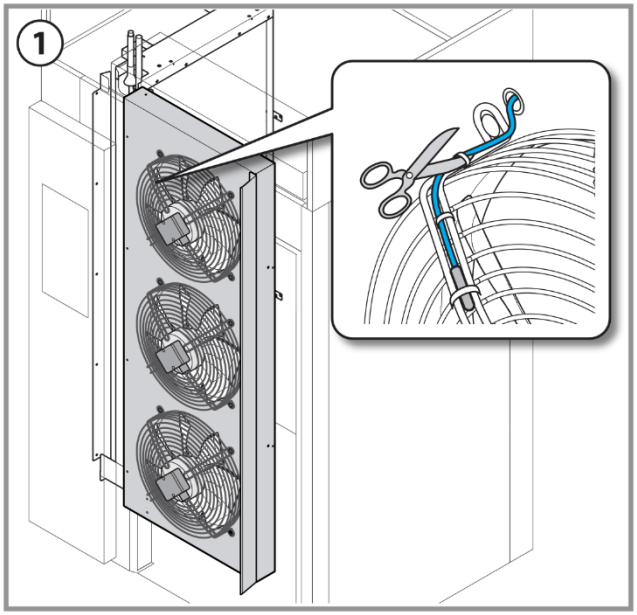
88. Follow the procedure in the paragraph [*Opening the fan casing*].
89. Disconnect the thermostat connector and unscrew the sealing nut.

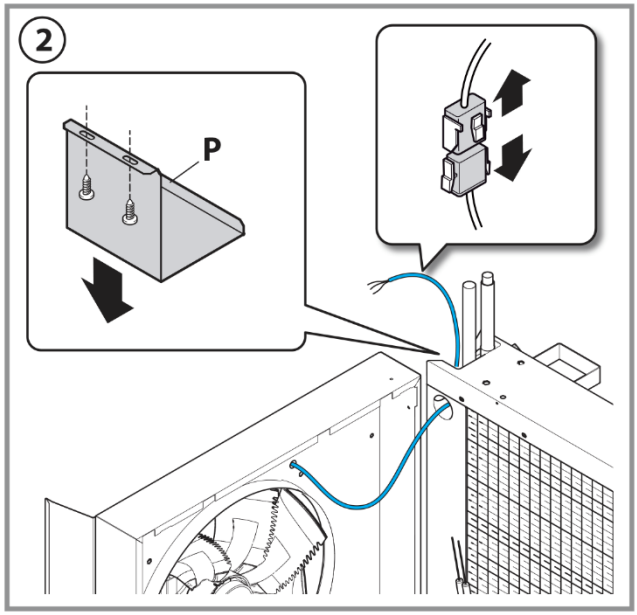


6.4.10 Cell probe

Steps for replacing the Cell probe:

90. Follow the procedure in the paragraph [*Opening the fan casing*].
91. Find the cell probe on the fan protection grid and cut the cable ties to release the probe (Fig. 1).
92. Remove the covering panel (P) by unscrewing the two screws (figure 2).
93. Disconnect the probe connector.

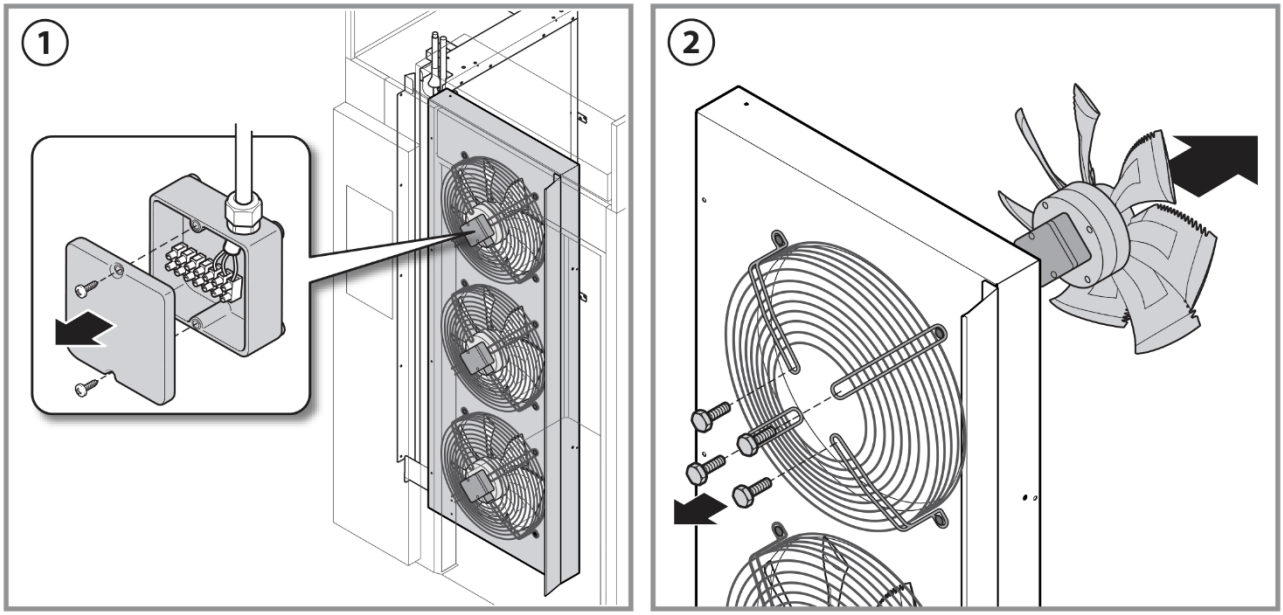




6.4.11 Evaporator fan

Steps for replacing the Evaporator fan:

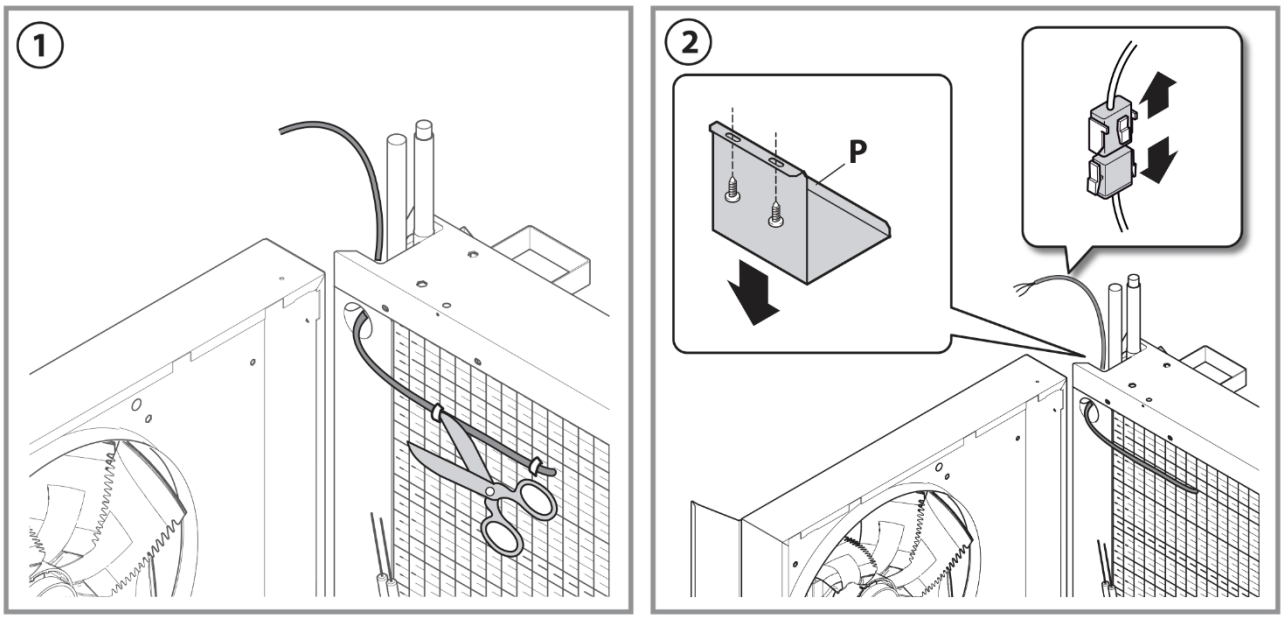
94. Follow the procedure in the paragraph [*Opening the fan casing*].
95. Open the electrical box of the fan and disconnect the power cable (figure 1).
96. Remove the 4 fan sealing screws (figure 2).



6.4.12 Evaporator probe

Steps for replacing the Evaporator probe:

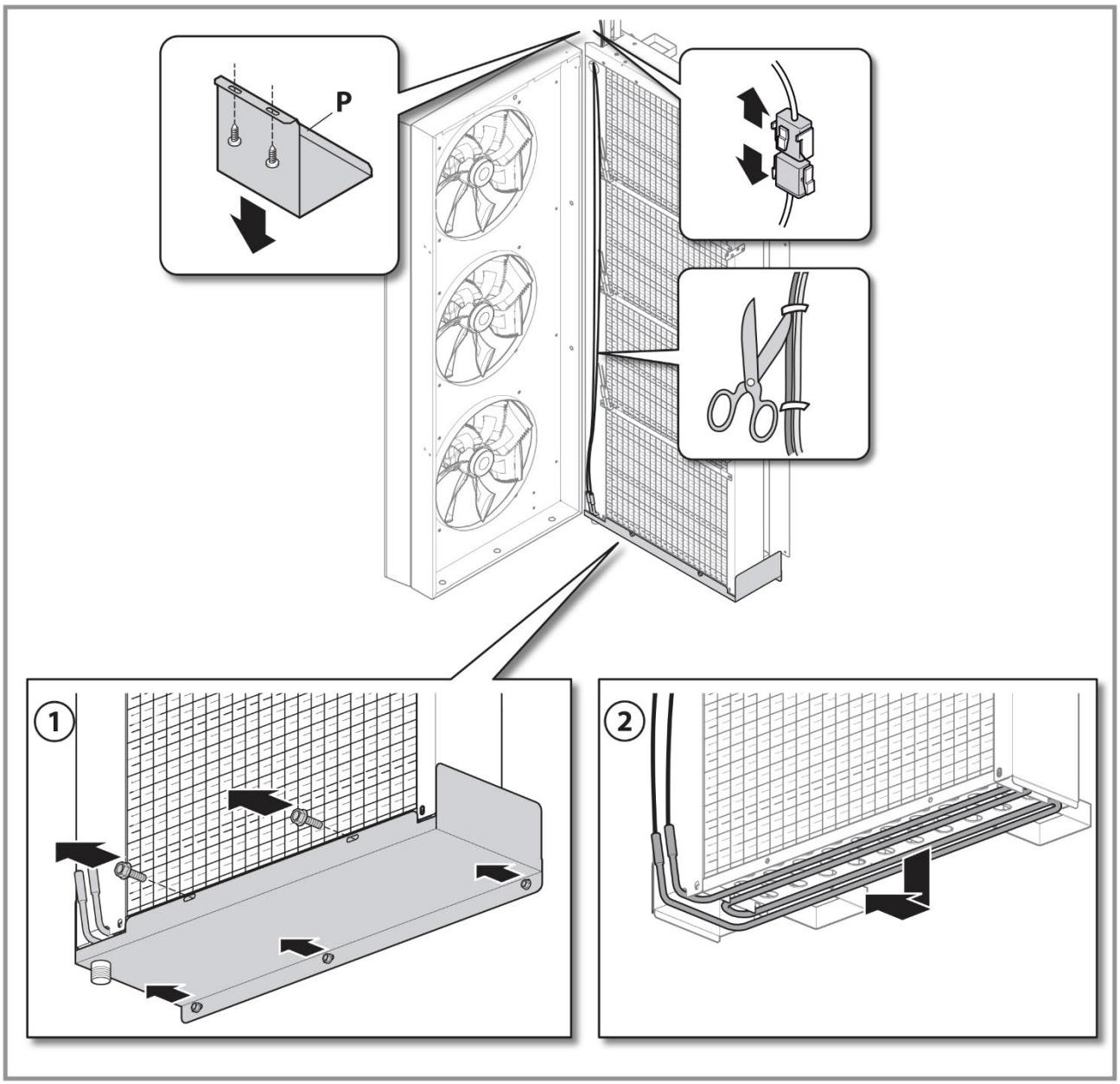
97. Follow the procedure in the paragraph [*Opening the fan casing*].
98. Cut the clamps that hold the probe to the evaporator (figure 1).
99. Remove the covering panel (P) by unscrewing the two screws (figure 2).
100. Disconnect the probe connector.



6.4.13 Lower evaporator heating element

Steps for replacing the Lower evaporator heating element:

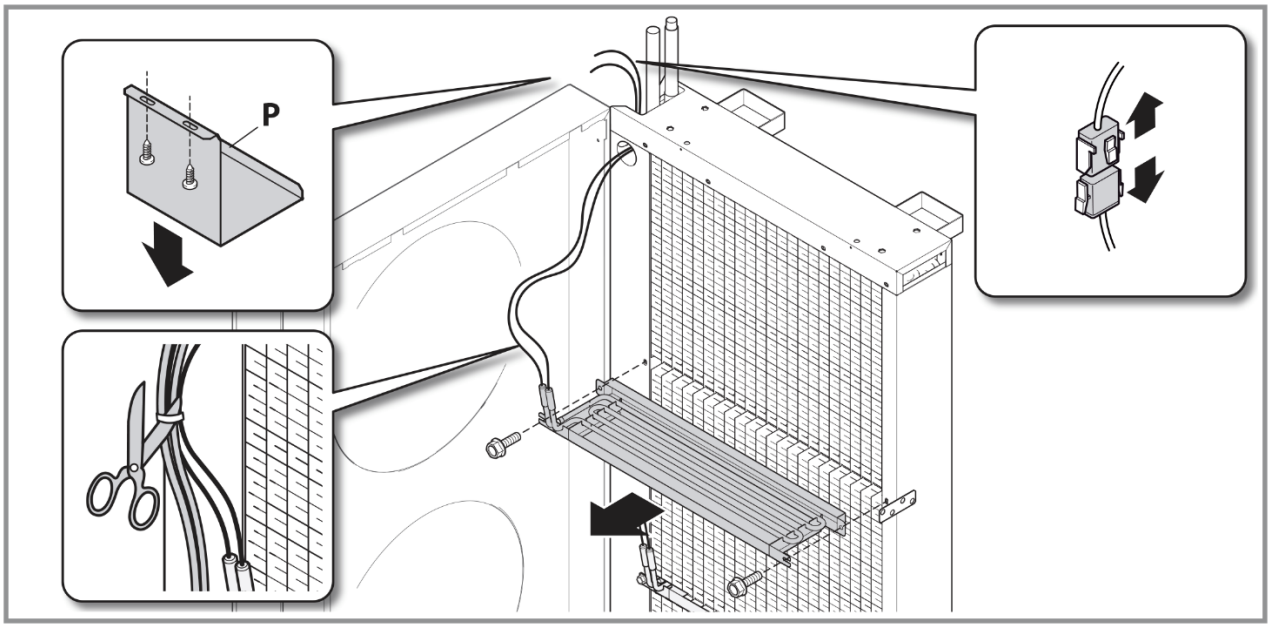
101. Follow the procedure in the paragraph [*Opening the fan casing*] (page 120).
102. Remove the 5 screws that hold the lower tray.
103. Remove the heating element by applying a little force downwards.
104. Cut the cable ties that block the cables.
105. Remove the covering panel (P) by unscrewing the two screws.
106. Disconnect the resistor connector.



6.4.14 Heating element evaporator

Steps for replacing the Heating element evaporator:

107. Follow the procedure in the paragraph [*Opening the fan casing*].
108. Cut the cable ties that block the cables.
109. Remove the two screws that fix the resistor to the evaporator.
110. Remove the covering panel (P) by unscrewing the two screws.
111. Disconnect the resistor connector.



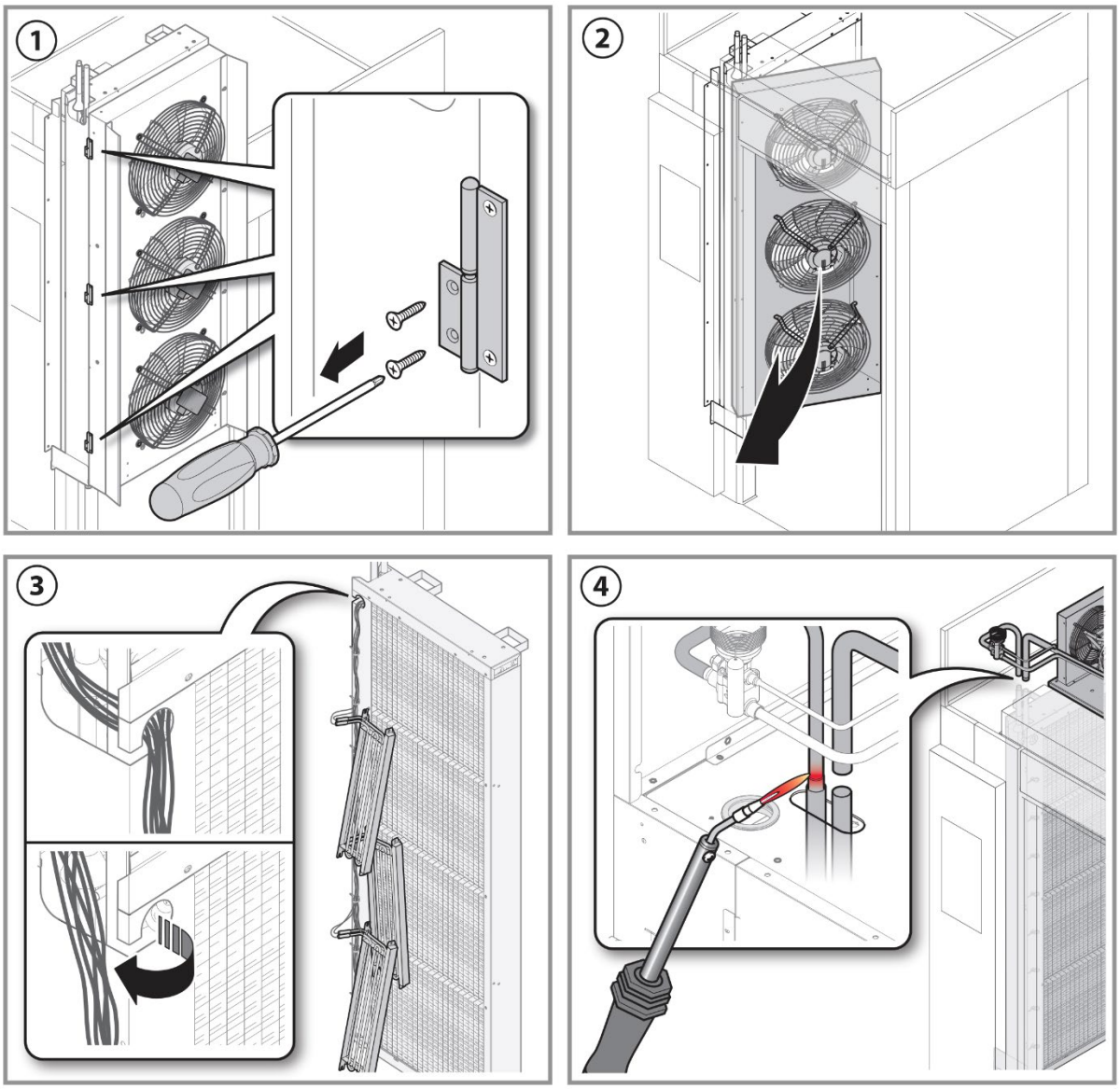
6.4.15 Evaporator

Steps for replacing the Evaporator:

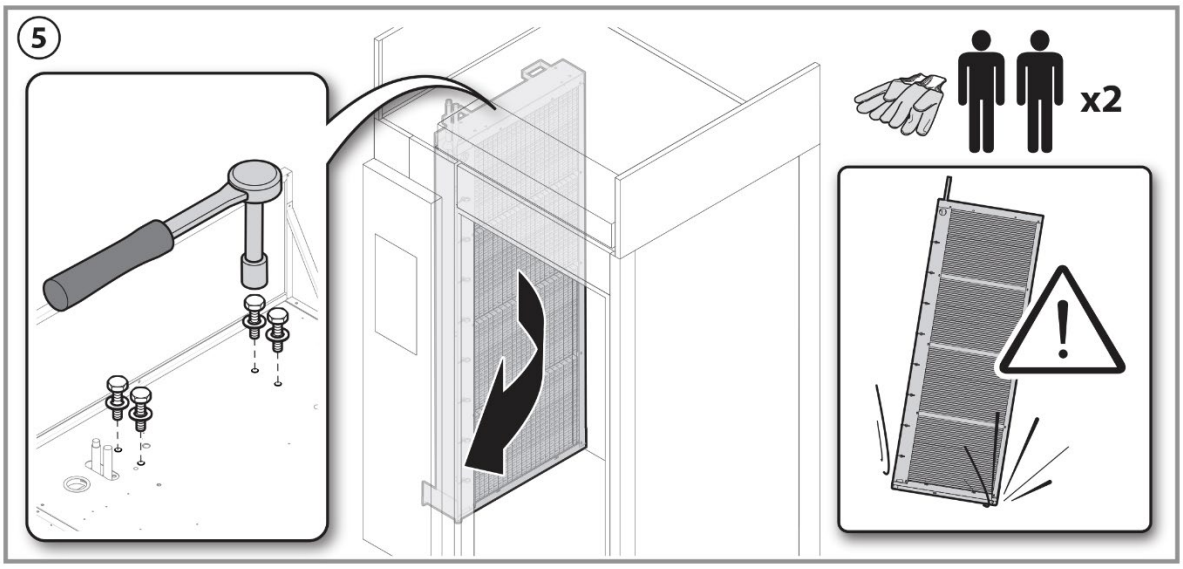
ATTENTION!

Before replacing the evaporator, make sure that the suction valve and the exhaust gas valve are closed and then follow the important procedures shown on page 103.

112. Perform the phase [*Opening the fan casings*] (page 120).
113. Disconnect the thermostat connector as explained in [*Thermostat*] (page 121).
114. Remove the cell probe as explained in [*Cell Probe*] (page 121).
115. Disconnect the fans as explained in [*Evaporator fan*] (page 122).
116. Disconnect the evaporator probe as explained in [*Evaporator probe*] figure 1 (page 122).
117. Perform the [*Lower evaporator heating element*] phase (page 123) for all three resistors. Do not disconnect the connectors of the resistors because all the wiring will be made to come out of the recess on the side of the evaporator as shown in figure 3.
118. Remove the screws holding the side hinges (figure 1) and move the casing outwards (figure 2).
119. Remove from the slotting the cables of the various components previously disconnected as shown in figure 3.
120. Desolder the two connection pipes to the evaporator, as shown in figure 4.



121. Remove the 4 hexagonal screws of the evaporator located on the upper panel of the machine, as shown in figure 5.



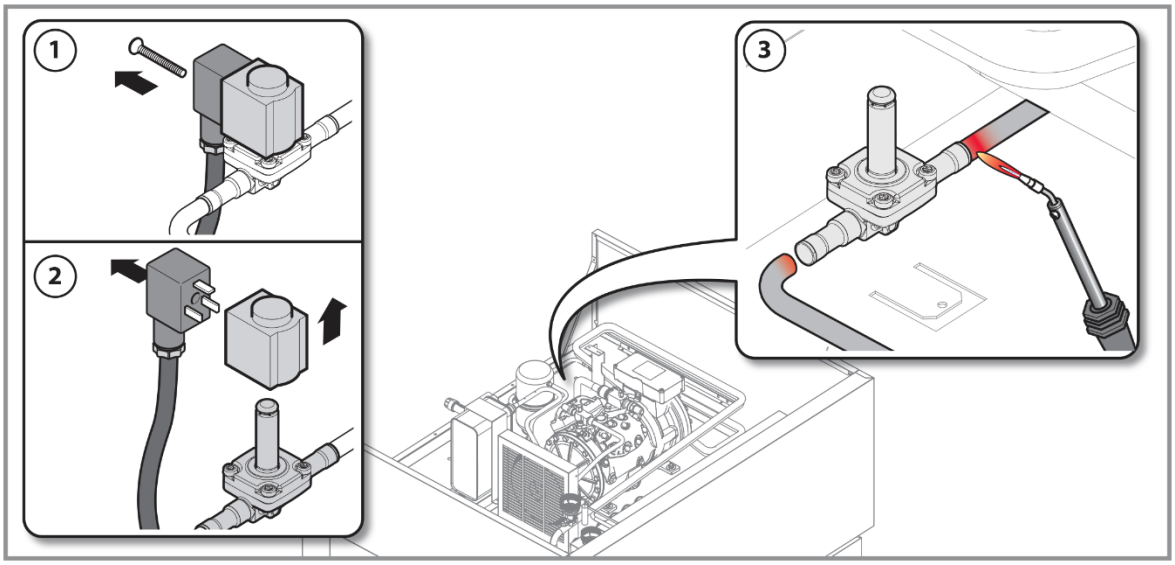
ATTENTION!

In this phase the presence of two operators is recommended. Use cut-resistant protective gloves.
During reassembly, the Bostomia paste must be reapplied so as to seal the pipe housing slot. Non-compliance compromises the thermal insulation.

6.4.16 Solenoid valve

Steps for replacing the Solenoid valve:

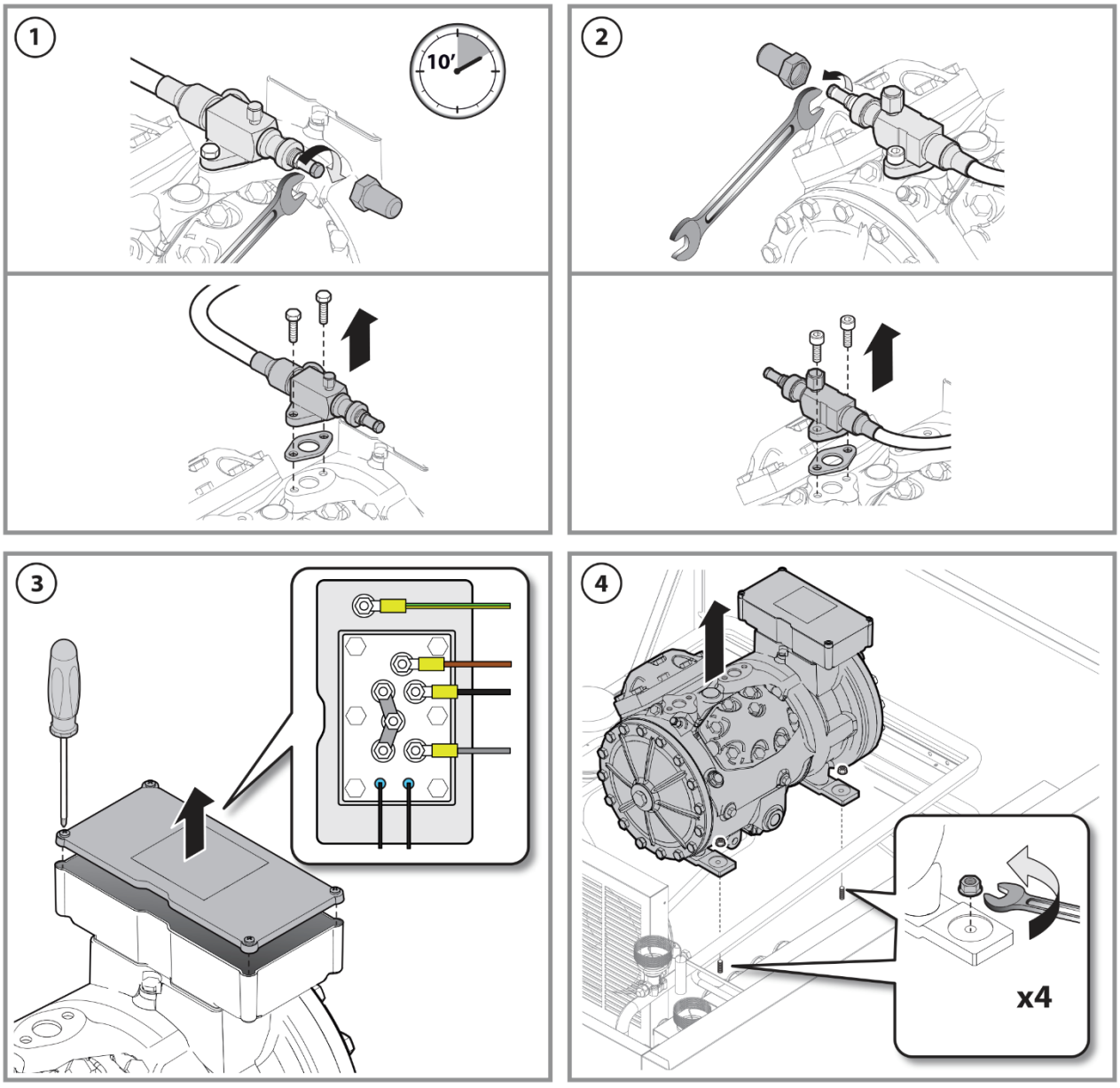
122. Follow the procedure in paragraph [*Upper Panel*] to reach the solenoid valve.
123. Remove the screw of the power connector on the coil of solenoid valve (Fig. 1).
124. Remove the coil upwards from body valve (Fig. 2).
125. Desolder the joints upstream and downstream of the valve (Fig. 3).



6.4.17 Compressor

Steps for replacing the Compressor:

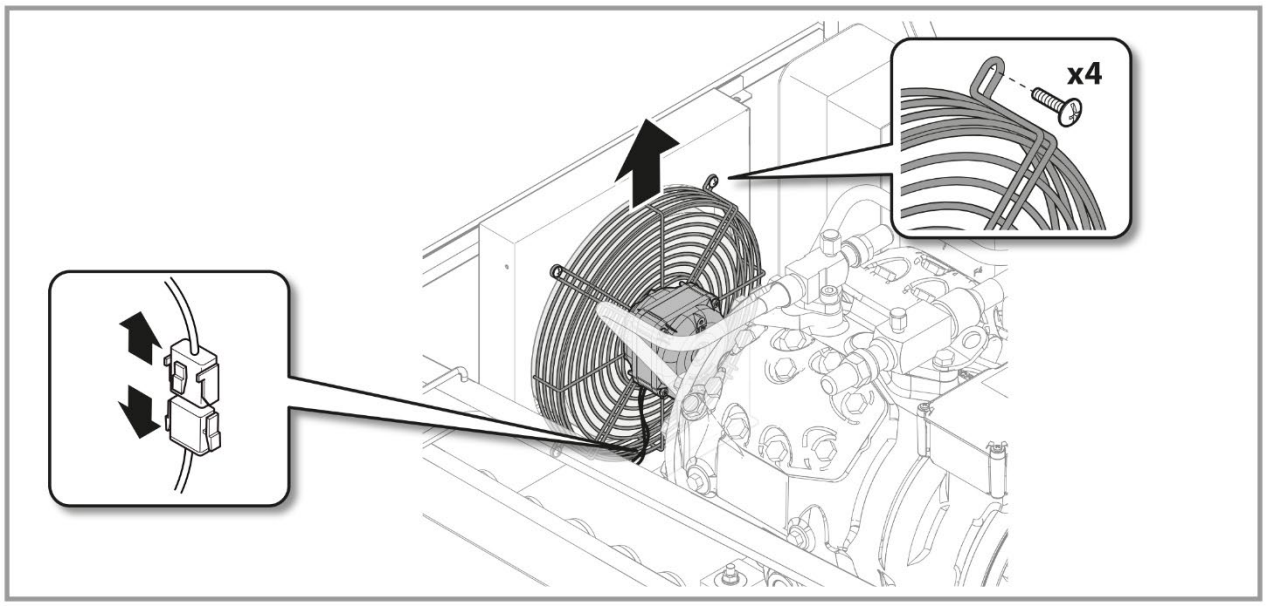
126. Follow the procedure in paragraph [*Upper Panel*] to reach the compressor.
127. Close the low pressure supply by screwing clockwise the valve, **then wait for 10 minutes** (Fig. 1).
128. Close the high pressure supply by screwing clockwise the valve (Fig. 2).
129. Connect the vacuum pump and create vacuum in the compressor.
130. Shut down the power supply to the appliance.
131. Disconnect the wiring to the compressor.
132. Unscrew the two screws from each valve (low and high pressure) to release the compressor from the circuit (Fig. 1-2).
133. Remove the cover of the compressor electrical box and disconnect the power cables (Fig. 3).
134. Unscrew the four nuts at the basement of the compressor to release it from the chassis (Fig. 4).



6.4.18 Condenser fan

Steps for replacing the Condenser fan:

135. Follow the procedure in paragraph [*Upper Panel*] to reach the condenser fan.
136. Unscrew the four screws of the fan grid to release the grid and the fan.
137. Pull out the condenser fan as shown in figure.



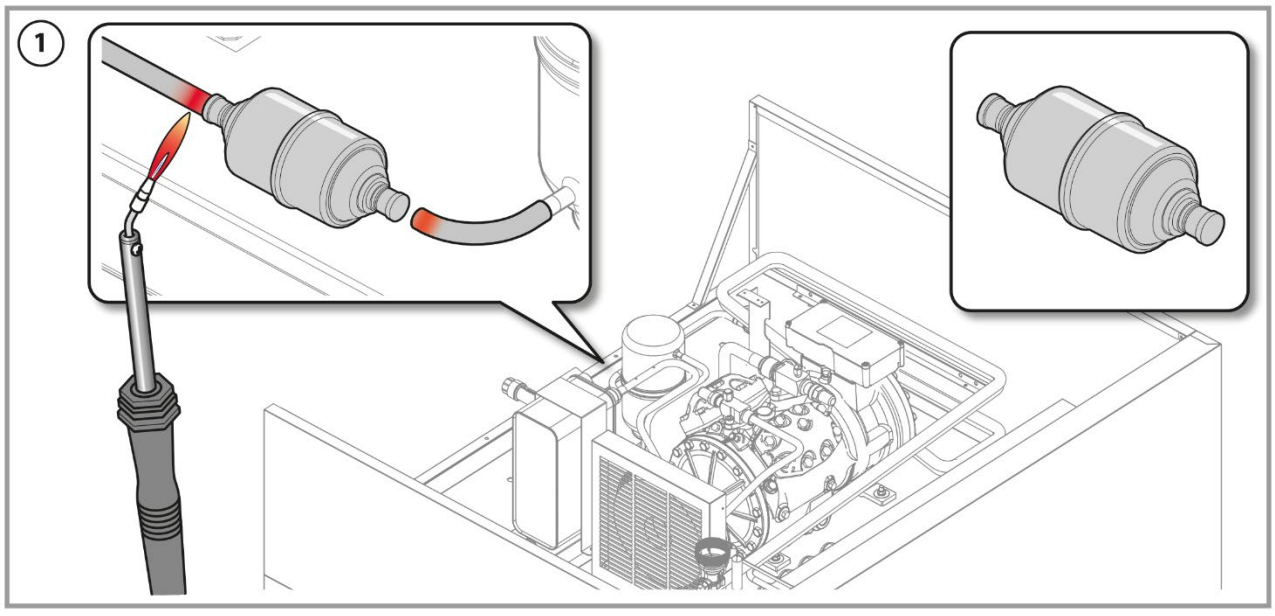
6.4.19 Dehidrator Filter

Steps for replacing the Dehidrator Filter:

ATTENTION!

Before replacing the Filter, make sure that the suction valve and the exhaust gas valve are closed and follow the important procedures shown on page 103.

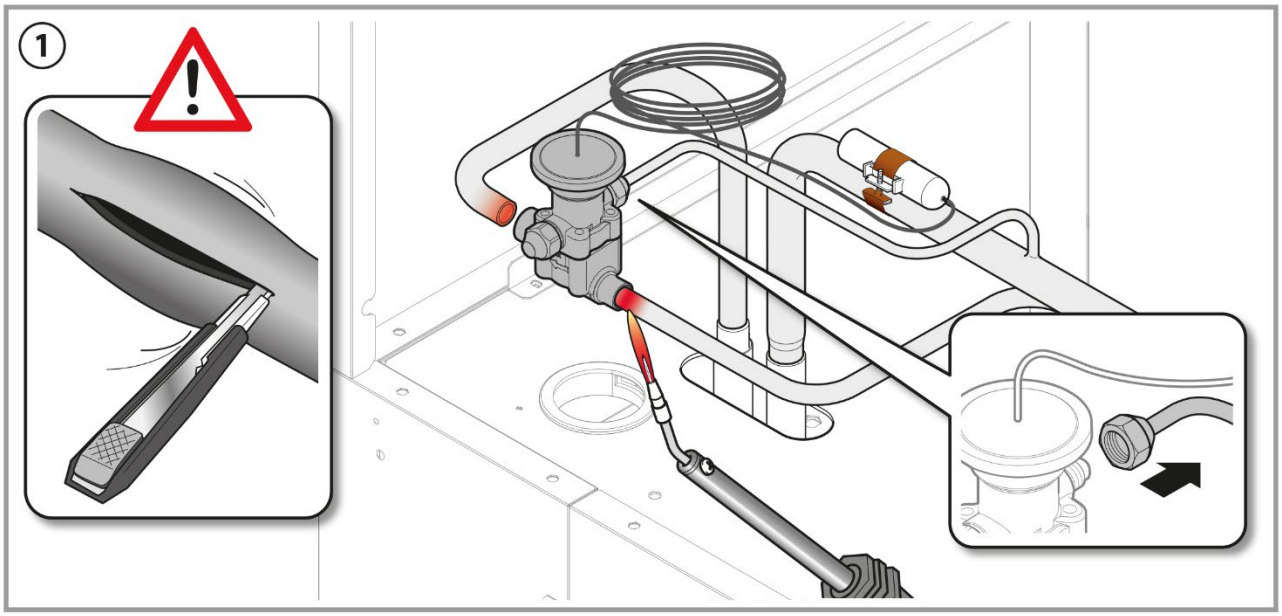
138. Desolder the joint upstream and downstream of the Dehidrator Filter (Fig. 1).

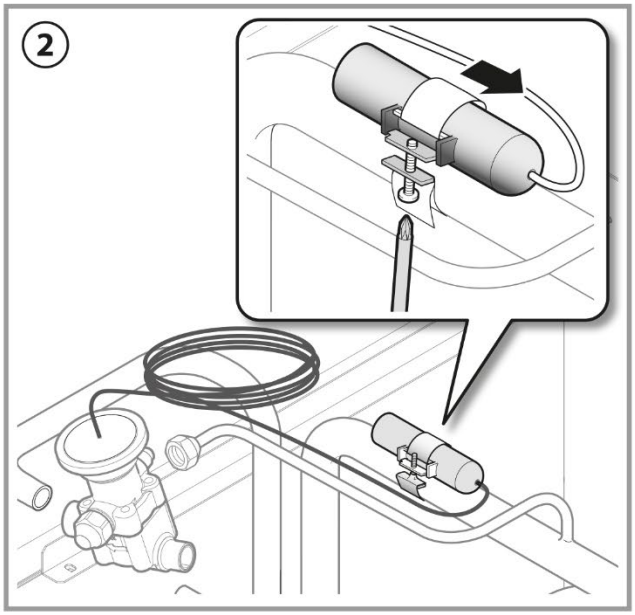


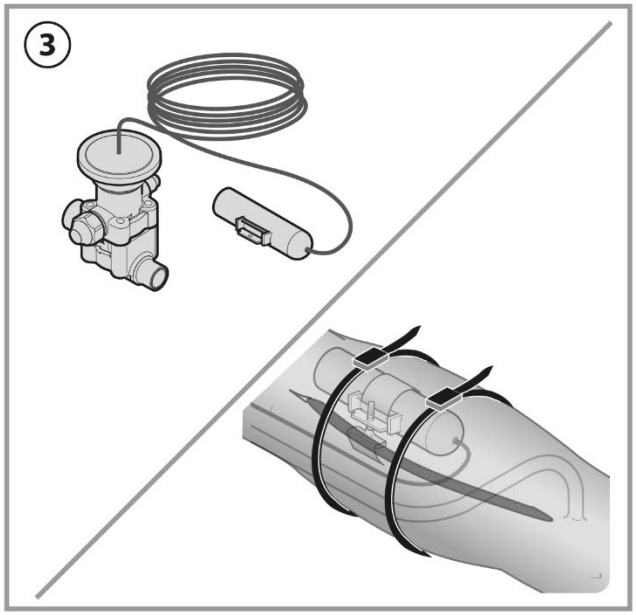
6.4.20 Thermostatich valve

Steps for replacing the Thermostatich valve:

139. Follow the procedure in paragraph [*Upper Panel*].
140. Remove the insulation pipe
141. Disconnected the bulb of thermostatic valve and out probe, from suction pipe
142. Wrap with a wet cloth the new thermostatic before to welding
143. Re setting the bulb and out probe evaporator in the same position of previous.
144. Reassembly all part using the inverse procedure.
145. Restore the insulation accurately. Use a cable tie to fix the insulation and the suction probe (Fig. 3).
146. Use cable ties to restore the wiring layout.



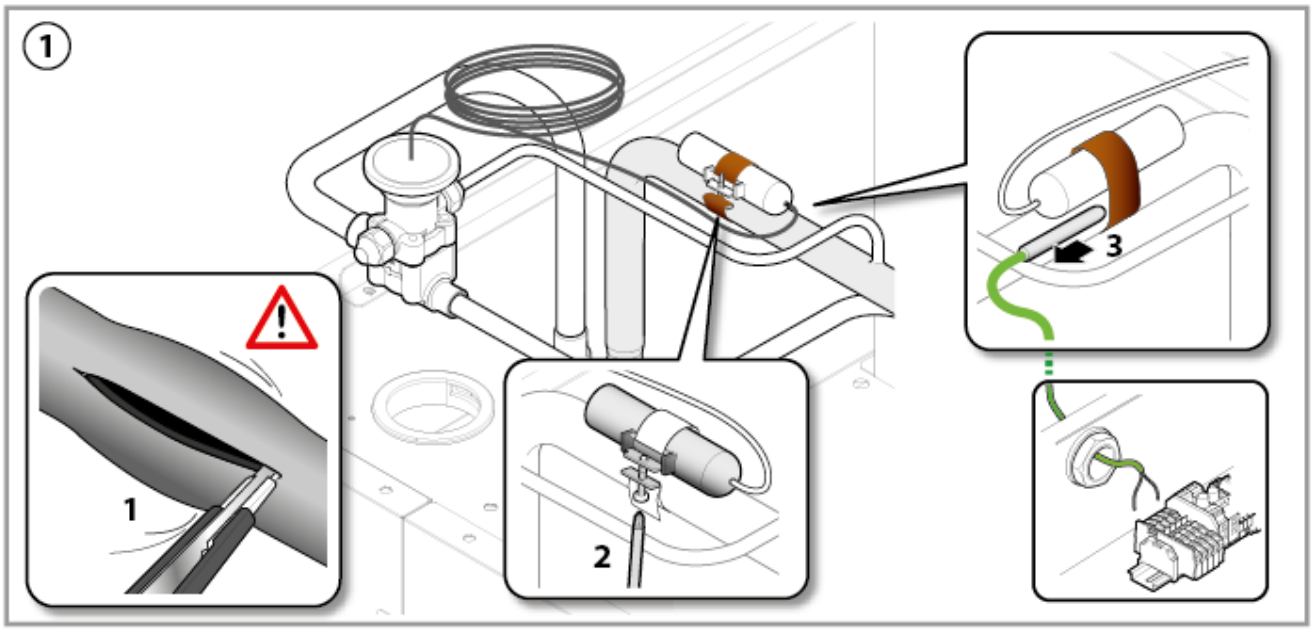


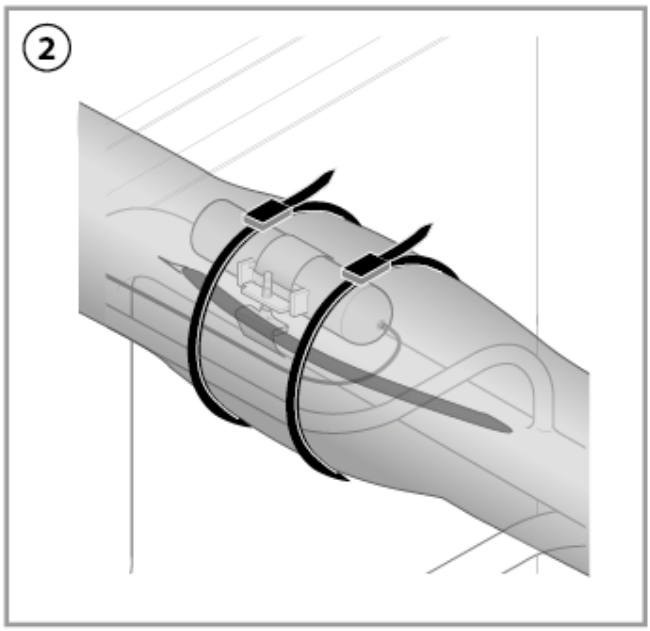


6.4.21 Outevaporator probe (green)

Steps for replacing the outevaporator probe:

147. Follow the procedure in the [*Upper Panel*] and [*Electrical Box*] paragraphs to reach the suction probe connector and disconnect it.
148. Cut the insulation near the thermostatich valve to reach the suction probe (Fig. 1 phase 1).
149. Unscrew the clamp of expansion valve bulb to release the suction probe bulb (Fig. 1 phase 2), then pull out the suction probe bulbe (Fig. 1 phase 3).
150. Insert the bulb of the new suction probe into the seat, then tighten the screw of the clamp. Do not overtight the screw in order to prevent any damage to the bulbs.
151. Restore the insulation accurately. Use a cable tie to fix the insulation and the suction probe (Fig. 2).
152. Use cable ties to restore the wiring layout.
153. Reassemble all the removed components following the inverse procedure.

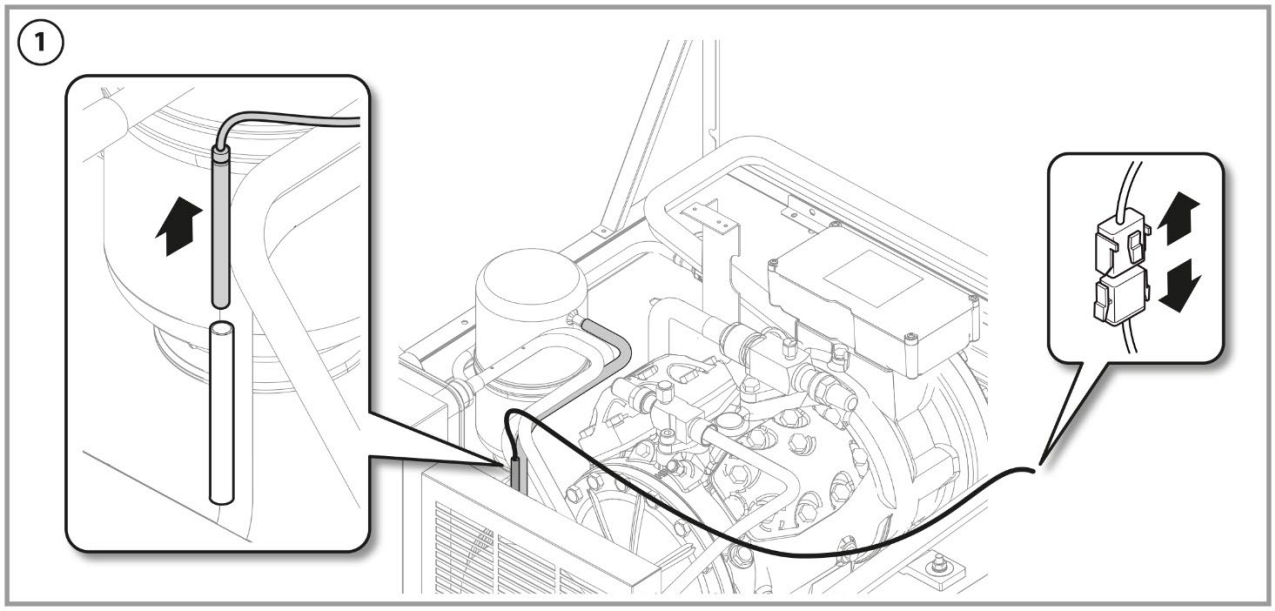




6.4.22 Condenser probe (black)

Steps for replacing the condenser probe:

154. Follow the procedure in the [*Upper Panel*] and [*Electrical Box*] sections to reach the probe connector and disconnect it.
155. Pull out probe from its position (Fig. 1).
156. Insert the bulb of the new probe into the seat.
157. Use cable ties to restore the wiring layout.
158. Reassemble all the removed components following the inverse procedure.



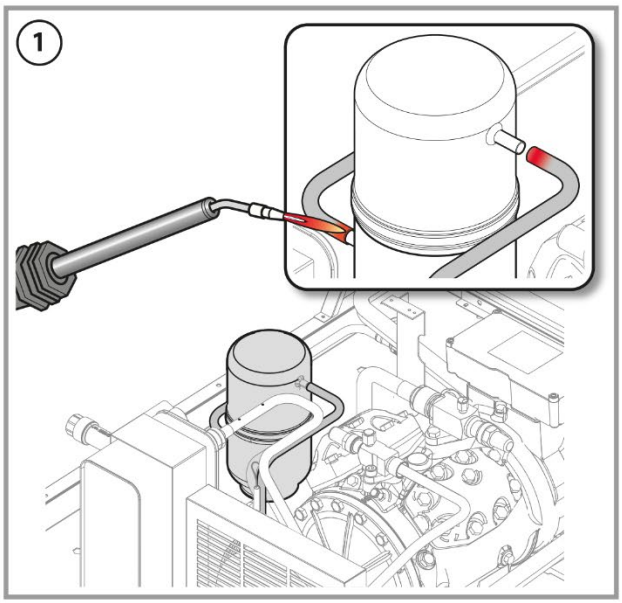
6.4.23 Tanic Receiver

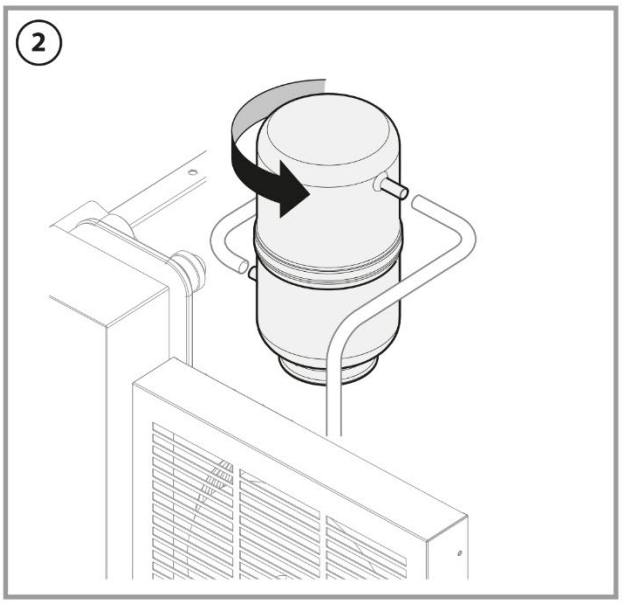
Steps for replacing the Tanic receiver:

ATTENTION!

Before replacing the Receiver, make sure that the suction valve and the exhaust gas valve are closed and follow the important procedures shown on page 103.

159. Remove the front panel as explained in the paragraph [*Upper Panel*].
160. Desolder the two connection pipes to the receiver, as shown in figure 1.
161. Turn the receiver counterclockwise to remove it from its seat (Fig. 2).





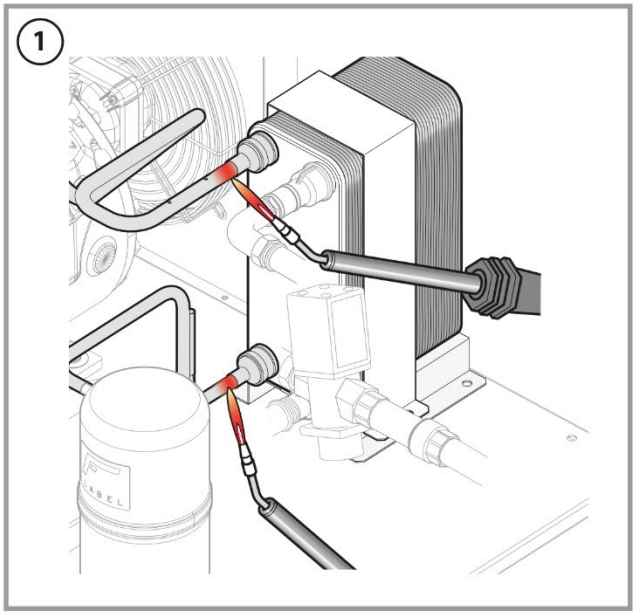
6.4.24 Condenser

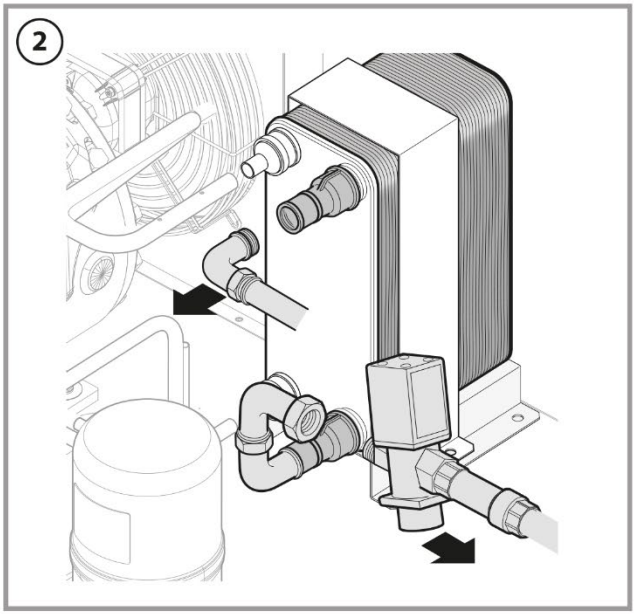
Steps for replacing the Condenser:

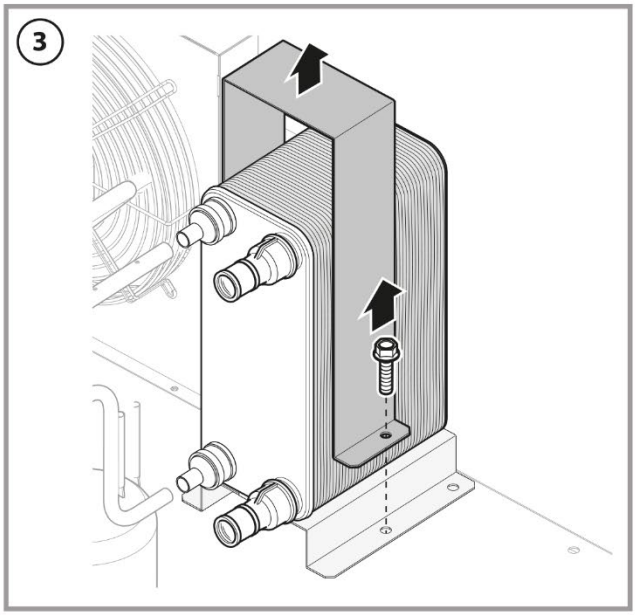
ATTENTION!

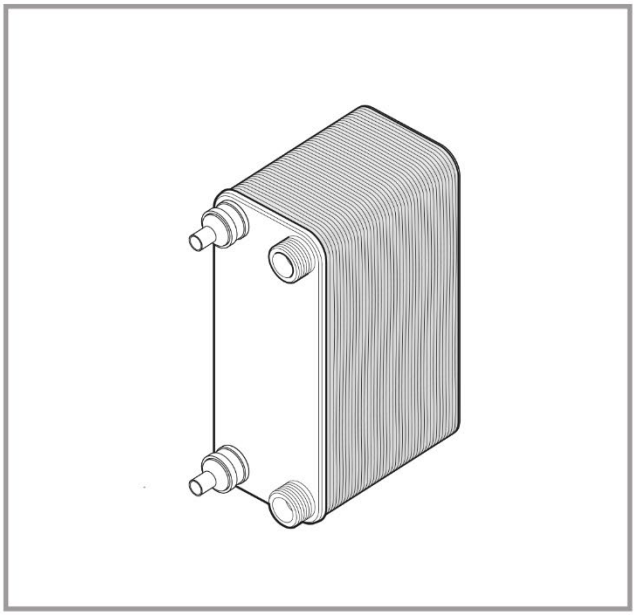
Before replacing the condenser, make sure that the suction valve and the exhaust gas valve are closed and follow the important procedures shown on page 103.
Make also sure you have closed the water circuit.

162. Remove the front panel as explained in the paragraph [*Upper Panel*].
163. Desolder the two condenser connection pipes, as shown in figure 1.
164. Disconnect the water inlet and outlet pipes, as shown in figure 2.
165. Unscrew the two screws of the condenser holding bracket.





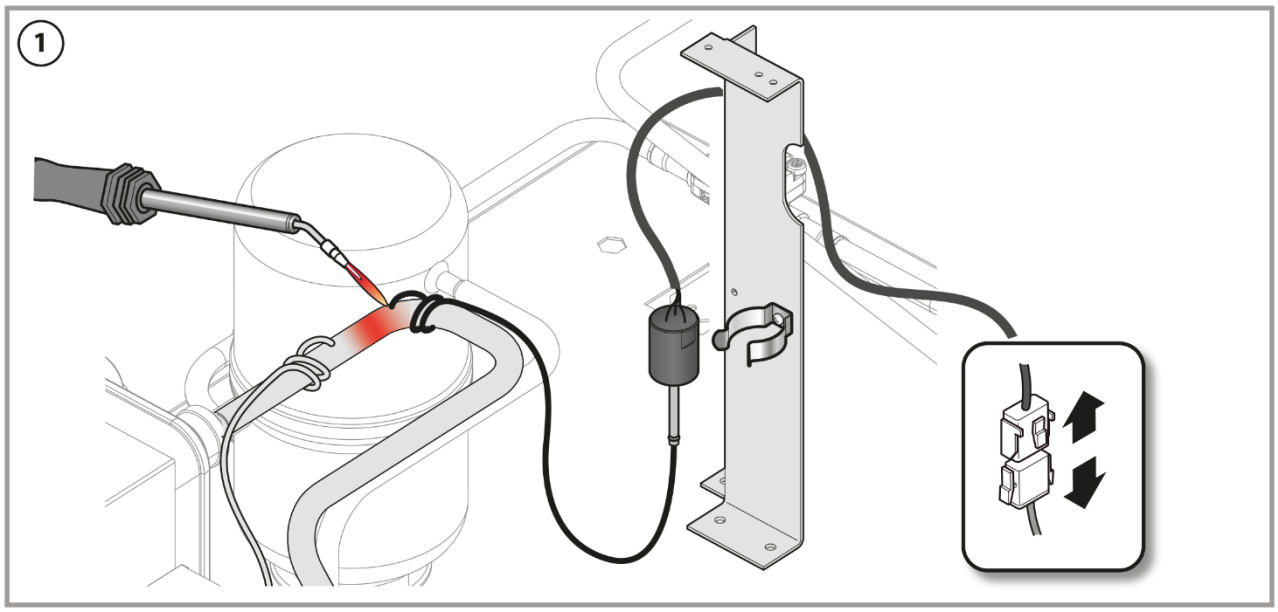




6.4.25 Pressure switch

Steps for replacing the Pressure switch:

166. Disconnect the cable from the electrical box, as in the [*Electrical Box*] procedure.
167. Desolder the bulb from the tube.



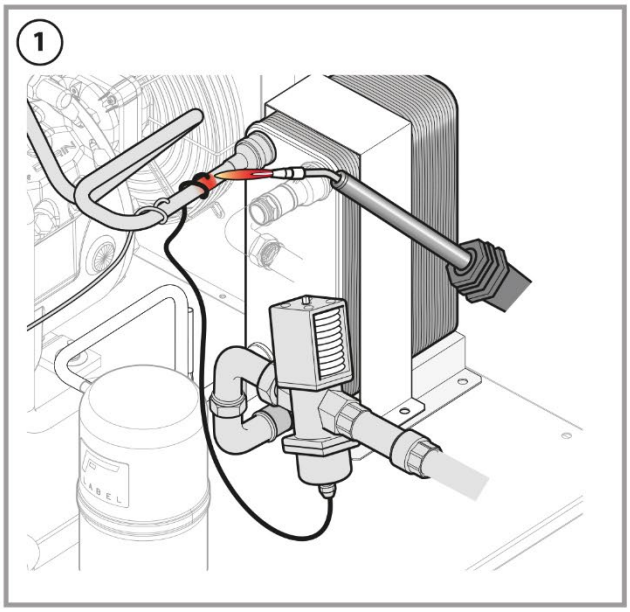
6.4.26 Water thermostatic valve

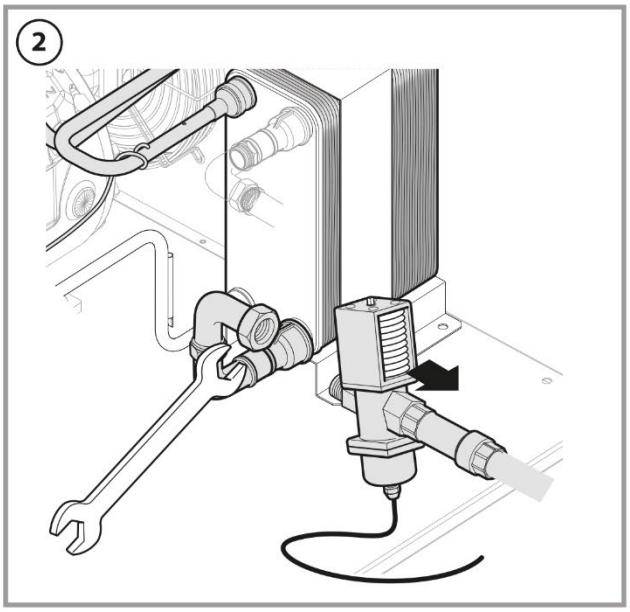
Steps for replacing the water thermostatic valve:

ATTENTION!

Make sure you have closed the water circuit.

168. Close the water inlet.
169. Desolder the bulb from the Condenser tube (figure 1)
170. Unscrew the valve sealing nut (figure 2)

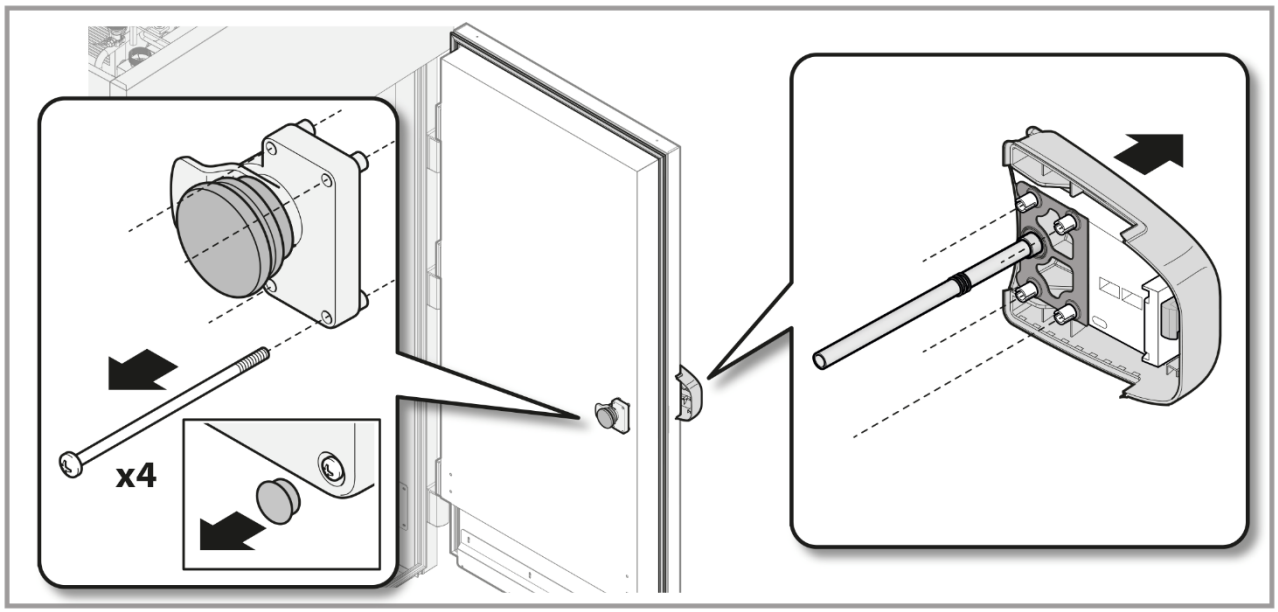




6.4.27 Handle

Steps for replacing the handle:

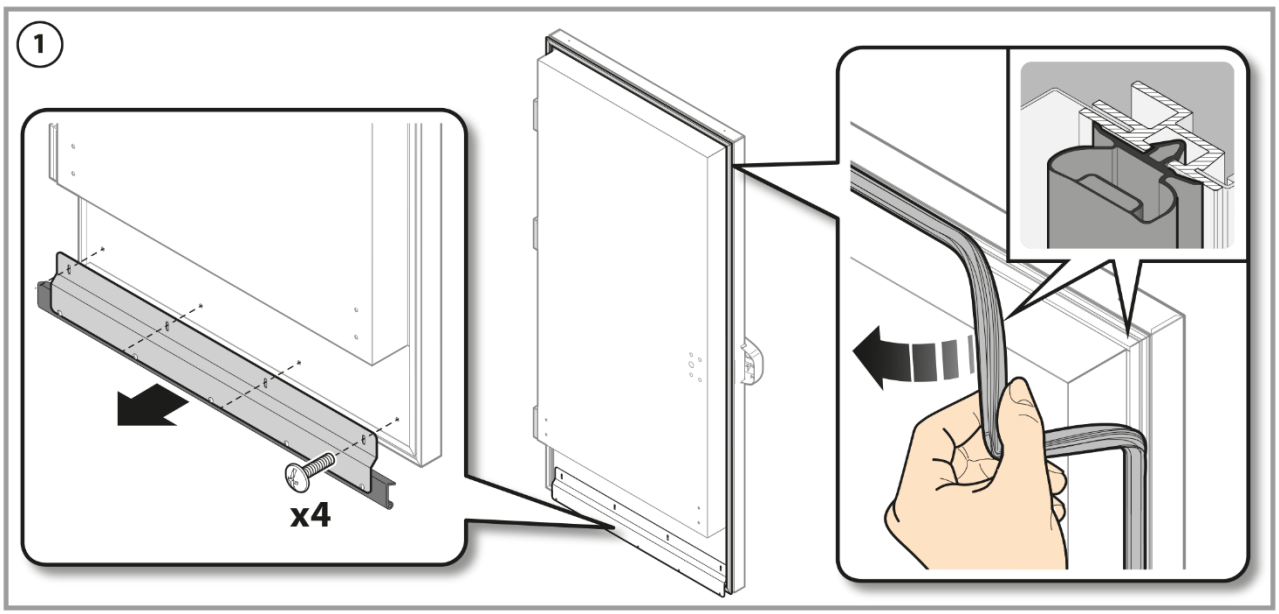
171. Remove the screw caps.
172. Unscrew the 4 handle retaining screws.



6.4.28 Door gasket

Steps for replacing the Door gasket:

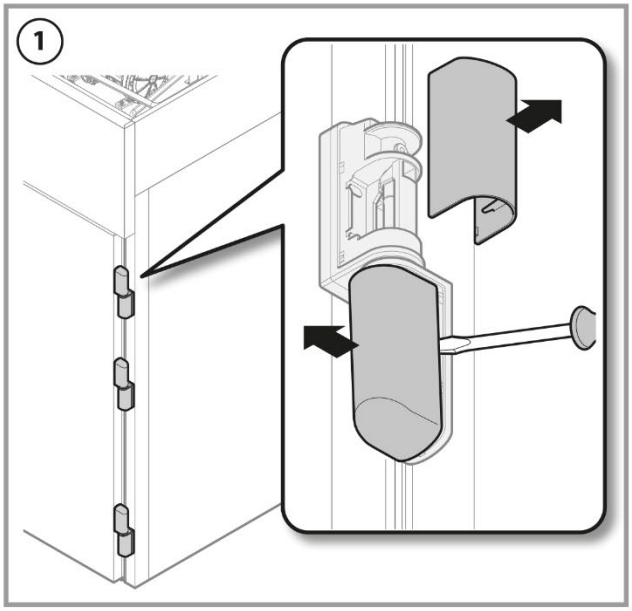
173. Remove the 4 screws that hold the lower seal holder.
174. Pull out the gasket from the groove (Fig. 1)
175. Install the new one by pushing it back into the groove (see Fig. 2 for the proper insertion).

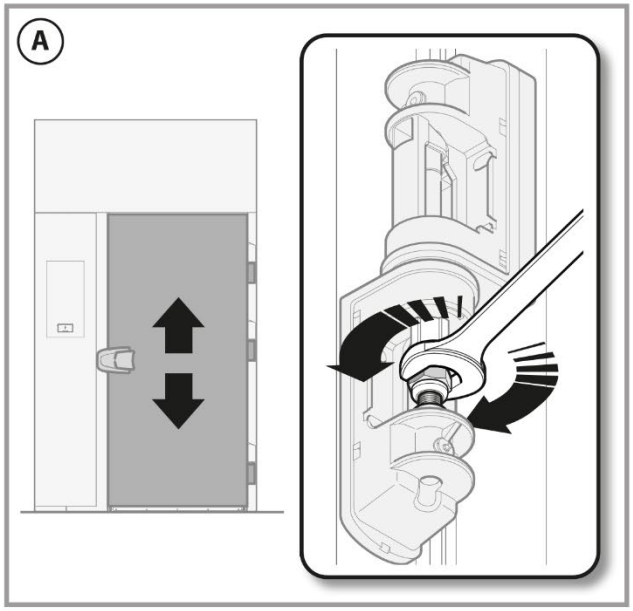


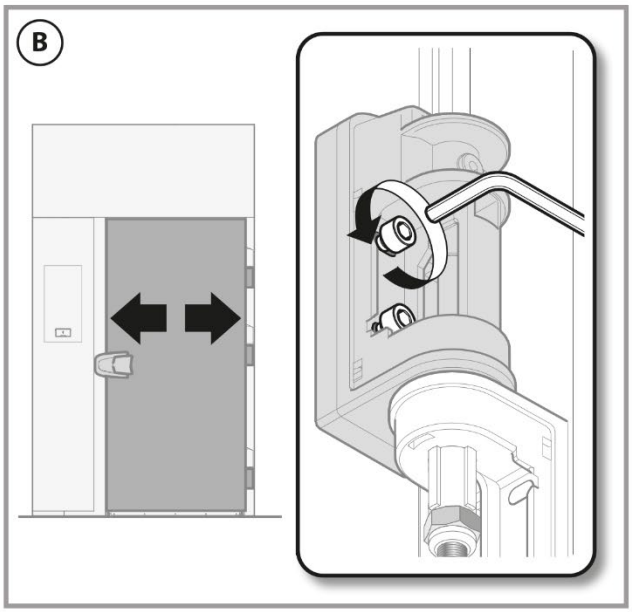
6.4.29 Door hinges

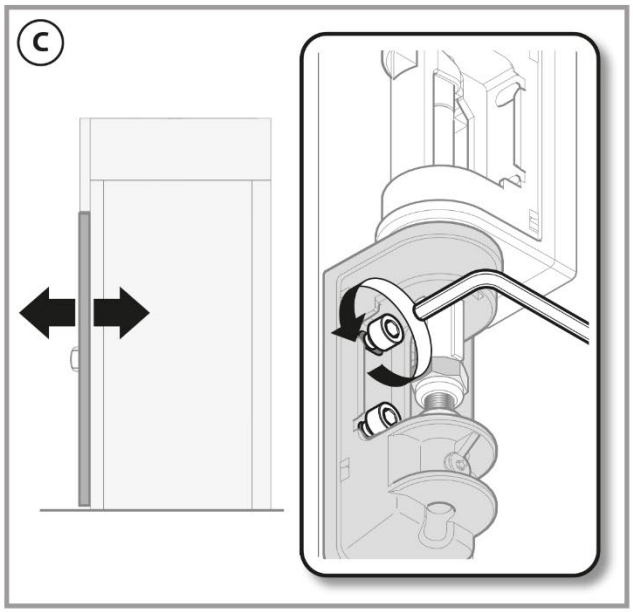
Step to disassemble and adjust the hinges:

176. Remove the hinge covers by levering with a screwdriver (Fig.1).
177. To adjust the door vertically, adjust the nut **(Fig. A)** turning it clockwise or counterclockwise.
178. For the horizontal adjustment of the door, loosen the 4 screws of each hinge **(Fig. B)**. Once the desired position has been obtained, close all the screws.
179. To adjust towards the inside or outside of the door, loosen the 4 screws of each hinge **(Fig. C)**. Once the desired position has been obtained, close all the screws.





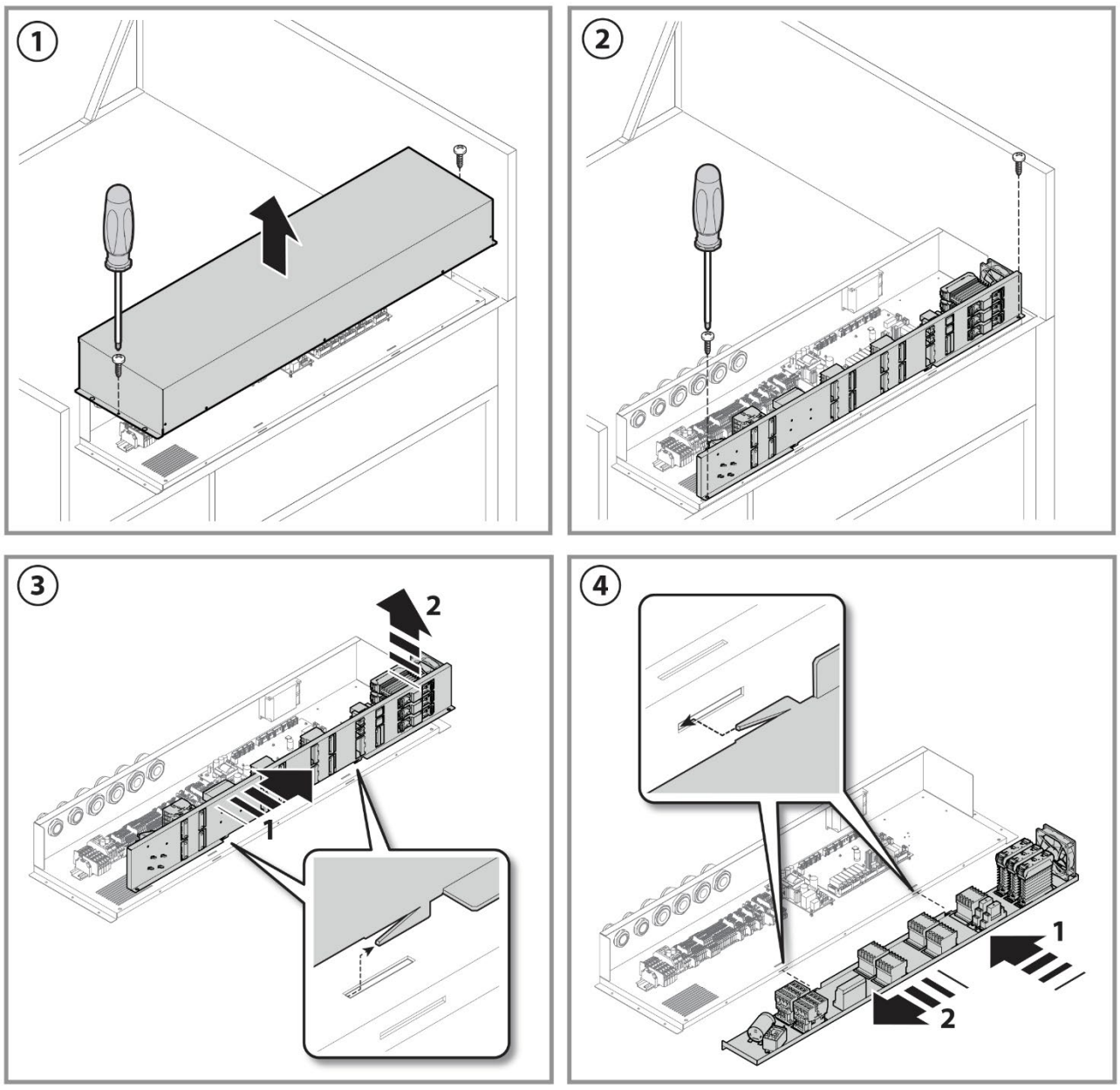




6.4.30 Electrical box

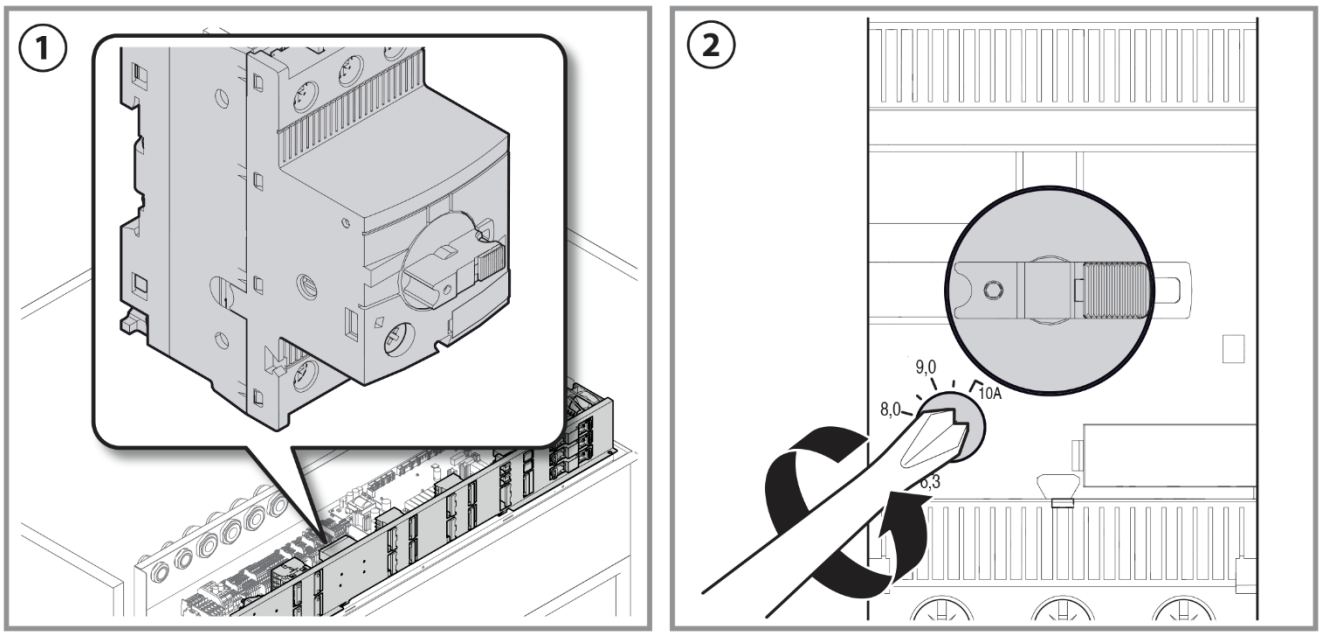
Steps for replacing the Electrical box:

180. Remove the front panel as explained in the paragraph [*Upper Panel*].
181. Unscrew the screws on the lower edge of the box covering panel (Fig. 1).
182. Unscrew the 2 fixing screws of the front support (Fig. 2).
183. Move the front support to the right and lift it (Fig. 3).
184. Hook the front support into the slots at the front (Fig. 4).



6.4.31 Motor protection

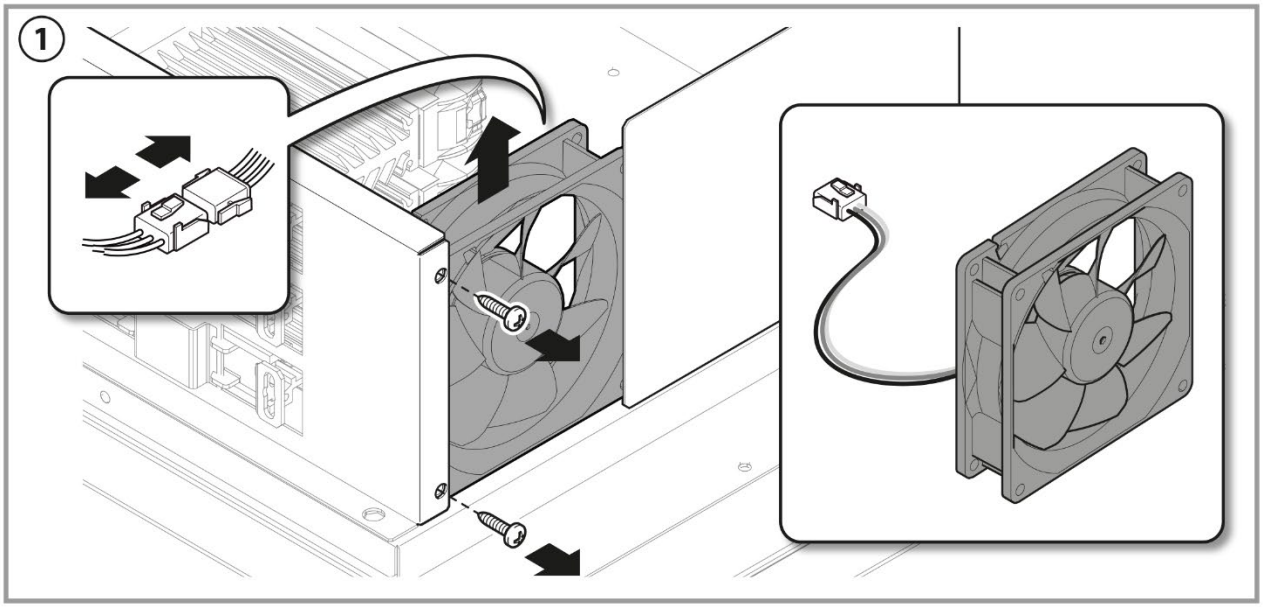
Steps to adjust the motor protection:



6.4.32 Electric box fan

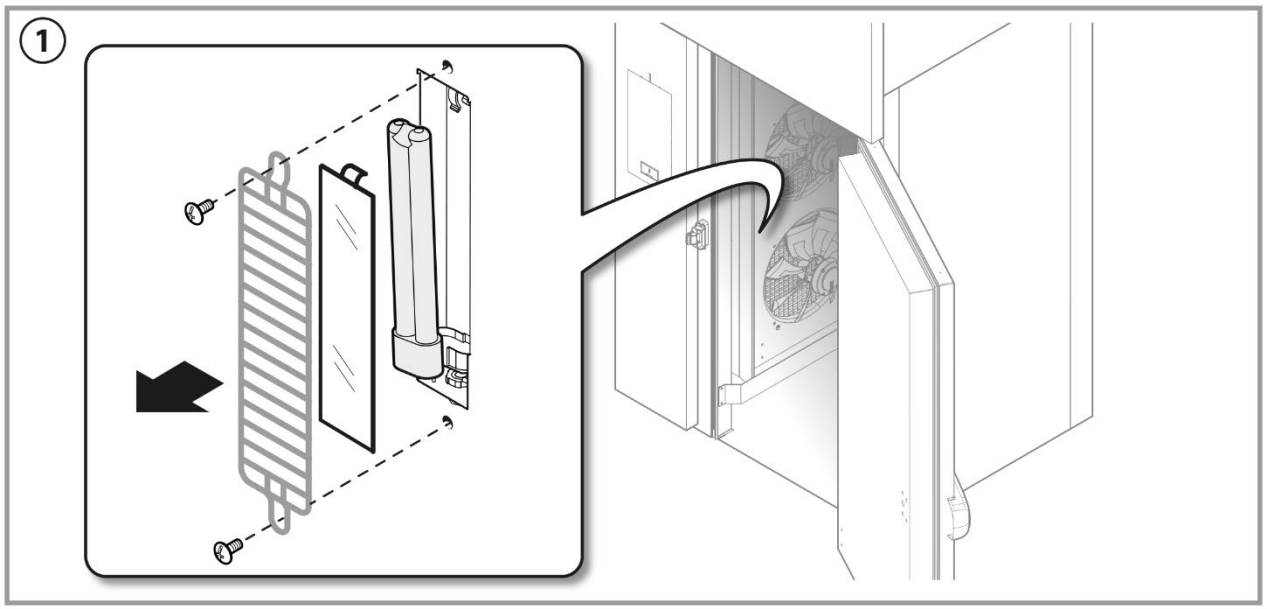
Steps for replacing the Electrical box fan:

185. Remove the front panel as explained in the paragraph [*Upper Panel*].
186. Follow the procedure described in the paragraph *[Electrical box].*
187. Unscrew the two fan sealing screws.
188. Disconnect the connector



6.4.33 LED lamps

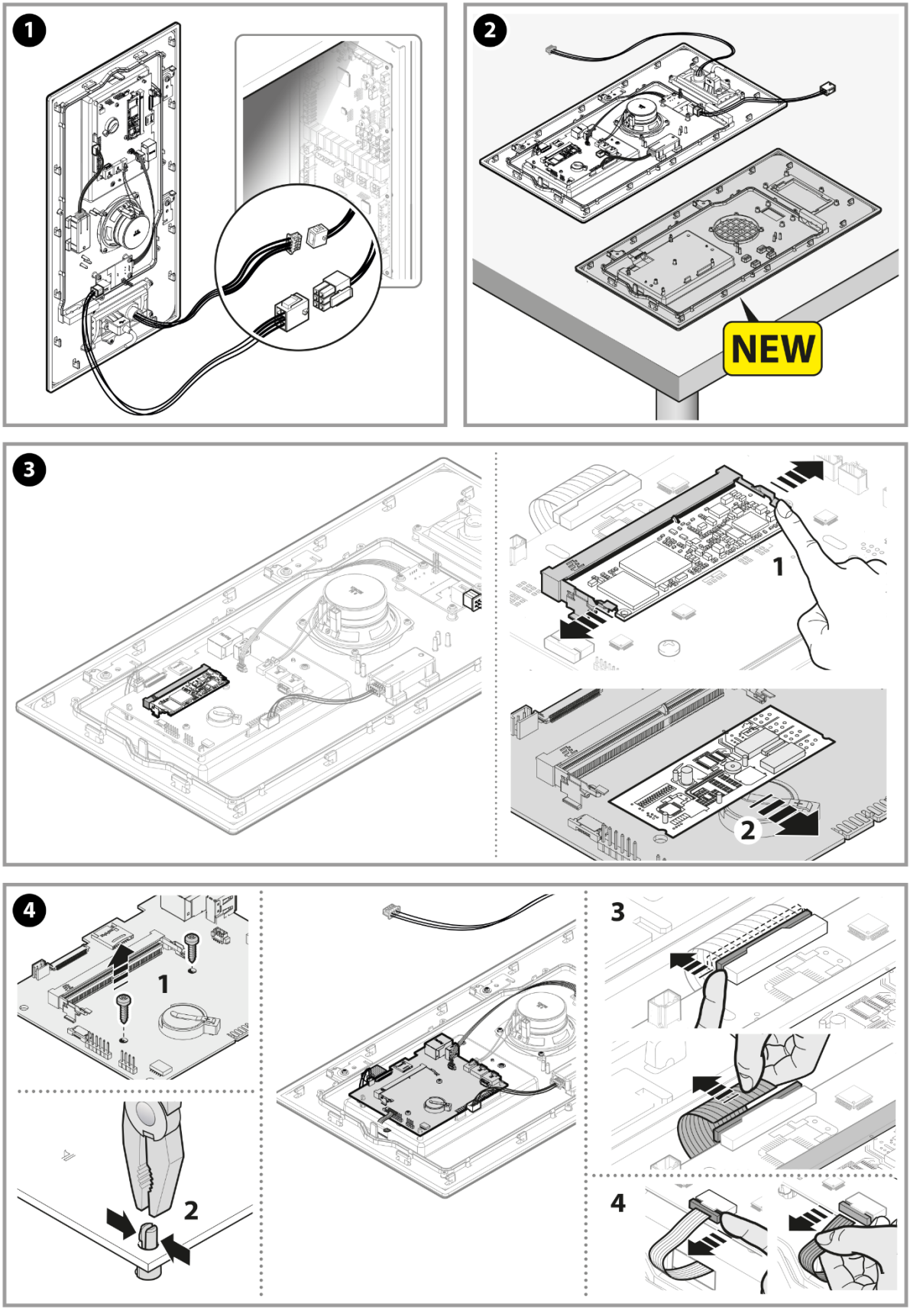
Steps for replacing the LED lamps:

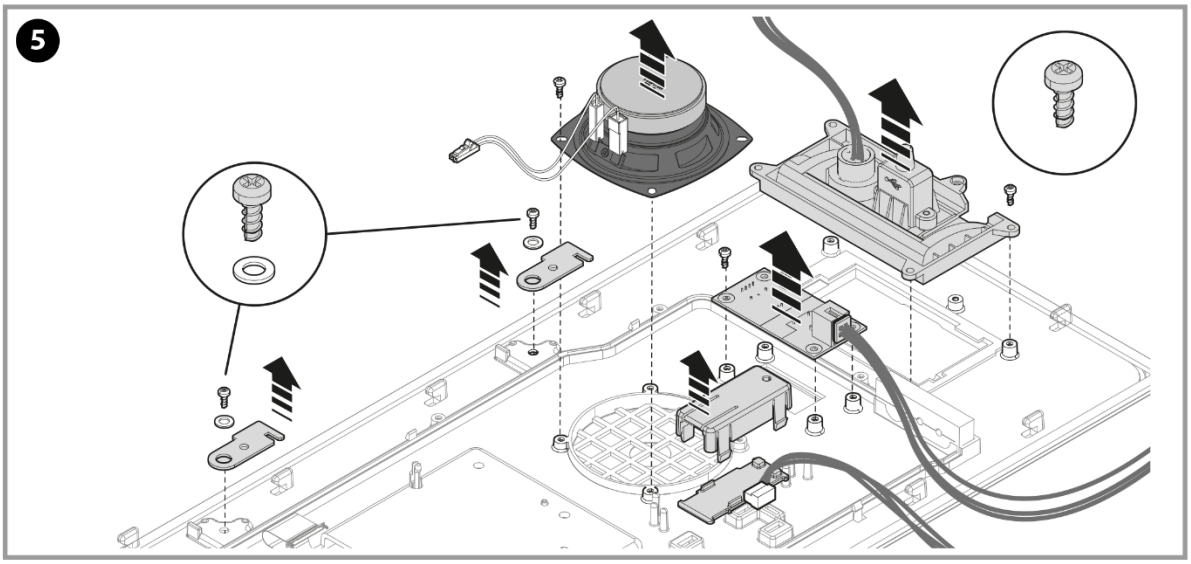


6.4.34 Access display and replacement of mambrane sticker

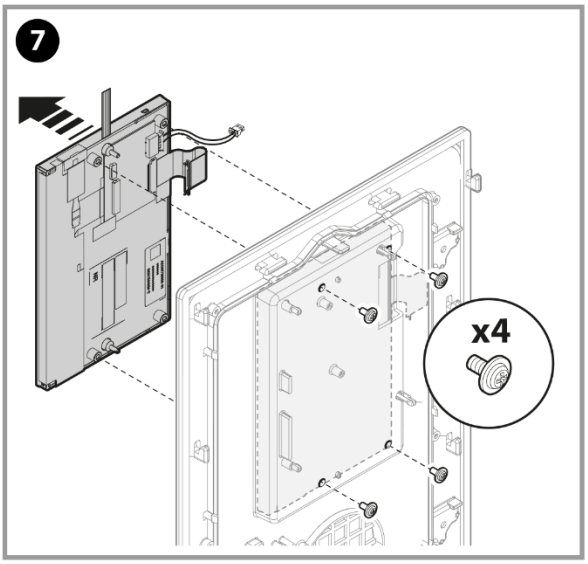
ATTENTION!

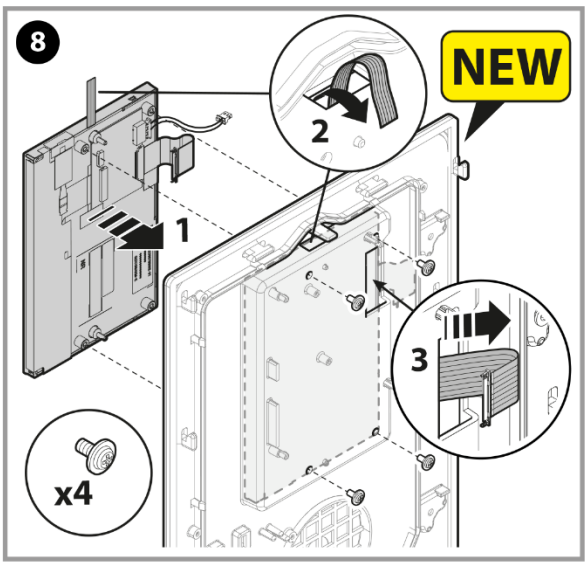
The replacement of the membrane sticker requires also the replacement of the frame, this because the glue of the membrane cannot be removed as it is a particular adesive glue/resin and once exposed to air becomes very difficult to take off and clean.

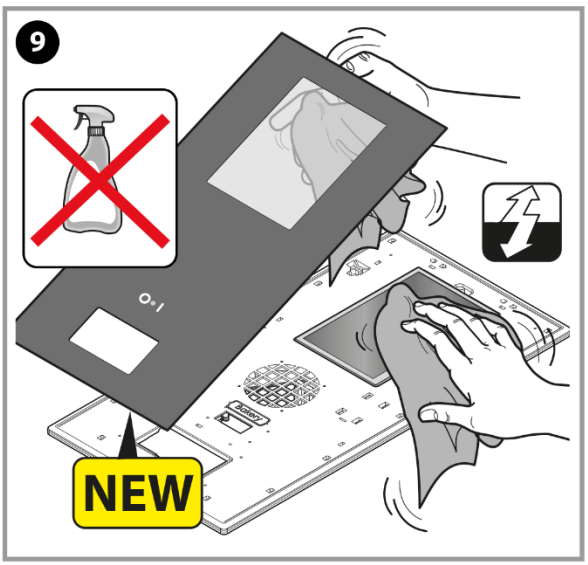


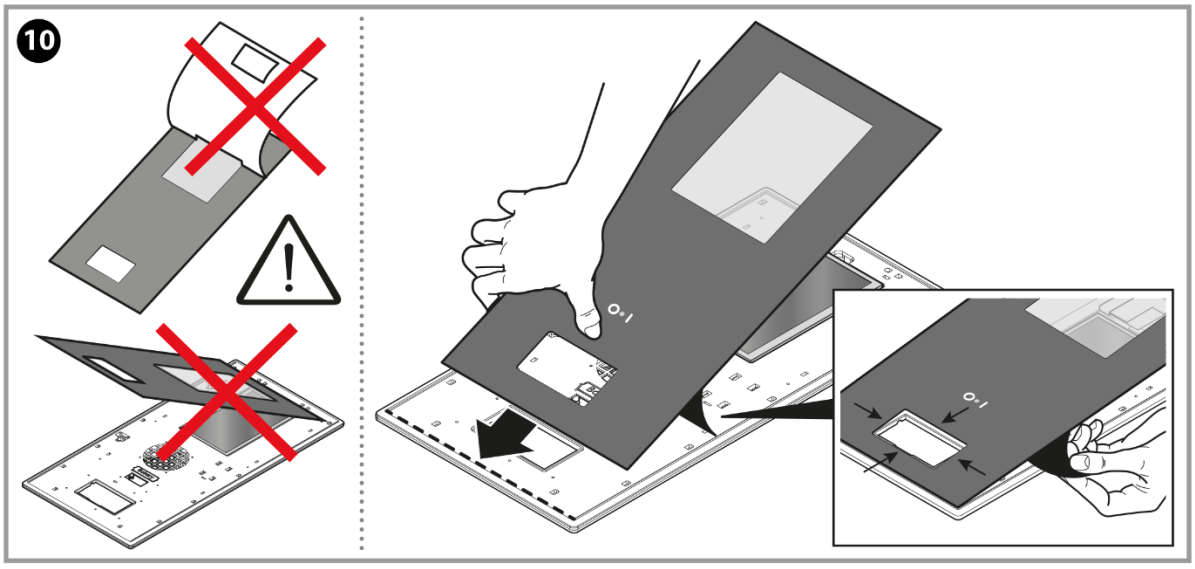

5

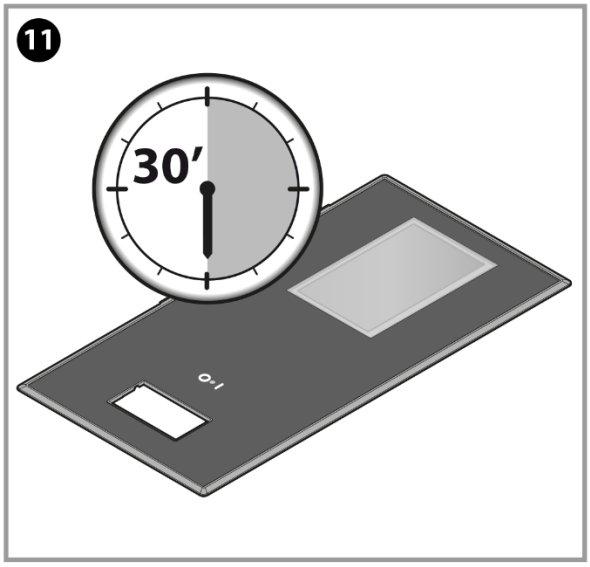

6

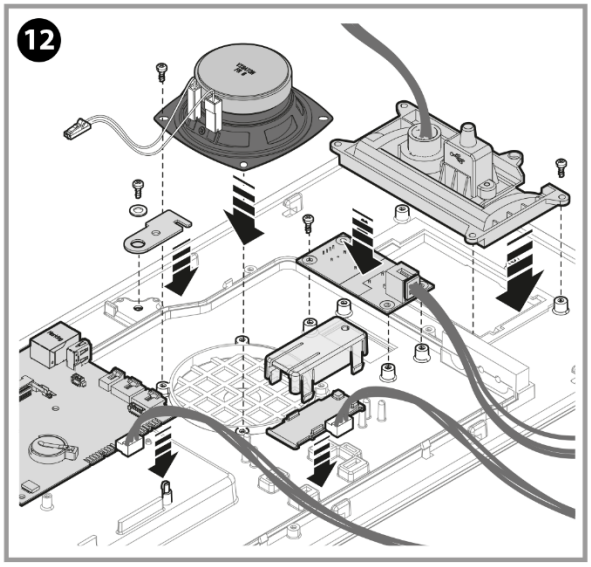

7
x4

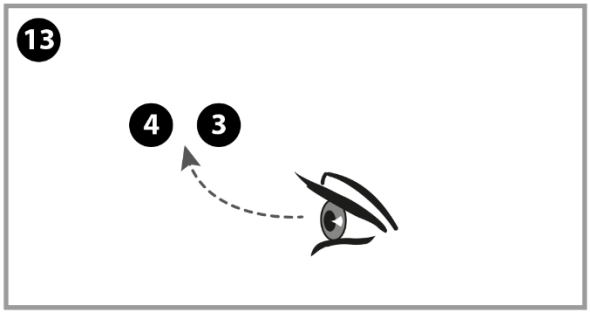

8
NEW
2
1
3
x4


9
NEW









ATTENTION!

11* = the particular adhesive glue/resin of the membrane, once exposed to air, becomes very difficult to remove. The reaction will be complete in approx. 30 minutes. In case of need to realign the new membrane time is very limitated.

6.5 PREVENTIVE MAINTENANCE PLAN

6.5.1 Refert to document “Check list preventive maintenance

7. RELATED DOCUMENTS

7.1 EXPLODED VIEW

Please refer to the spare parts catalogue of the unit:
Code n°595R520.. BCF 20 gn 1/1
Code n°595R519.. BCF 20gn 2/1

7.1.1 List Of The Vital and Wear&Tear Parts

Please refer to the Spare Parts Catalogue of the appliance, column “**V = Vital spare part” – “W&T = Wear & Tear part”**

7.1.2 List Of Available Accessories

Please refer to the accessories section on WEB.

7.1.3 List Of Consumables

[refert to spare part catalogue]

7.1.4 List Of Spares Wear And Tear

[refert to spare part catalogue]

7.2 ELECTRICAL WIRING DIAGRAM

Electrical wiring diagram is located in the paragraph 4
Each components has link the electrical wirind diagram
For specific wiring diagram refer to web to single unit:

7.3 PARAMETERS LIST:

Parameter ID	Parameter	Description	Table	Min	Max	Default
11	**FMAn**	enables/disables the Manual environment (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
13	**Faut**	enables/disables the Automatic environment (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
15	**FPRO**	enables/disables the Program environment (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
17	**FHGI**	enables/disables the Hygiene environment (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
19	**FSHU**	enables/disables the Skyhub environment (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
21	**FAgN**	enables/disables the Agenda environment (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
23	**FSdE**	Enable Skyduo (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	0
26	**FSCn**	Show consumption estimation (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
27	**SCnE**	Show consumption estimation (user setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
30	**FENV**	Selects the default environment to be loaded at startup	{0, "Manual"} {1, "Automatic"} {2, "Programs"} {3, "Hygiene"} {4, "Settings"}	0	4	0
31	**FAPS**	Automatic – preset saving (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
32	**AFSb**	Automatic – show recipe graph form (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	0
34	**APMF**	Automatic – preset management (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
75	**FMt**	Eenables/disables the MultiTimer feature(factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
81	**Mtrt**	MultiTimer temperature recovery maximum duration		0	28800	300
94	**PrH**	Delta for cavity set in preheating/precooling phase respect to the first phase selected		0	10	6
95	**FduS**	Eenables/disables the the format mm:ss to input the phase duration (factory setting)	{0, “Disabled”} {1, “Enabled"}	0	1	1
104	**CFd**	Sets the default speed for the evaporator fan in cooling cycles		1	7	7
105	**HFd**	Sets the default speed for the evaporator fan in heating cycles		1	7	2
106	**COFd**	Sets the default speed for the evaporator fan in Conserve cycles		1	7	4

Parameter ID	Parameter	Description	Table	Min	Max	Default
107	**CFon**	Sets evaporator fan ON time when compressor is OFF. Valid only for Conserve cycles		0	18000	120
108	**CFof**	Sets evaporator fan OFF time when compressor is OFF. Valid only for Conserve cycles		0	18000	900
109	**snLC**	Minimum value for cavity set point temperature in cooling cycles		-50	125	-41
110	**snHC**	Maximum value for cavity set point temperature in cooling cycles		-50	125	10
111	**snLH**	Minimun value for cavity set point temperature in heating cycles		-50	125	-18
112	**snHH**	Maximum value for cavity set point temperature in heating cycles		-50	125	40
113	**SCA**	Cavity set point for soft chilling cycle		-50	125	0
114	**SCH**	Cavity set point for hard chilling cycle		-50	125	-20
115	**HSP**	Maximum value for cavity set point temperature in positive conserve		-50	125	10
116	**MSP**	Minimum value for cavity set point temperature in positive conserve and Maximum value for cavity set point temperature in negative conserve		-50	125	0
117	**LSP**	Minimum value for cavity set point temperature in negative conserve		-50	125	-25
121	**CAL**	Cavity probe calibration		-50	50	0
123	**dIFP**	Positive differential for compressor re-start. Reached the set-point, the compressor will start again at 'Setpoint+DIFP'.		0	50	1
124	**dIFN**	Negative differential for compressor stop. Reached the setpoint, the compressor will start again at 'Setpoint-DIFN'.		0	50	1
125	**dFHC**	Hysteresis to switch from heating to cooling when both the modalities are enabled		0	50	2
126	**dFCH**	Hysteresis to switch from cooling to heating when both the modalities are enabled		0	50	5
127	**nFP**	Defines the total probes in the food probe for the appliance		0	6	3
128	**EFP**	Defines the number of separated food probes in the applicance 0: no probe available 1: only one food probe that can be 1,3 or 6 probes (according to PAR_NUM_FOOD_PRB) 2: two food probes that can be only with 3 probes each (PAR_NUM_FOOD_PRB=6) 3: two food probes that can be only with 1 probe each (PAR_NUM_FOOD_PRB=3)		0	3	1
130	**dsr**	Delay time before food probe or time cycle selections after evaporator fans start		0	240	30

Parameter ID	Parameter	Description	Table	Min	Max	Default
131	**dPS**	Delta beetwen cavity and food probe temperature during food probe recognition		0	60	10
133	**Eft**	Configures appliance evaporator fans motor type. If motor without speed regulation is selected, eletrical wiring and user interface will be adapted accordingly	{0, “No speed regulation”} {1, “Internal inverter"} {2,"External inverter}	0	2	1
135	**Efn**	Number of evaporator fans according to appliance model. Set 0 to disable fans diagnostic		0	3	2
145	**CPA**	Cruise optimization percentage according to estimated time. Set 0 to disable optimization		0	100	0
146	**dFRS**	Door frame activation set temperature		-50	100	10
147	**CdP**	Minimum delay between consecutive compressor activations		0	240	120
148	**CoFt**	Maximum n° of hours with compressor OFF. After this time the compressor will start with impluse start-up. Set 0 to disable the impulse start-up		0	240	48
149	**CnCy**	Number of impluses at compressor startup		1	240	12
150	**CtOn**	ON time during impluse start-up		0	240	0,8
151	**CtOF**	OFF time during impluse start-up		0	240	8,0
164	**CPE**	enables/disables the compressor alarm diagnostic	{0, “Disabled”} {1, “Enabled"}	0	1	1
165	**PAt**	Max number compressor protection activations before to stop the cycle		1	240	10
166	**PAL**	Max compressor protection duration before to stop the cycle		0	600	10
167	**CPt**	Defines the compressor diagnostic type	{0, “Safety switch”} {1, “Thermic"}	0	1	1
168	**dLEM**	OFF delay of compressor after OFF flow valve during Positive/Negative conserve		0	240	4
169	**dLEC**	OFF delay of compressor after OFF flow valve during chilling/freezing cycles		0	240	4
170	**dLCM**	ON delay of flow valve during Positive/Negative conserve		0	240	4
171	**dLCC**	ON delay of flow valve during chilling/freezing cycles		0	240	4
172	**bYVE**	enables/disables the additional bypass flow valve	{0, “Disabled”} {1, “Enabled"}	0	1	0
173	**bYVT**	The additional bypass valve is activated if Out evaporator Temperature is greater or equal than this parameter.		-50	125	-10
174	**oEEC**	Calibration applied when the cavity probe is used to drive bypass valve (out evaporator error)		-50	125	0

Parameter ID	Parameter	Description	Table	Min	Max	Default
175	**FSt**	When the Out Evaporator temperature is higher than this parameter the evaporator fan is stopped (evaporator fan stop functionality)		-50	125	20
176	**CFSt**	When the cavity temp is lower than this parameter the evaporator fan stop functionality is ignored		-50	125	20
177	**CoTA**	Defines the condenser temperature value for the Condenser High temperature alarm		-50	125	70
178	**L0Gt**	Service data log sample time. If 0 log features is disabled		0	3600	1
179	**tPrn**	User HACCP data log sample time.		60	3600	60
180	**EStc**	Enables the Germicidal cycle	{0, “Disabled”} {1, “Enabled"}	0	1	0
181	**SLd**	Germicidal Cycle duration		0	600	30
182	**SHt**	Cavity set point temperature in germicidal cycles		-50	125	40
183	**dSt**	Stop Evaporator temperature for Defrost		-50	125	3
184	**dto**	Timeout for defrost		0	600	30
185	**dCt**	If Cavity set point temperature is lower than this parameter, periodic evaporator defrost will not be active. Valid for Turbo cooling and positive/negative holding		-50	125	3
186	**SdIn**	Time interval between defrosts during turbo cooling cycle		1	240	8
187	**dIn**	Time interval between defrosts during positive/negative holding		1	240	12
188	**Iddl**	Delay for the first defrost after beginning of positive/negative holding. Set 0 to disable first defrost		0	600	2
189	**drt**	Dripping time after defrost		0	3600	180
190	**drFd**	Evaporator fan delay after dripping time		0	3600	120
191	**dCS**	Cavity set point for drying cycles		-50	125	40
195	**PFt**	Power failure alarm. The alarm popup is shown if the power failure duration is greater than this parameter		0	600	10
196	**Ady**	Cavity High/Low temperature duration: the warning is triggered if cavity temperature is above the threshold for all this time interval (Valid only for holding cycles)		0	600	60
197	**Aor**	Cavity High/Low temperature warning delay after cycle start. (Valid only for holding cycles)		0	600	60
198	**dFO**	Cavity High/Low temperature warning delay after defrost end. (Valid only for holding cycles)		0	600	35

Parameter ID	Parameter	Description	Table	Min	Max	Default
199	**HAC**	Cavity High temperature threshold: the warning is triggered if Cavity Temperature > (Cavity Set + HAC). Valid only for holding cycles.		-50	125	5
200	**LAC**	Cavity Low temperature threshold: the warning is triggered if Cavity Temperature < (Cavity Set - LAC). Valid only for holding cycles.		-50	125	5
201	**Afd**	Cavity High/Low temperature differential: the High temperature warning is resettled if Cavity Temperature is less or equal than (Cavity Set + HAC - Afd). Low Temperature warning is resettled if Cavity Temperature is greater or equal than (Cavity Set - LAC + Afd)		-50	125	1
202	**bCoF**	enables/disables the fan to cooling eletronic boards	{0, “Disabled”} {1, “Enabled"}	0	1	1
203	**ERLO**	External resistor load to be used for energy consumption calculation. [ohm]		0	50000	0
204	**NVOL**	Nominal appliance voltage supply. Used for energy consumption calculation (heaters) [V]		0	500	230
205	**POFF**	Power cunsumption offset . Used for energy consumption calculation [W]		0	50000	0
206	**REm**	Defines if the cooling unit is remote or on board	{0, “On board”} {1, “Remote"}	0	1	0
207	**APPM**	Appliance model	{0, "LW 30 Kg"} {1, "LW 50 Kg"} {2, "LW 70 Kg"} {3, "LW 100 Kg"} {4, "LW 150 Kg"} {5, "LW 200 Kg"}	0	5	0
208	**APPT**	Appliance type: defines if the appliance is only a blast chiller (BC) or a blast chiller and freezer (BCF)	{0, "BC"} {1, "BCF"}	0	1	1
210	**dEMo**	Enables/disables different demo modes. · Disabled: the appliance behaves normally; · Basic: the appliance simulates the normal behaviour. All temperatures are internally simulated, there is no need of an ACU connection; · Exhibition: the appliance simulates the normal behaviour except the door sensing which is retrieved from real sensor ; · Development: all the appliance features are simulated. Temperatures and digital inputs are sent to target through a serial port	{0, “Disabled”} {2, “Exhibition”} {3, “Development”} {4, “Remote view”}	0	4	0

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