SERVICE MANUAL
FOR
PREMIER BLAST CHILLERS

KPS21SG
KPS21SGU

KPS42SG
KPS42SGR

KPS72SG
KPS120SG

3513310_rev.1

ALL THE OPERATIONS DESCRIBED IN THIS MANUAL MUST BE PERFORMED BY QUALIFIED PERSONNEL AUTHORISED TO WORK ON THE MACHINE.

THE OPERATOR MUST TAKE ALL PRECAUTIONS AND UTILISE ALL DEVICES NECESSARY FOR SAFE OPERATION.

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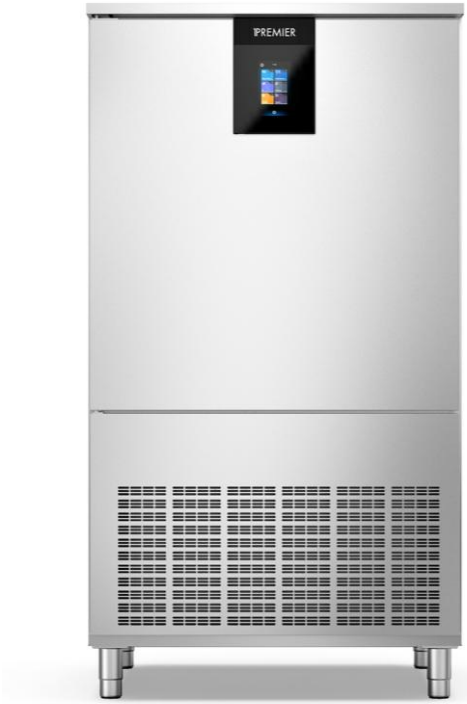
1. PRODUCT DESCRIPTION

1.1. PRODUCT PHOTO

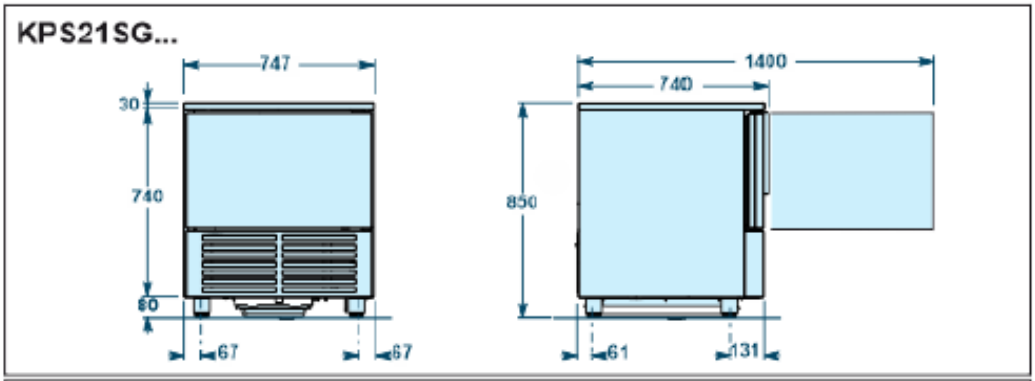
KPS21SG…

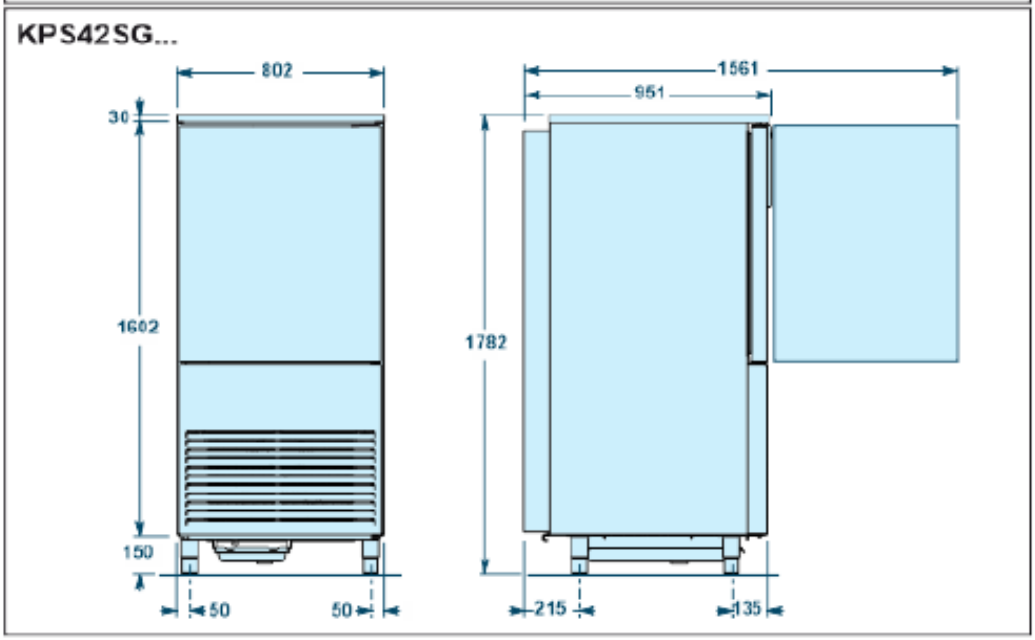
KPS72SG
KPS120SG

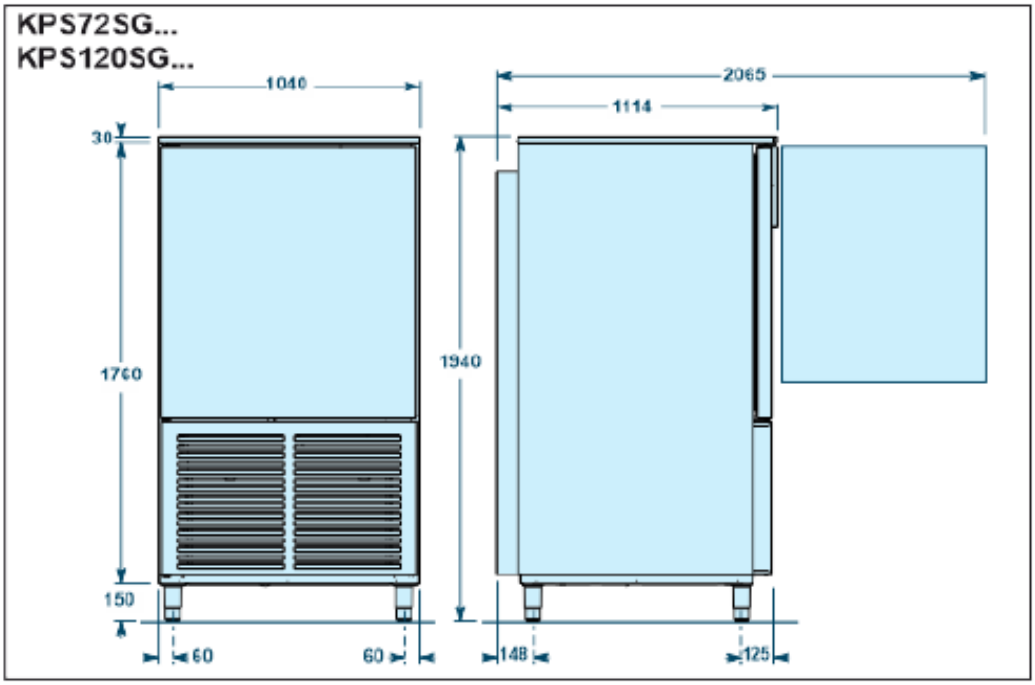


KPS42SG…

1.2. TECHNICAL DATA SHEET







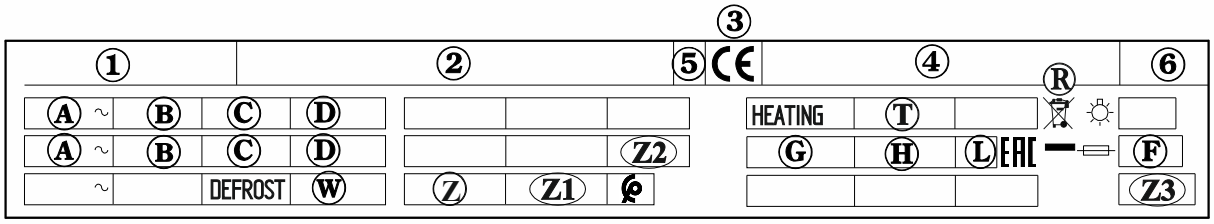
Model	KPS21SG KPS21SGU	KPS42SG KPS42SGR	KPS72SG	KPS120SG
Gross weight	125	200	305	305
Net weight	115	175	285	285
Dimensions	747x740x850	802x951x1782	1040x1114x1940	1040x1114x1940
Capacity				
Mass /cycle [kg] (+90°C ÷ +3°C)	25	50	72	120
Mass /cycle [kg] (+90°C ÷ -18°C)	15	25	40	60
Internal volume [l]	90	195	480	480
Rails	GN1/1 600x400	GN1/1 600x400	GN2/1 600x800	GN2/1 600x800
Trays	5	10	10	10
Power supply				
Voltage [V]	230V 1N~	400V 3N~	400V 3N~	400V 3N~
Frequency [Hz]	50	50	50	50
Intensity [A]	4,2	3,9	4,2	5
Power input [W]	900	1800	2050	2500
Refrigerating unit				
Refrigerating power [W]	935 **(A)**	935+935 **(A)**	1317+1317 **(A)**	1586+1586 **(A)**
Evaporation temperature [°C]	-23,3	-23,3	-23,3	-23,3
Cooling temperature [°C]	+90÷+3	+90÷+3	+90÷+3	+90÷+3
Cooling time [min]	90	90	90	90
Freezing temperature [°C]	+90÷-18	+90÷-18	+90÷-18	+90÷-18
Freezing time [min]	240	240	240	240
Condensation temperature [°C]	+54,5	+54,5	+54,5	+54,5
Max room temperature [°C]	+32	+32	+32	+32
Compressor type	Ermetic	Ermetic	Ermetic	Ermetic
Coolant	R290	R290	R290	R290
Coolant qty [g]	150	150+150	150+150	150+150
Condesation air	Air	Air	Air	Air
Noise [dB] (A)	60	64	64	64
Heating				
Electrical power [W]	440	440+440	900+900	900+900
IFR	•	•	•	•
Multi-detector probe Pt1000(Ω)	•	•	•	•

(A) – Ashrae conditions
(B) – Cecomaf conditions

1.3. RATING PLATE

Make sure that plate details and technical specifications of the power line correspond (V, kW, Hz, number of phases and power available from the mains).

When communicating with the manufacturer always quote the machine serial number, referring to its technical rating plate.

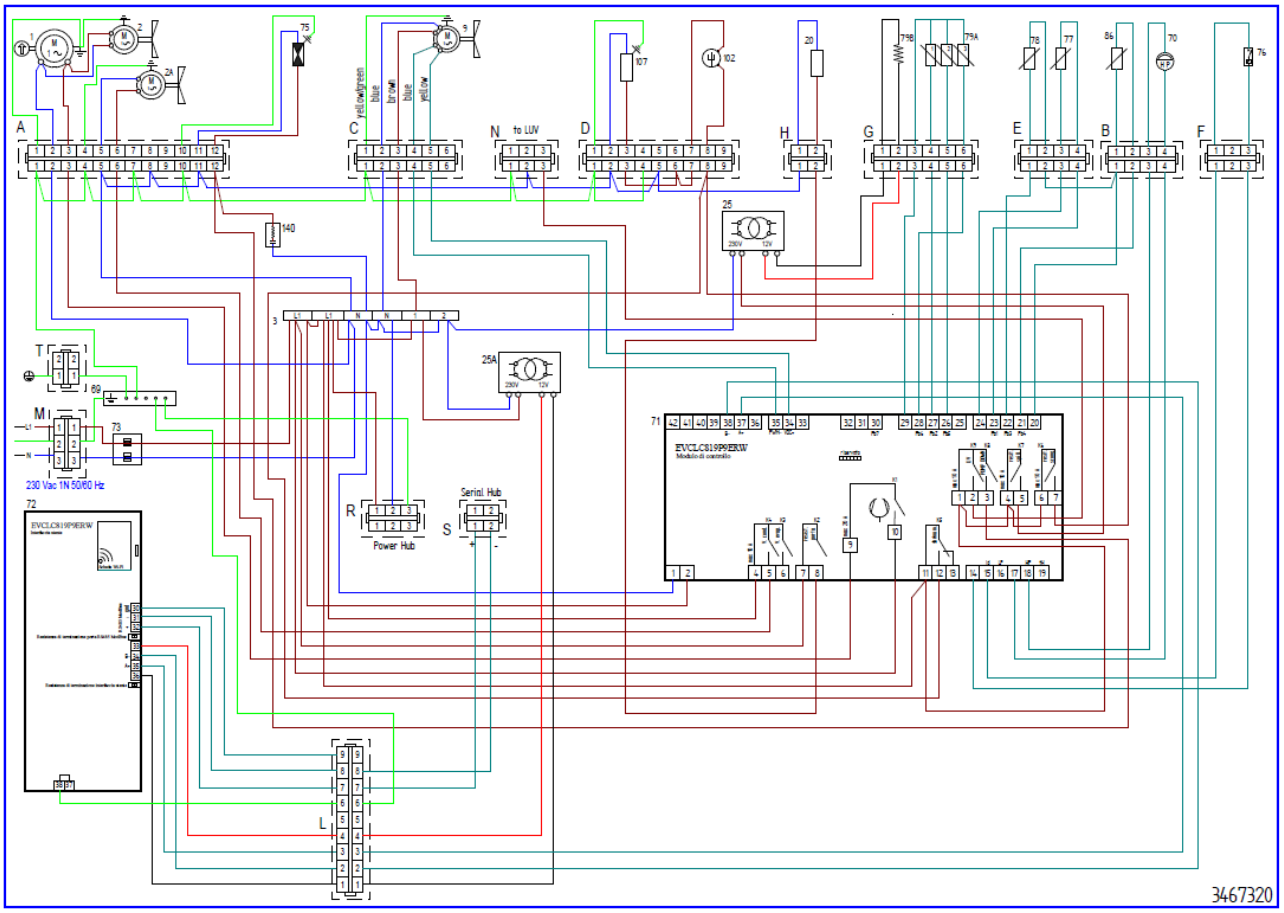


List of data contained on the rating plate:

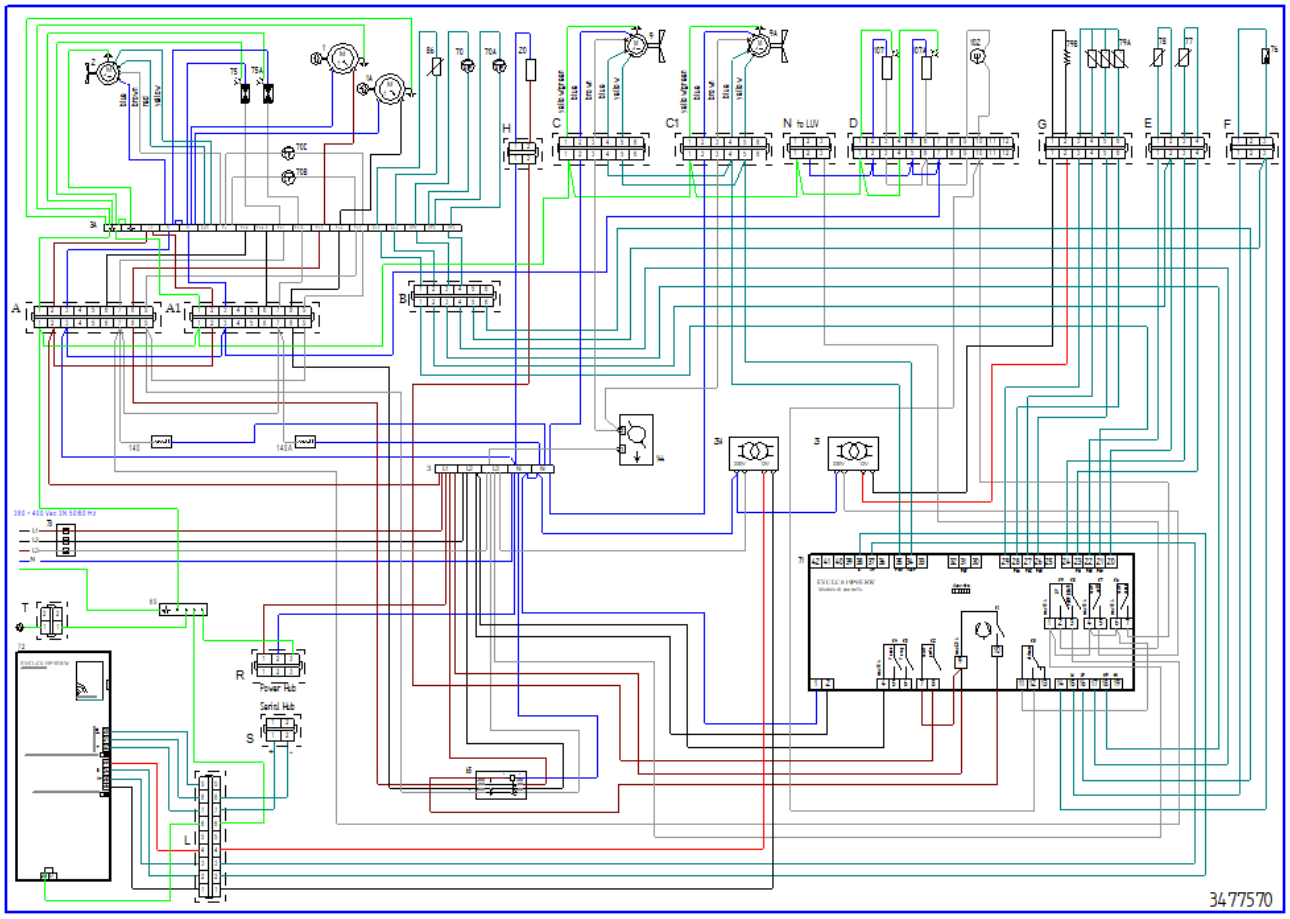
1) MODEL
2) MANUFACTURER AND ADDRESS
3) CE MARKING CODE
4) SERIAL NUMBER
5) ELECTRICAL INSULATION CLASS
6) ELECTRICAL PROTECTION CLASS
A) POWER SUPPLY VOLTAGE
B) ELECTRIC CURRENT INTENSITY
C) FREQUENCY
D) NOMINAL POWER
F) COMPRESSOR RLA
G) REFRIGERANT FLUID TYPE
H) REFRIGERANT FLUID QUANTITY
L) TEMPERATURE CLASS
R) WEEE SYMBOL
T) HEATING POWER
W) HEATING ELEMENT POWER
Z) MINIMUM H20 PRESSURE
Z1) H20 CONSUMPTION
Z2) EXPANSION FLUID
Z3) GWP

1.4. WIRING DIAGRAM

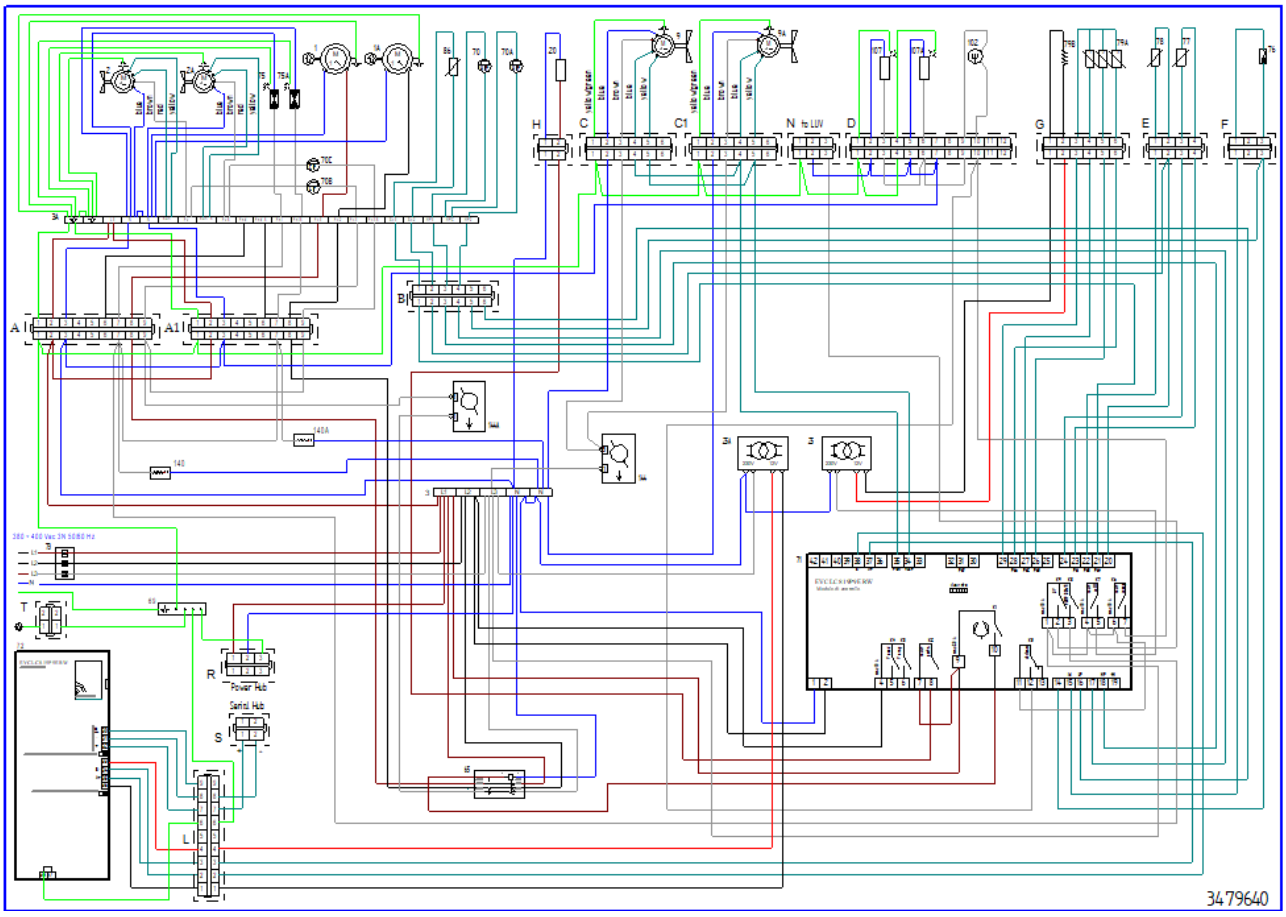
KPS21G…



KPS42SG…



KPS120SG-KPS72SG

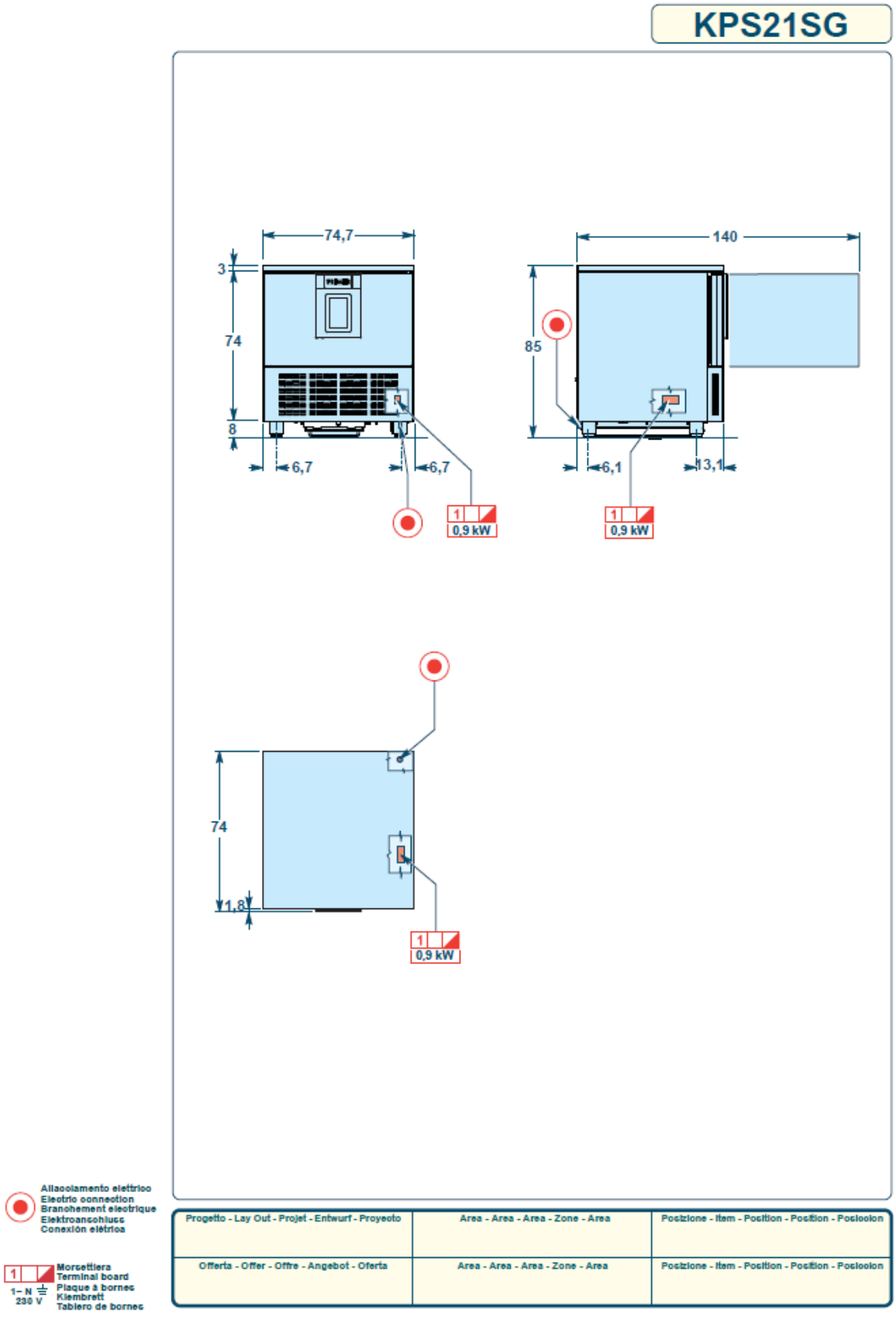


LIST OF WIRING DIAGRAM COMPONENTS

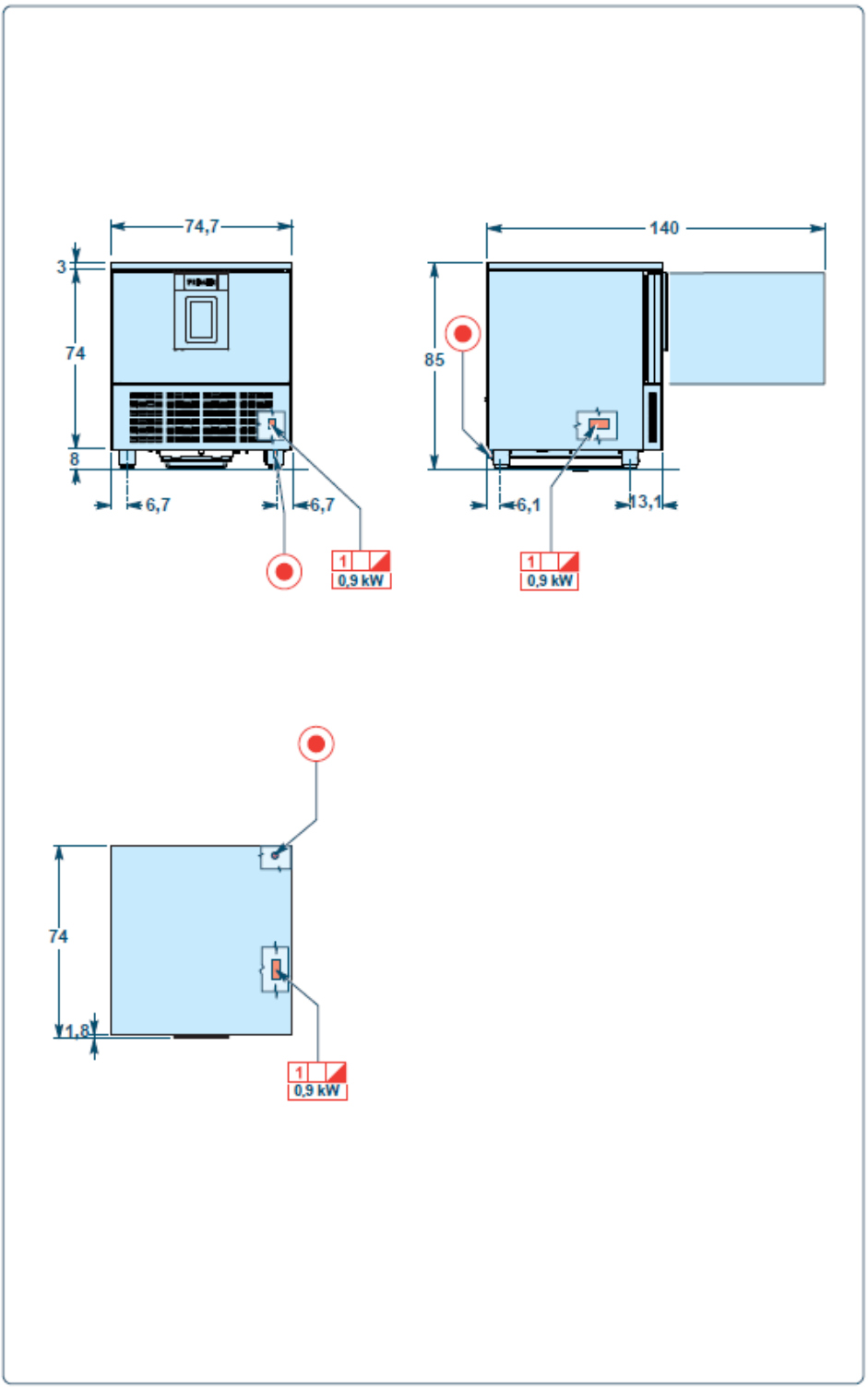
No.	DESCRIPTION	No.	DESCRIPTION
1	COMPRESSOR	75	LIQUID LINE SOLENOID VALVE
1A	COMPRESSOR	75A	LIQUID LINE SOLENOID VALVE
2	CONDENSER FAN	76	MAGNETIC MICRO-SVWITCH
2A	THERMOSTATED CONDENSER FAN	77	COMPARTMENT PROBE
3	GENERAL TERMINAL BOARD	78	EVAP./DEFROST PROBE
3A	GENERAL TERMINAL BOARD	79A	MULTIPOINT NEEDLE CORE PROBE
9	EVAPORATOR FUN	79B	MULTIPOINT PROBE RESISTANCE
9A	EVAPORATOR FUN	80	PTC RESISTANCE FOR COMPRESSOR CASING
12	SOLENOID VALVE DEFROSTING	86	CONDENSER PROBE
20	DOOR ANTICONDENSING RESISTOR	87	LCD QUICK COOLER CARD
22	WATER DRAIN PAN HEATING ELEMENT	91	CONDENSATION EVACUATION PTC HEATING ELEMENT
25	NEEDLE PROBE HEATING TRANSFORMER	97A	EVAP. FAN PARTIALISER MODULE
25A	TFT BOARD POWER TRANSFORMER	102	BIMETALLIC SAFETY THERMOSTAT
65	CONTACTOR	103	HUMIDITY PROBE
66	THERMAL RELAY	107	COMPARTMENT HEATING ELEMENT
67	EVAPORATOR FAN RUN CAPACITOR	107A	COMPARTMENT B HEATING ELEMENT
67A	EVAPORATOR FAN RUN CAPACITOR	112	HUMIDIFICATION WATER ELECTROVALVE
69	GROUNDING TERMINAL	133	WI-FI MODULE (OPTIONAL)
70	HIGH PRESSURE PRESSOSTAT	134	HOT CYCLE FUNCTIONS MODULE
70A	HIGH PRESSURE PRESSOSTAT	135	WATER DRAIN SOLENOID VALVE
70B	CONDENSATION PRESSURE SWITCH	140	LIQUID SOLENOID VALVE EMI FILTER
70C	CONDENSATION PRESSURE SWITCH	140A	DEFROST SOLENOID VALVE EMI FILTER
71	POWER PANEL ELECTRONIC CARD	144	INDUCTIVE FAN FILTER (CHOKE)
72	TFT CIRCUIT BOARD	144A	INDUCTIVE FAN FILTER (CHOKE)
73	FUSE-HOLDER WITH UNIPOLAR FUSE		

2. INSTALLATION

2.1. CONNECTION DIAGRAM



KPS21SGU

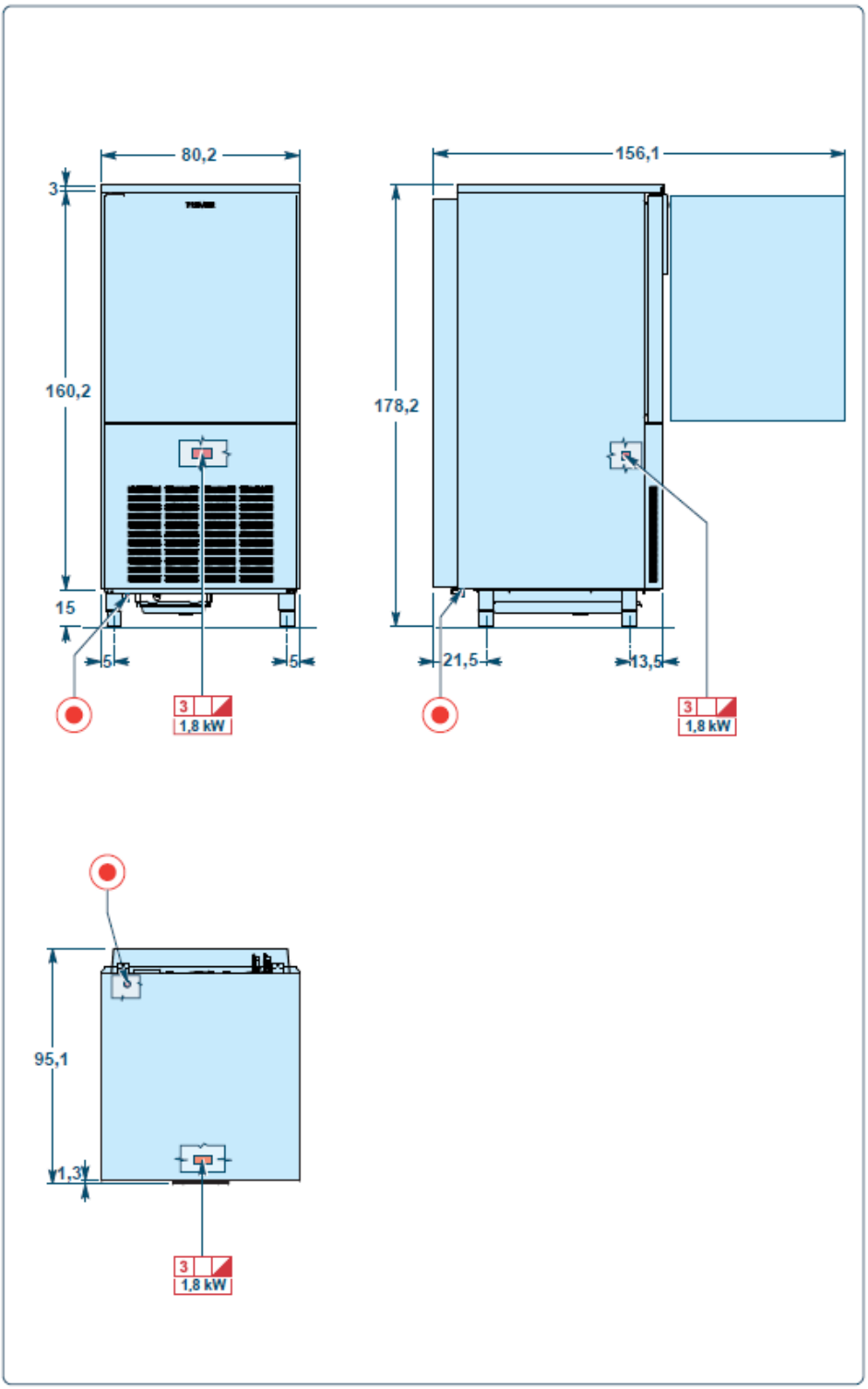


Allacciamento elettrico
Electric connection
Branchement electrique
Elektroanschluss
Conexión eléctrica

1
Morsettiera
Terminal board
Plaque à bornes
Klemmbrett
Tablero de bornes
1~ N ⏚
230 V

Progetto - Lay Out - Projet - Entwurf - Proyecto	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion
Offerta - Offer - Offre - Angebot - Oferta	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion

KPS42SG

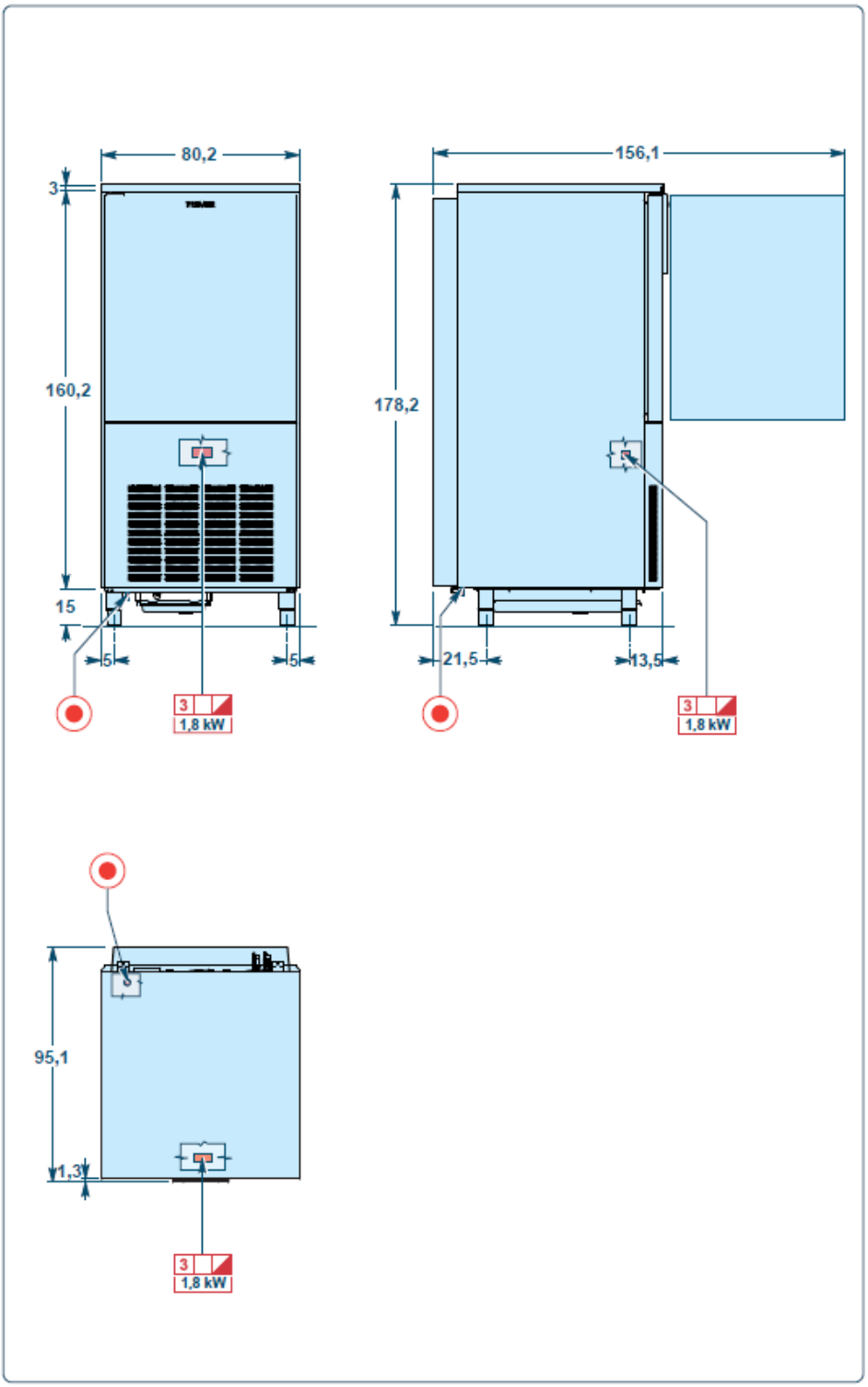


Allacciamento elettrico
Electric connection
Branchement electrique
Elektroanschluss
Conexión eléctrica

3 Morsettiera
Terminal board
Plaque à bornes
Klemmbrett
Tablero de bornes
3~ N ⏚
400 V

Progetto - Lay Out - Projet - Entwurf - Proyecto	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion
Offerta - Offer - Offre - Angebot - Oferta	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion

KPS42SGR

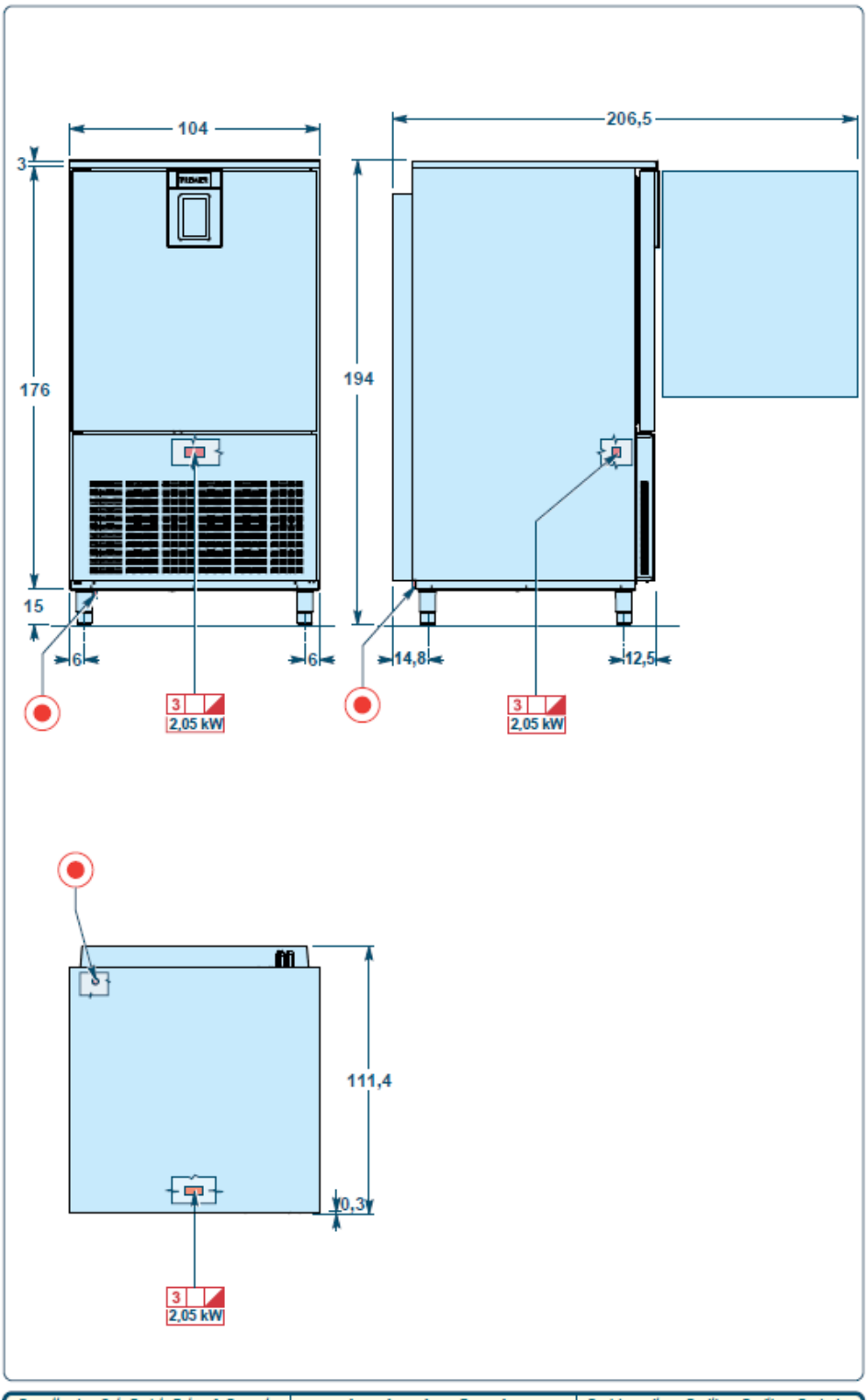


Allacciamento elettrico
Electric connection
Branchement electrique
Elektroanschluss
Conexión eléctrica

3 Morsettiera
Terminal board
Plaque à bornes
Klembrett
Tablero de bornes
3~ N ⏚
400 V

Progetto - Lay Out - Projet - Entwurf - Proyecto	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion
Offerta - Offer - Offre - Angebot - Oferta	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion

KPS72SG

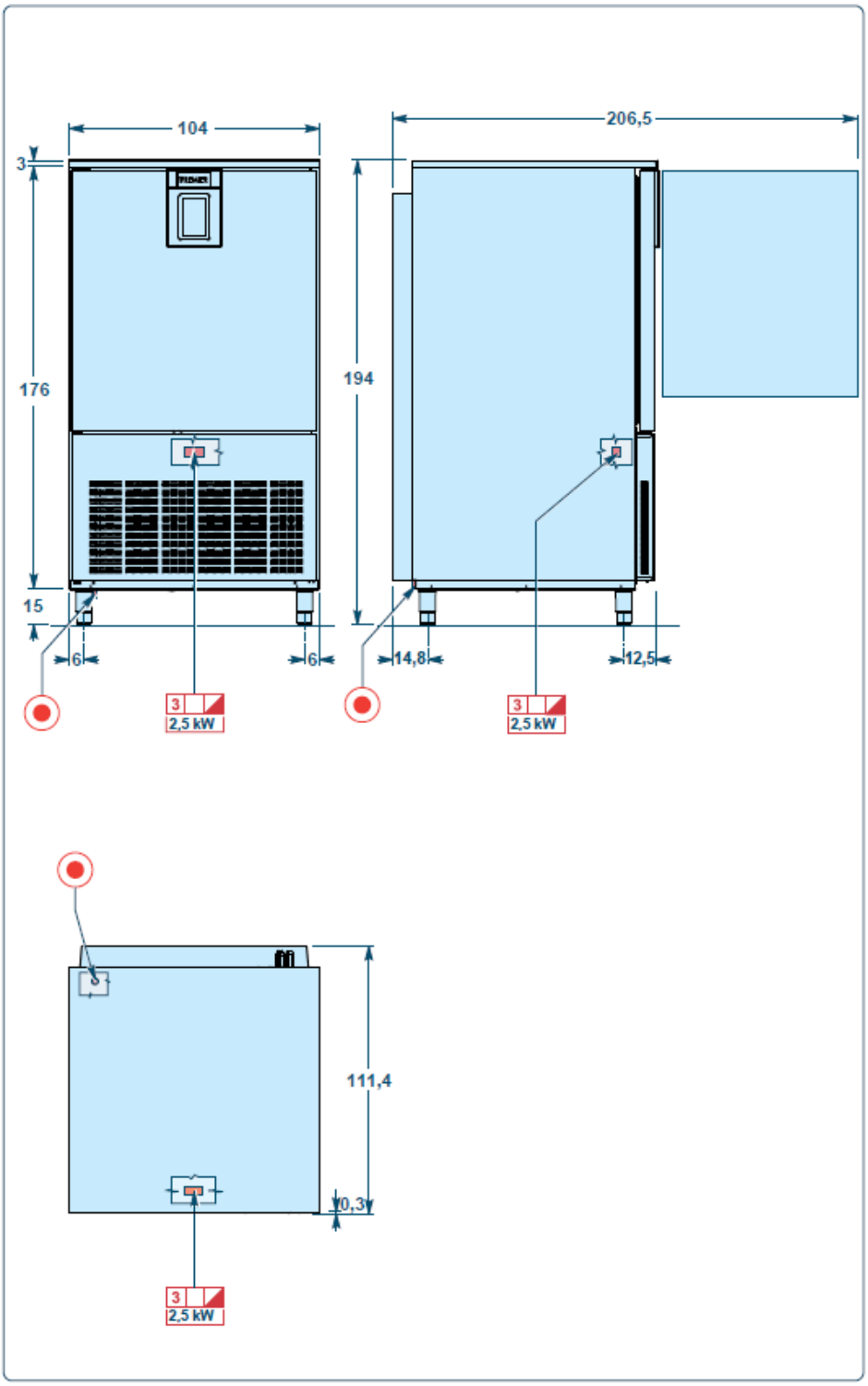


Allacciamento elettrico
Electric connection
Branchement electrique
Elektroanschluss
Conexión eléctrica

3 Morsettiera
Terminal board
Plaque à bornes
Klemmbrett
Tablero de bornes
3~ N ⏚
400 V

Progetto - Lay Out - Projet - Entwurf - Proyecto	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion
Offerta - Offer - Offre - Angebot - Oferta	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion

KPS120SG



Allacciamento elettrico
Electric connection
Branchement electrique
Elektroanschluss
Conexión eléctrica

Morsettiera
Terminal board
Plaque à bornes
Klemmbrett
Tablero de bornes
3~ N ⏚
400 V

Progetto - Lay Out - Projet - Entwurf - Proyecto	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion
Offerta - Offer - Offre - Angebot - Oferta	Area - Area - Area - Zone - Area	Posizione - Item - Position - Position - Posicion

2.2. INSTALLATION AND INSPECTIONS NOTES

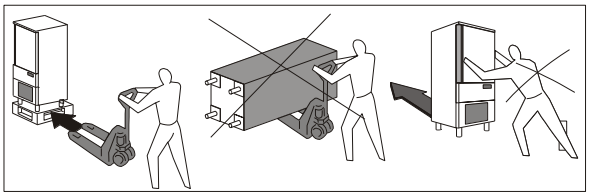
AMBIENT TEMPERATURE

The ambient temperature in the area where the equipment is installed must be between +15°C and +40°C. Temperatures outside these limits affect equipment performance and could reduce its lifespan. Make sure that the installation area has proper air circulation.

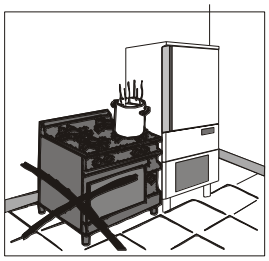
POSITIONING

The unit must be installed and tested in full compliance with accident prevention laws, EU directives and current regulations. The installer is obliged to check any prescriptions imposed by local authorities.

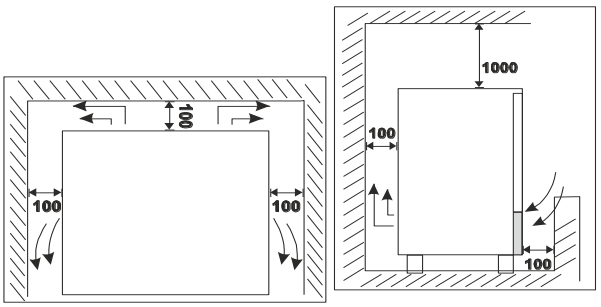
- Place the machine in the prescribed location.



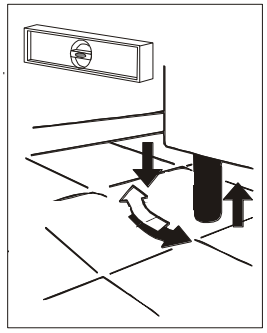
- Avoid places exposed to direct sunlight
- Avoid enclosed places with high temperatures and poor air exchange.
- Avoid installing the machine near any heat source.



- Maintain a minimum distance of 100mm from the air inlet and outlet sides of the machine compartment.



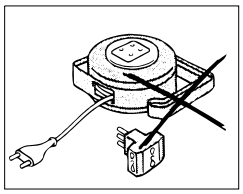
- Level the unit using the adjustment feet.



CAUTION: If the units are not levelled, their operation and the outflow of condensation may be impaired.

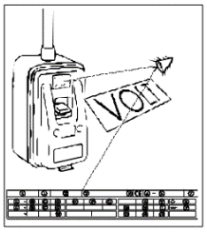
ELECTRICAL CONNECTION

The electrical connection and connection systems of the unit must comply with the regulations in force in the country of installation and must be carried out by qualified personnel authorised by the manufacturer.



CAUTION: do not use adapters or extension cords for connection to the mains.
DO NOT USE ADAPTER PLUGS. Due to safety hazards that may arise in certain situations, the use of adapter plugs is strongly discouraged.
DO NOT USE EXTENSION CORDS. The manufacturer does not guarantee the unit if an extension cord is used.

WARNING: any damaged power cord must be replaced by the manufacturer, after-sales service, or qualified personnel to prevent risks.

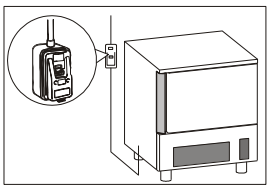


Check that the mains voltage corresponds to the voltage stated on the technical rating plate of the unit.

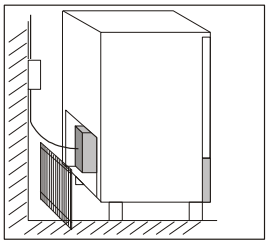
CAUTION: The unit must be connected to an effective earthing system ⏚.

CAUTION: It is compulsory to insert the unit into an equipotential system according to the regulations in force. The connection must be made between the different units via the equipotential terminal ⏚.

CAUTION: A thermal-magnetic circuit breaker must be installed upstream of the unit in accordance with the regulations in force in the country of installation.



The electrical mains cables must be correctly sized and selected based on the installation conditions.



The electrical connection is carried out from the rear part.

10kg models have 3m of single phase cable (3G 1.5mm²) with a SHUKO type plug.
Use of any other type of electrical connection or modifying the size of the cable by less than its length is not permitted. Take care to replace it with one having identical characteristics to the original.

20/30/40/50kg models are provided with 5m of cable for three-phase power supply (5G 2.5mm²) without a plug.
Fit an electrical plug (not supplied) of a type and capacity suitable for the maximum current absorbed by the unit or make a direct connection to an electrical panel.

The manufacturer declines all responsibility and any obligation to warranty if damage occurs to the equipment, persons or things, imputable to incorrect installation and/or non-compliance with applicable laws and tampering with any part of the unit (electrical, thermodynamic or hydraulic system).

CONDENSATE DRIP TRAY

The unit is equipped with a condensate drip tray located at the bottom the machine, which must be conveyed into the drainage system if cooking cycles are carried out, in order to avoid continuous maintenance of the water drainage from the tray.

COMMISSIONING

If the equipment was transported horizontally instead of vertically, DO NOT POWER IT UP BUT WAIT AT LEAST **24 HOURS** BEFORE OPERATION.
The manufacturer declines any responsibility and any warranty obligation if damage occurs to the equipment imputable to transportation in a horizontal position.

Respect the outside temperatures which must be between 15°C and 40°C.
Power up the unit and wait 30 minutes before use if the outside temperature is “low”.
Check absorption
Carry out at least one complete blast-chilling cycle in order to verify correct operation.

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3. MAINTENANCE: PART 1

3.1 MATE-N-LOK MAINTENANCE

Mate-n-lok connections are Male-Female quick connectors where the male connector is used for wiring internal components and the female connector is installed on electrical panels.

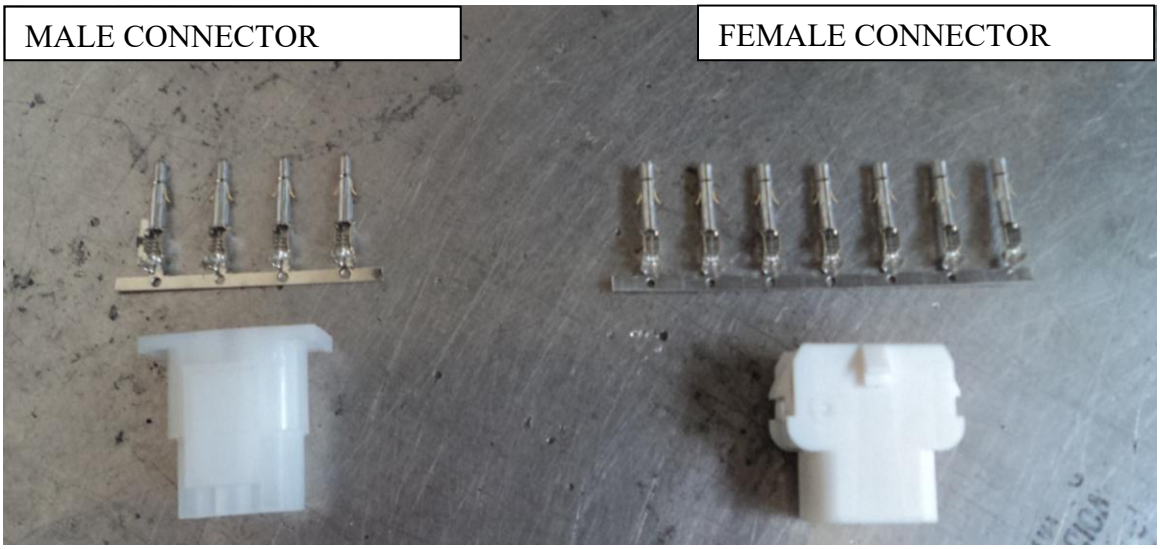


Figure 1

To perform maintenance on a Mate-n-lok connection:

I. Disconnect the unit from the electrical mains.
II. Uncouple the connector to be restored.
III. Uncouple the Mate-n-lok using a small diameter screwdriver: Bend the internal fins as indicated in the figure to slide the metal part off of the connector.

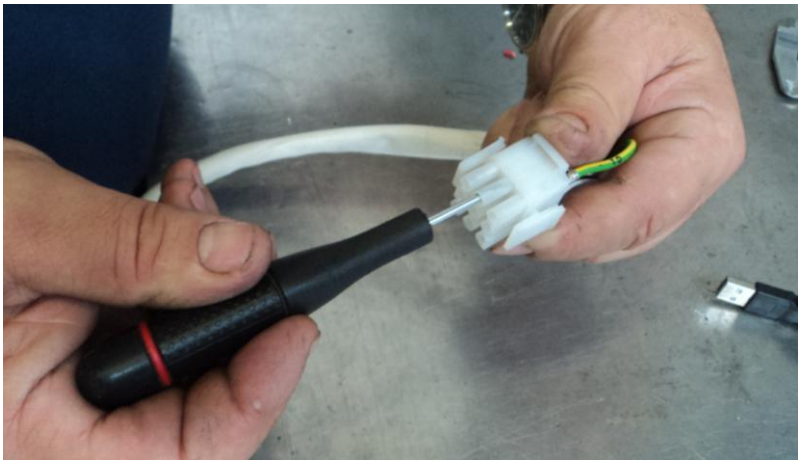


Figure 2

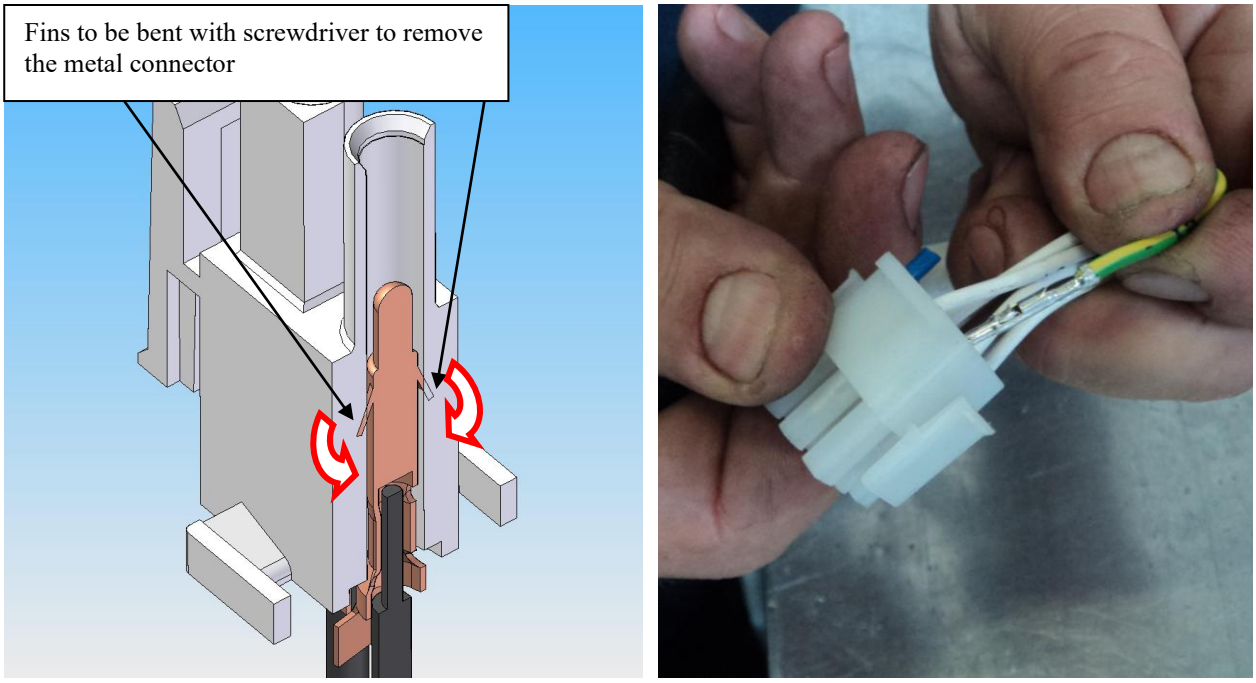


Figure 3

IV. Remove the metal connector, using a screwdriver to bend the metal fins keeping it anchored to the electrical cable.

V. If necessary, remove the wire sheath, leaving about 8-10 mm of copper in sight.

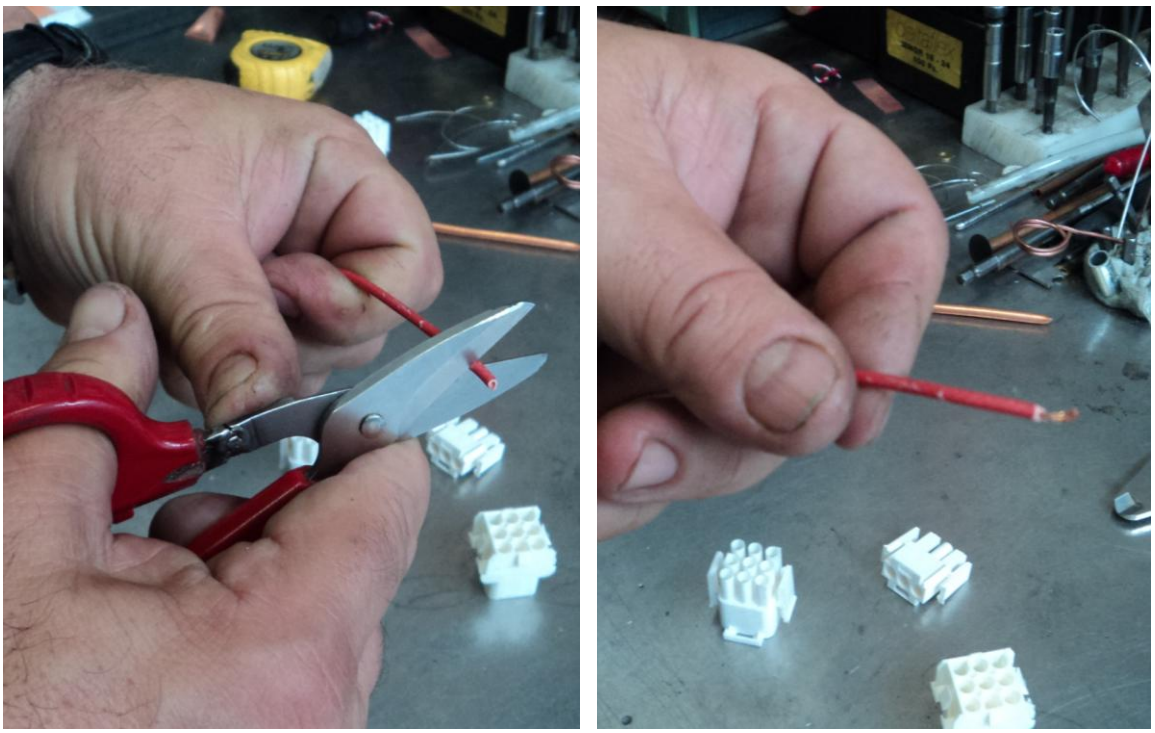


Figure 4

VI. Insert the previously prepared wire in the new metal connector as shown in the figure.

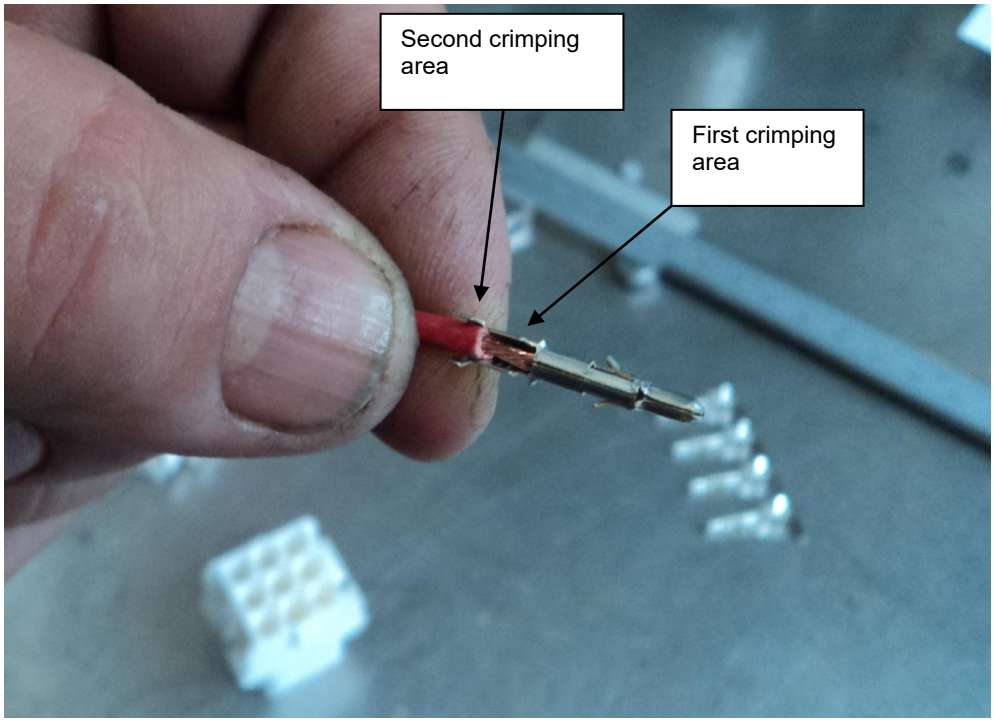


Figure 5

VII. Use crimping pliers to fasten the Mate-n-lok to the electrical wire: The metal component should be crimped in two phases in the area shown in the previous figure.

Figure 6

VIII. After having ensured correct crimping of the metal connector, insert the new mate-n-lok in the plastic terminal. **The connector should be inserted down to the bottom to permit the fins to attach into their housing (click)**. See the wiring diagram for correct positioning of the metal connector in the terminal block.

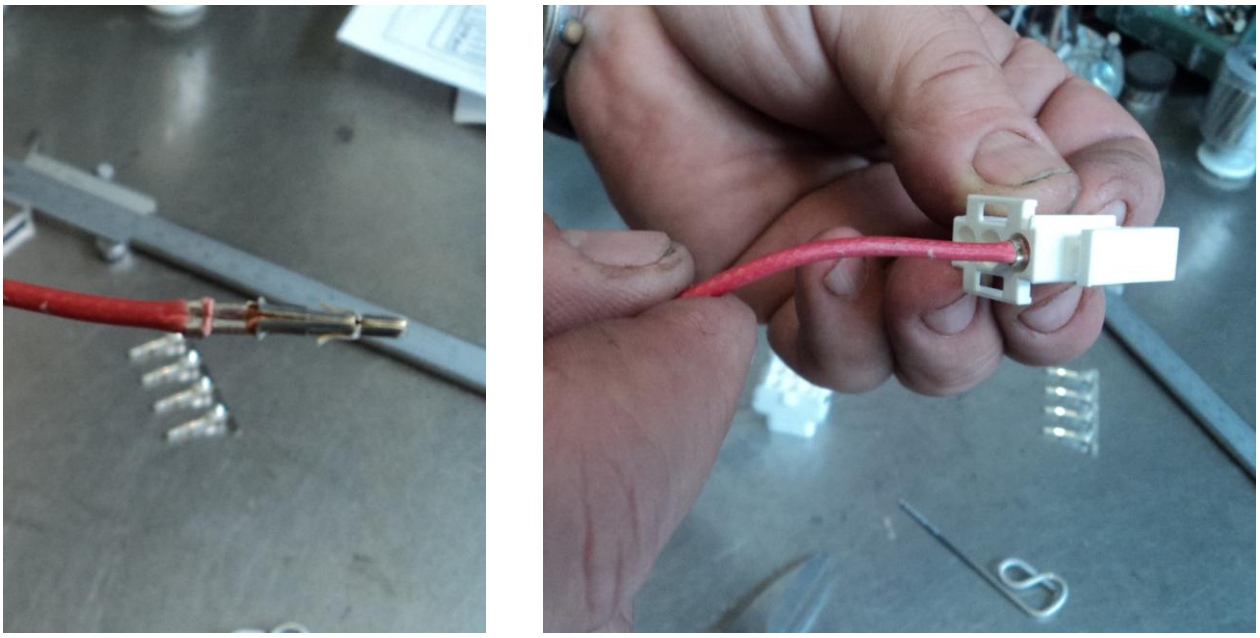


Figure 7

IX. Re-couple the male-female mate-n-lok connector. To detach the connector, press on the side fins as indicated in the figure.

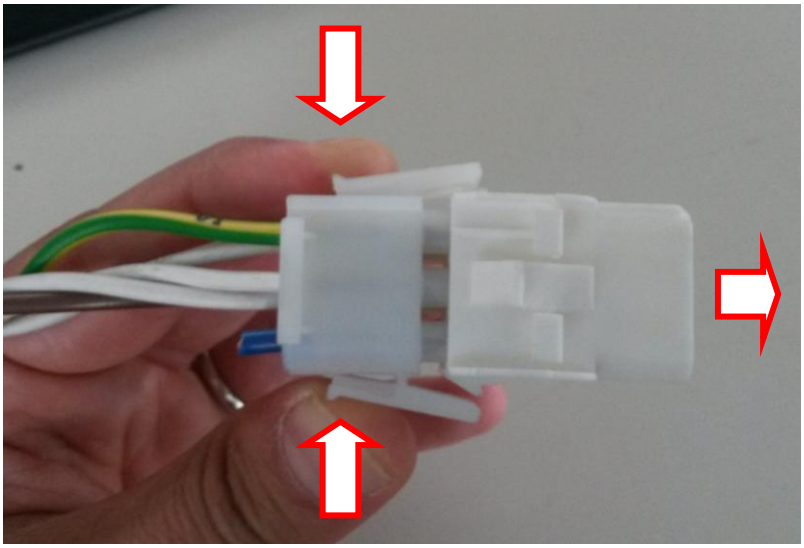


Figure 8

X. Mate-n-lok connections can be identified by means of clearly visible letters both on the male and on the female connectors. These same letters are also contained in the wiring diagram.

Figure 9

3.2 VIDEO BOARD MAINTENANCE

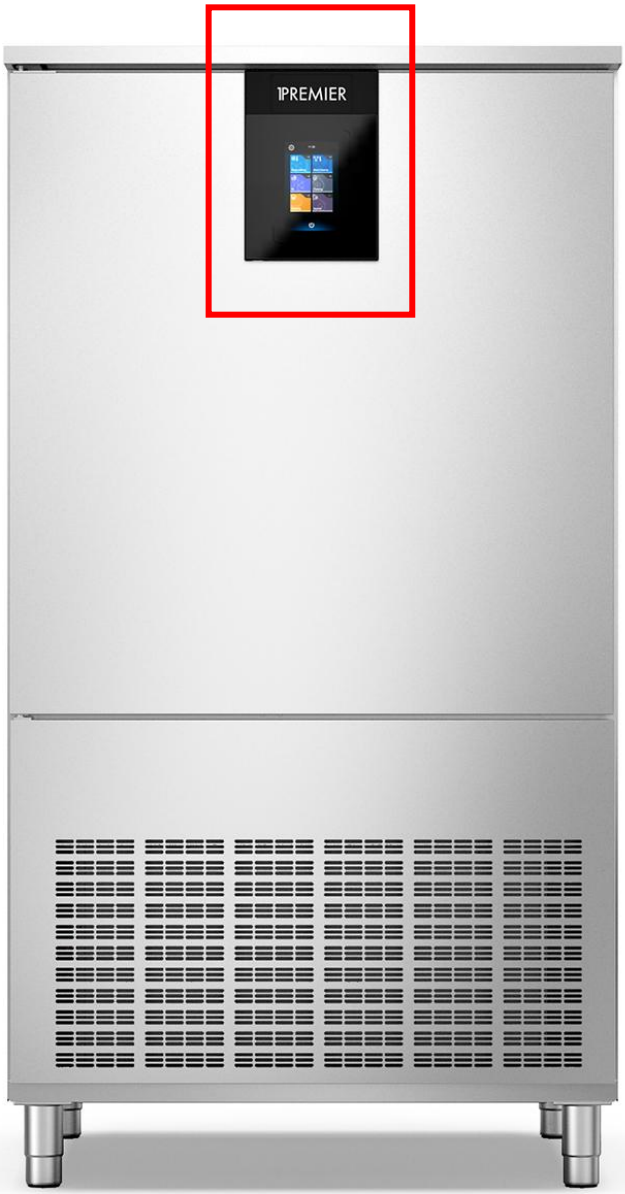


Figure 10

REPLACING THE VIDEO BOARD

I. To replace the video board, disassemble the support board, unscrewing the screws shown in the figure.

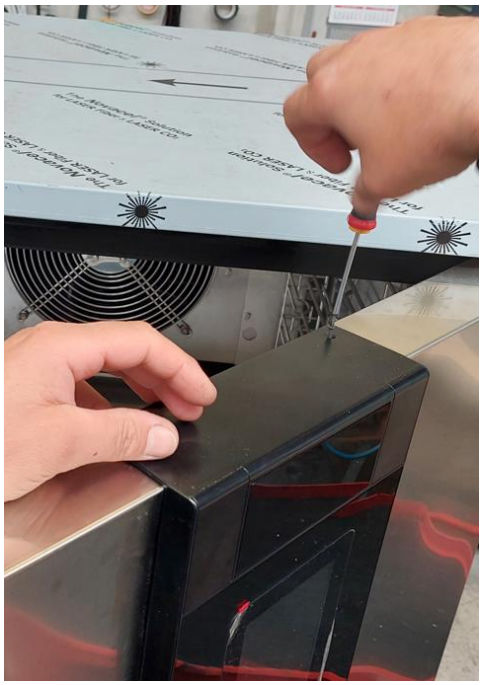


Figure 11

Figure 12

II. Dismantle the board from its housing, disconnecting the connectors and unscrewing the two stops shown in the figure.

Figure 13

III. To reassemble the new video board, repeat the previously described operations in reverse order.

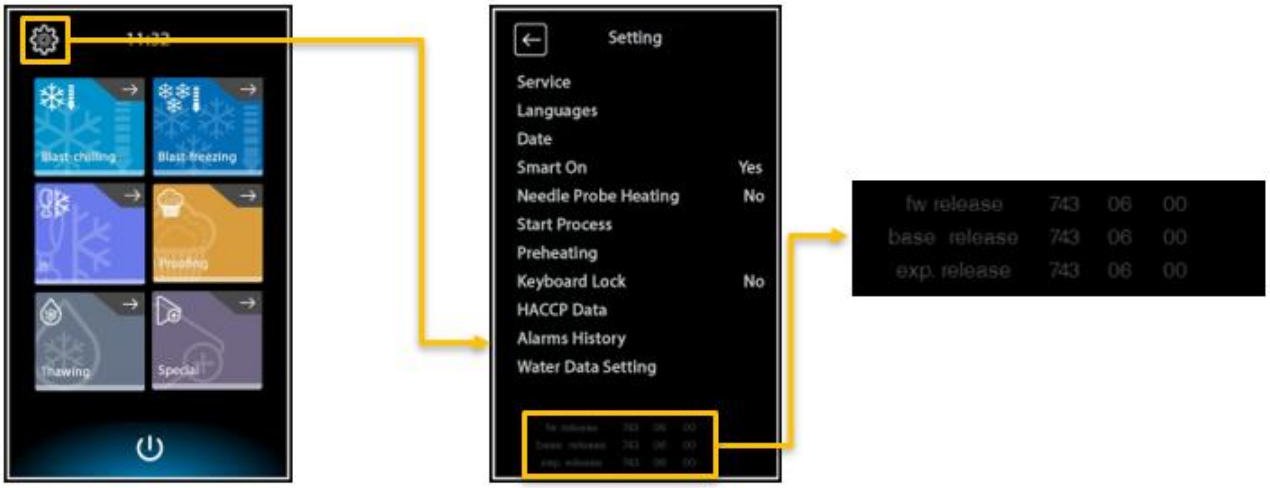
IV. The video board connects to the panel circuit board by means of mate-n-lok connector "L".

3.3 UPGRADING BOARD FIRMWARE

UPDATE PROCEDURE

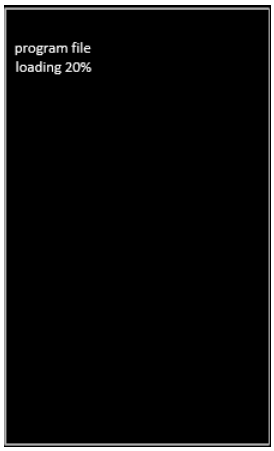
Check the firmware version now present on the unit boards.

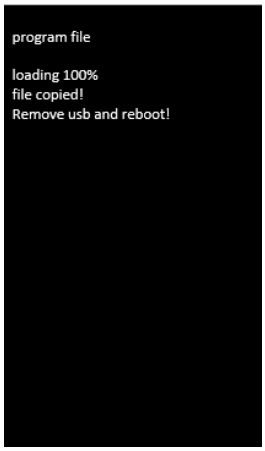
- Select SETTINGS.
- Check the firmware version now present on the unit boards.



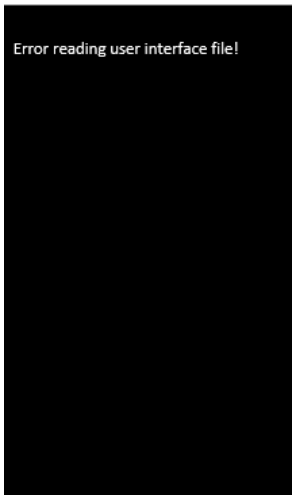
The procedure should only be performed by specialised personnel.

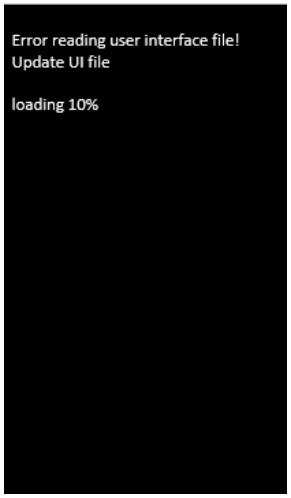
To update the firmware (software) of the circuit boards, it is necessary to have a pen drive (FAT32 formatting) with the controller's operating system (files with the extension work.ucjb and workUi.ucjb).
Insert the pen drive into the USB port located under the control panel and wait for instructions from the control panel before removing it ("Remove usb and reboot").

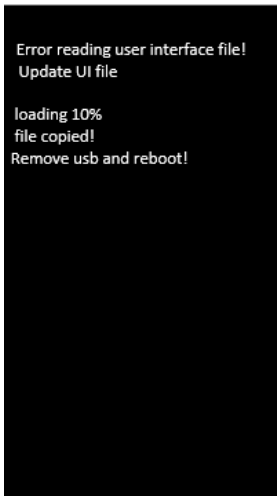




Disconnect the power and reconnect the machine after a few moments.
When the following message appears: “Error reading user interface files!”, reinsert the pen drive and wait for the controller to indicate that it has been removed.





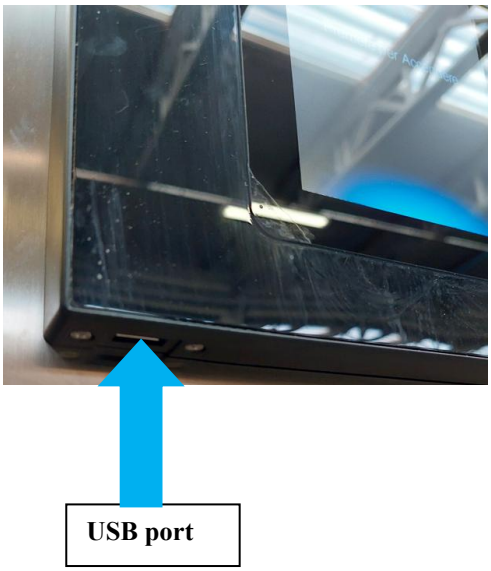


After removing the pen drive, switch the machine off and on again.

USB PORT

The USB port is located at the bottom of the TFT board holder panel.

The USB port is used to update the firmware or to download or upload HACCP parameters and data; in this case it is necessary to switch the board to the ON OFF screen.



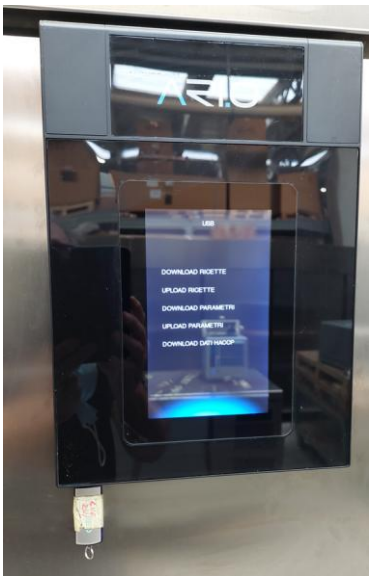


Figure 14

3.4 MAGNETIC MICRO MAINTENANCE

KPS21SG…

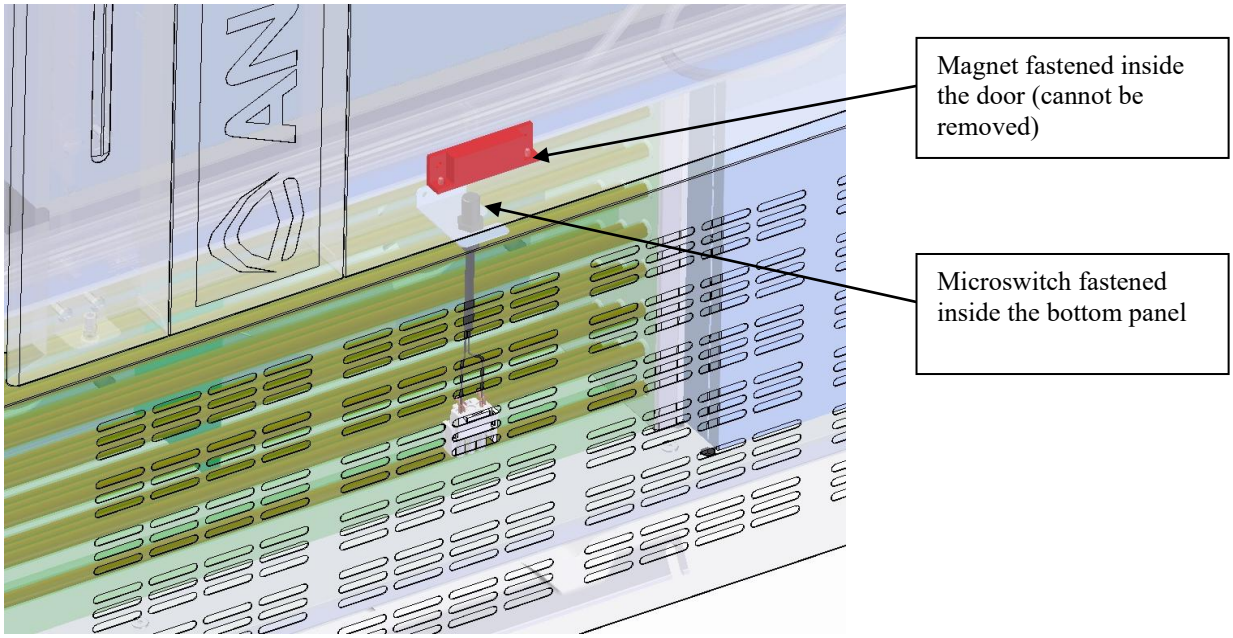


Figure 15

I. Dismantle the condenser protective panel, pulling it in the direction indicated in the figure.

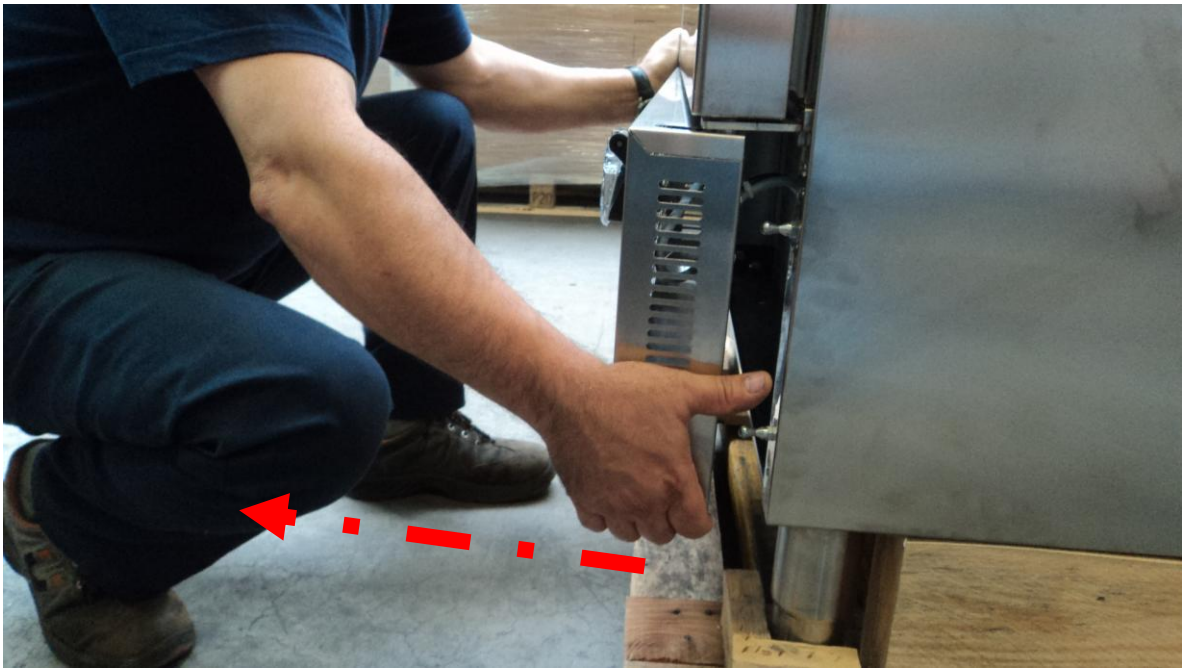


Figure 16

II. Remove the magnetic micro unscrewing the fastening nuts .

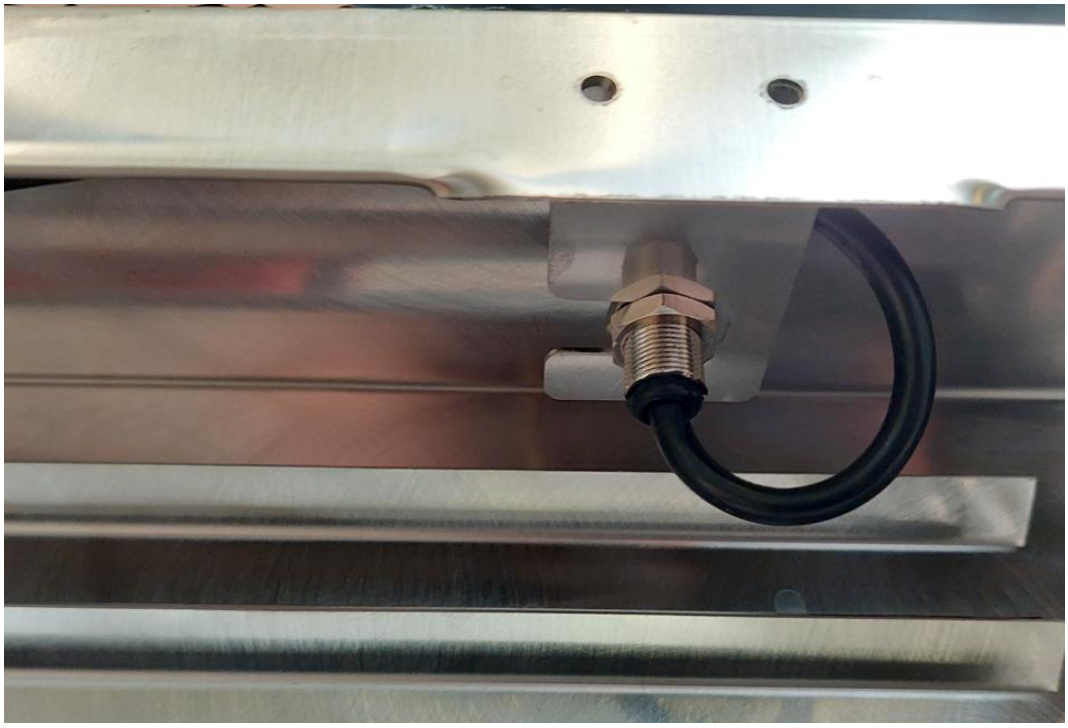


Figure 17

III. Remove the plate inside the wiring protection (3 screws).

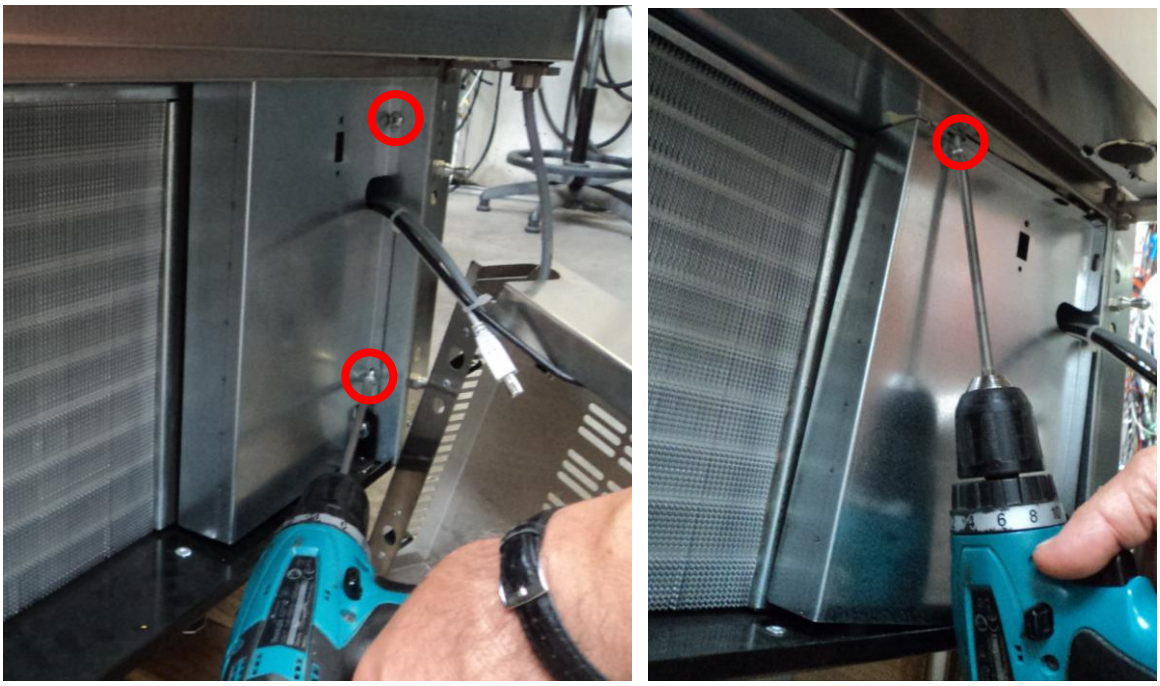


Figure 18

IV. Cut the grips to free the magnetic micro cable.

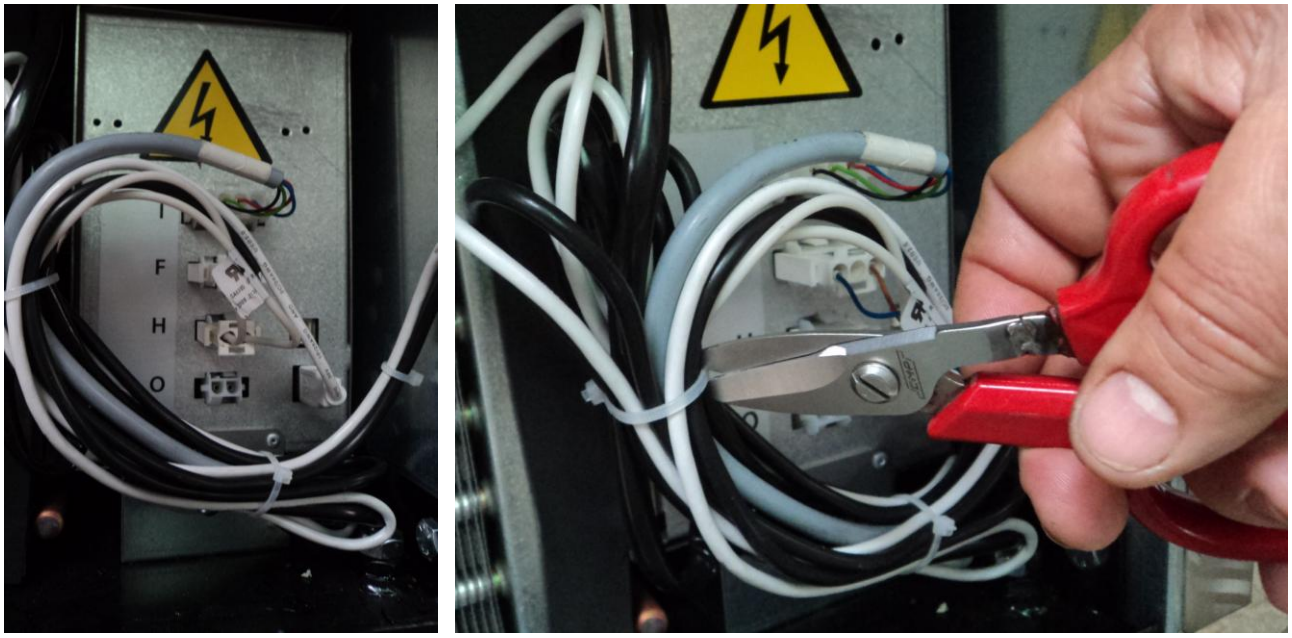


Figure 19

V. Disconnect Terminal "F" and remove the cable + micro.

Figure 20

VI. Reassemble the new micro, repeating operations in the reverse order.

VII. Dismantle the condenser protective panel, pulling it in the direction indicated in the figure.

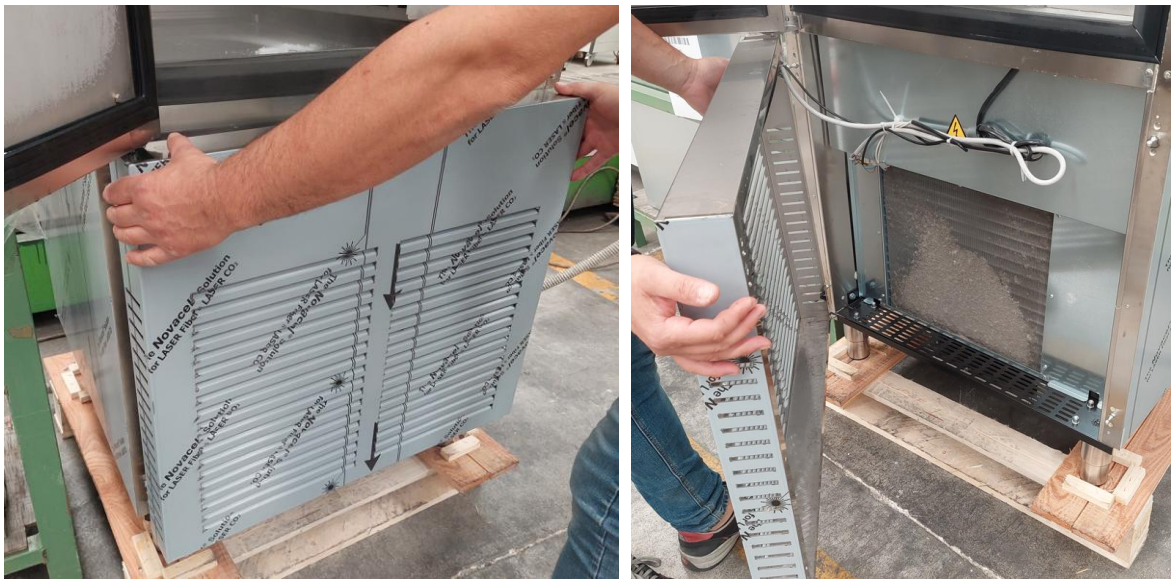


Figure 21

VIII. The magnetic micro is positioned under the panel. Remove the magnetic micro unscrewing the fastening nuts .

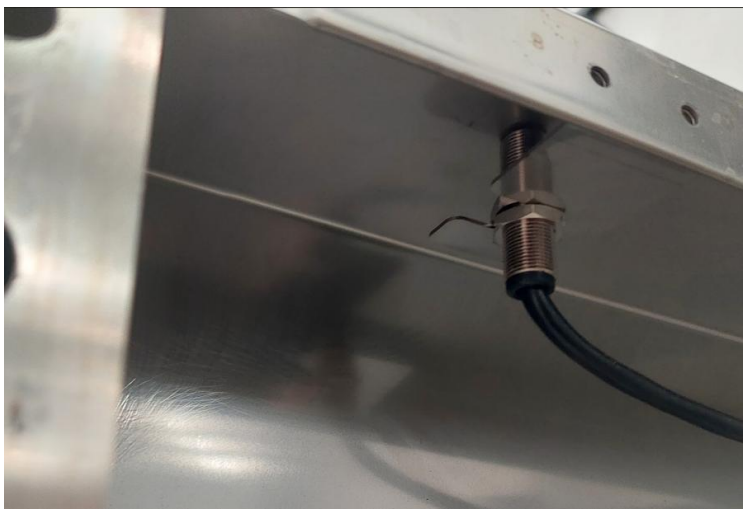


Figure 22

IX. Disconnect “F” Mate-n-lok connector.

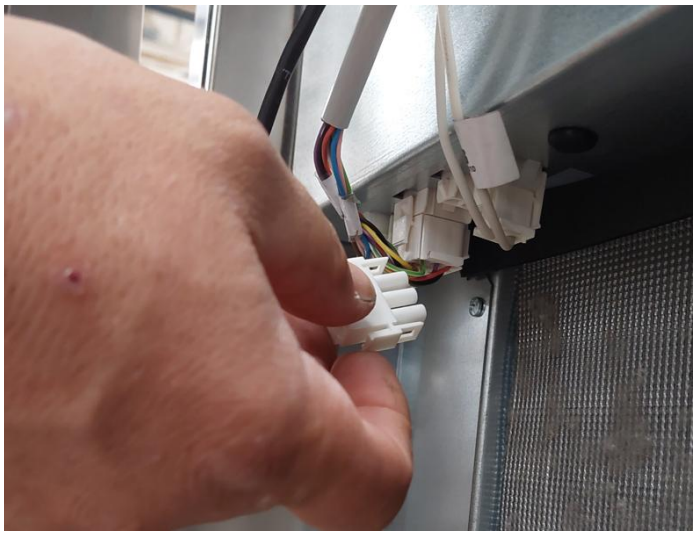


Figure 23

3.5 DOOR SEAL MAINTENANCE

CLEANING

Manually folding the seal lip and wipe with a cloth as illustrated. Repeat this operation over the entire perimeter and on both sides of the seal.

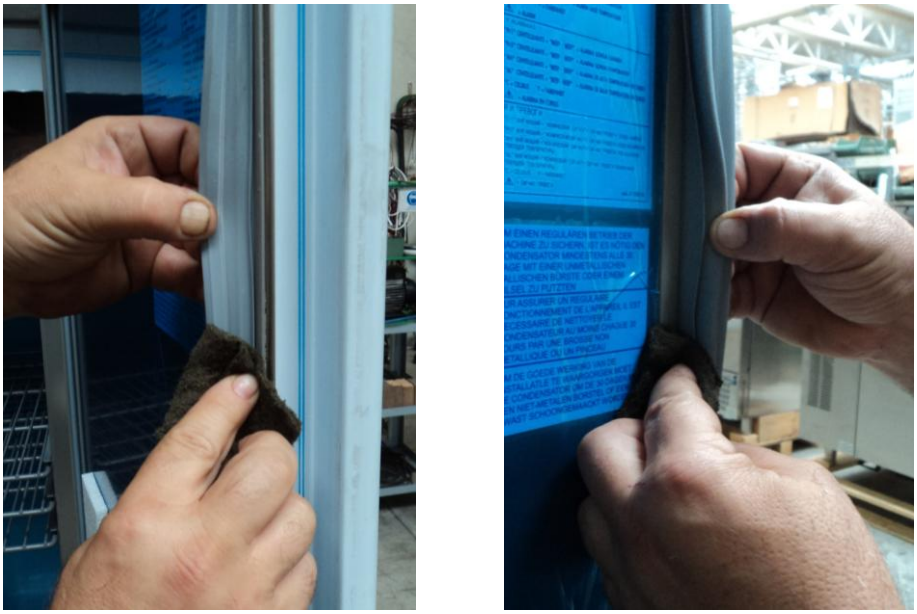


Figure 24

SEAL REPLACEMENT

In the event that replacement is required, manually remove the seal from its housing along the entire perimeter.

Figure 25

Assemble the new seal by inserting it manually into the housing.

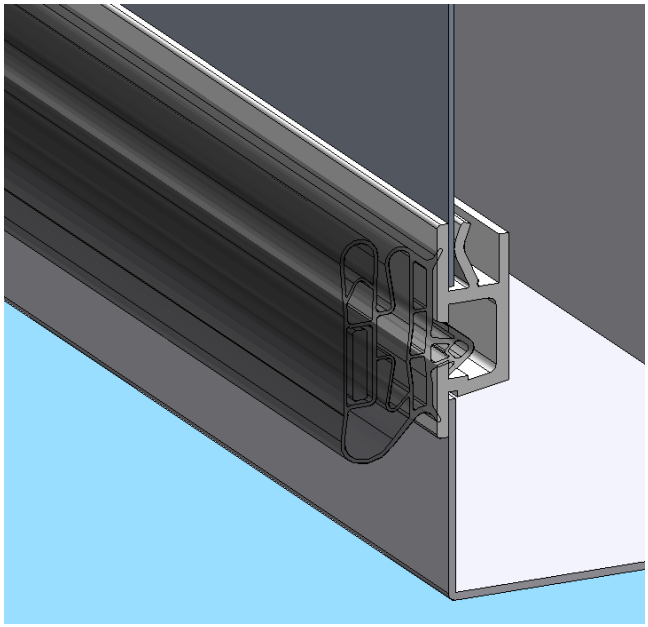


Figure 26

Use a soft material hammer to correctly place the seal in its housing, starting from the four corners and then continuing along the entire perimeter.

Check that the gasket has been correctly inserted into the housing groove.

Figure 27

3.6 FRAME PROFILE COOL PROTECTION RESISTANCE MAINTENANCE

KPS21SG…

I. Remove the condenser protective panel and the plate inside the cable protection (see 3.4 paragraphs I-III).

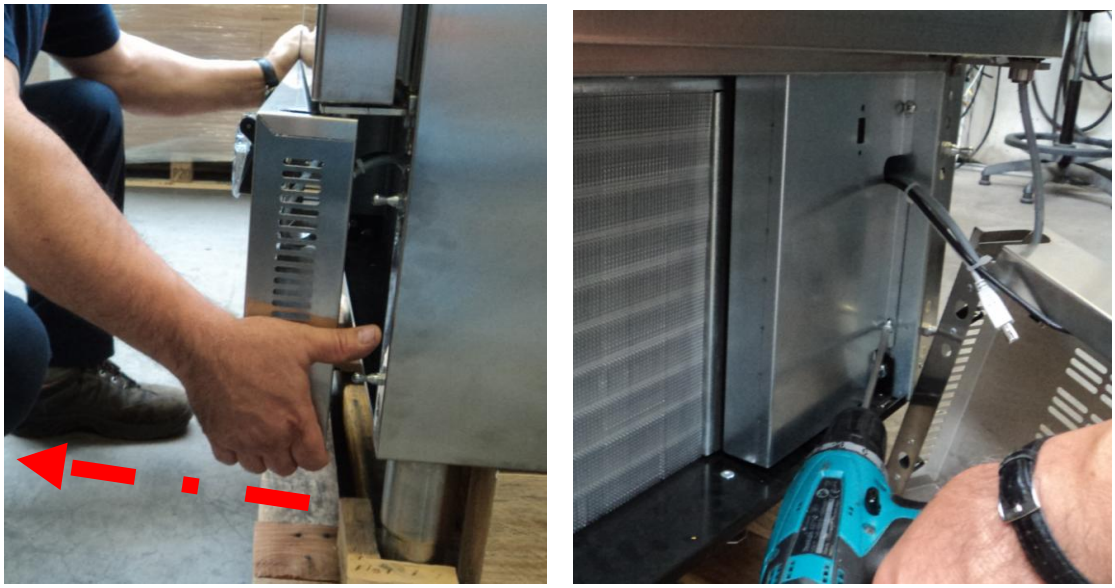


Figure 28

II. Disconnect Mate-n-lok "H" and cut the grips, freeing the cable going up toward the refrigerated compartment.

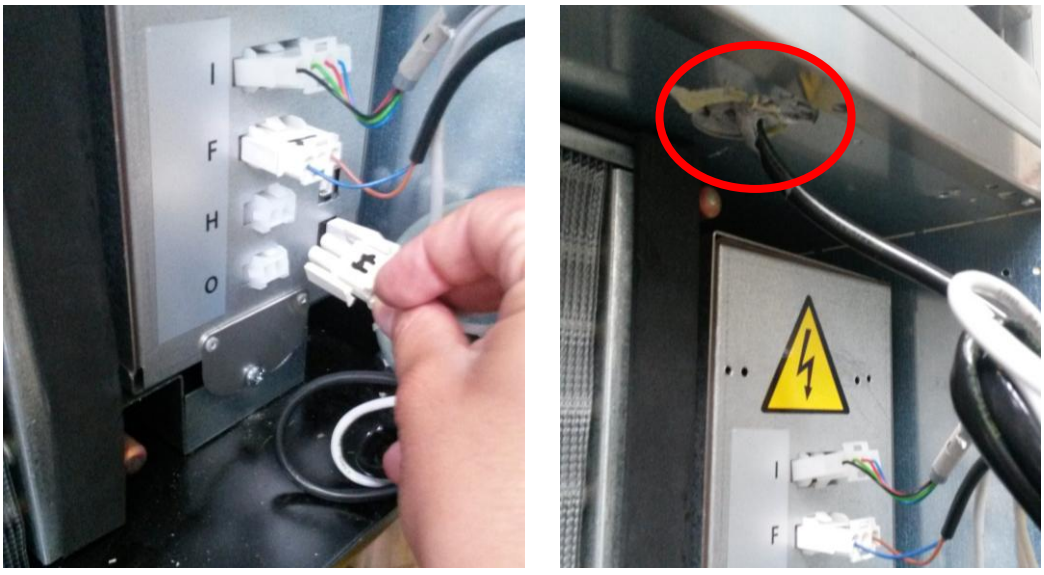


Figure 29

III. With the aid of a spatula, remove the frame cover by levering inside it, taking care not to damage its components. Repeat this operation on the entire frame profile.

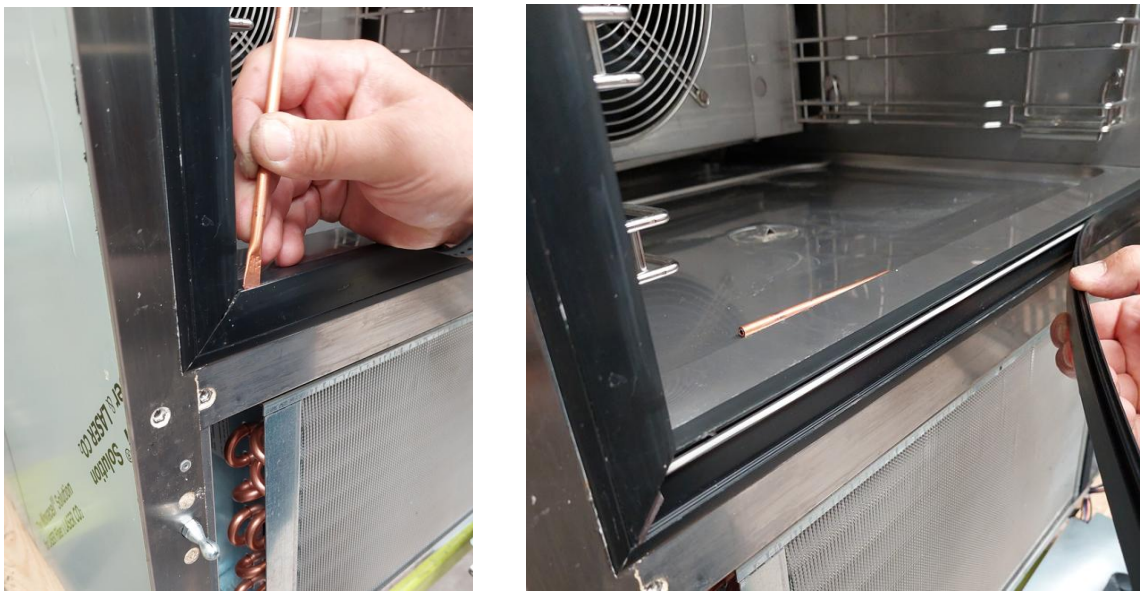


Figure 30

IV. When removing the frame cover, be careful of the magnetic bars inside which could slip out. If they should slip out, reassemble magnets with the grooved surface facing the inside of the refrigerated compartment.

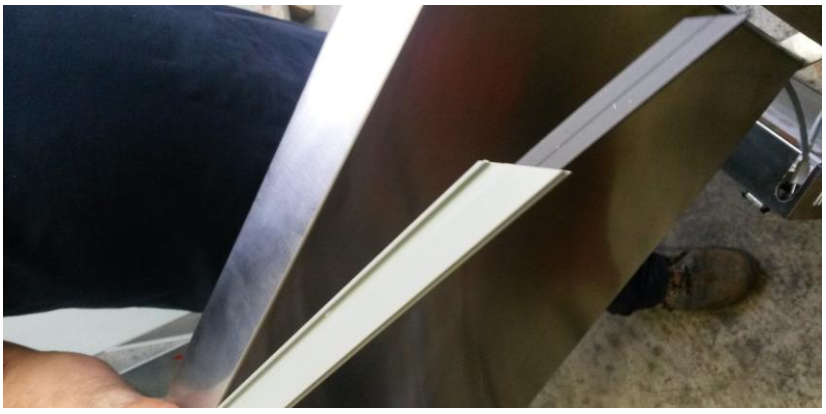


Figure 31

Note: Description of the cool protection resistance path

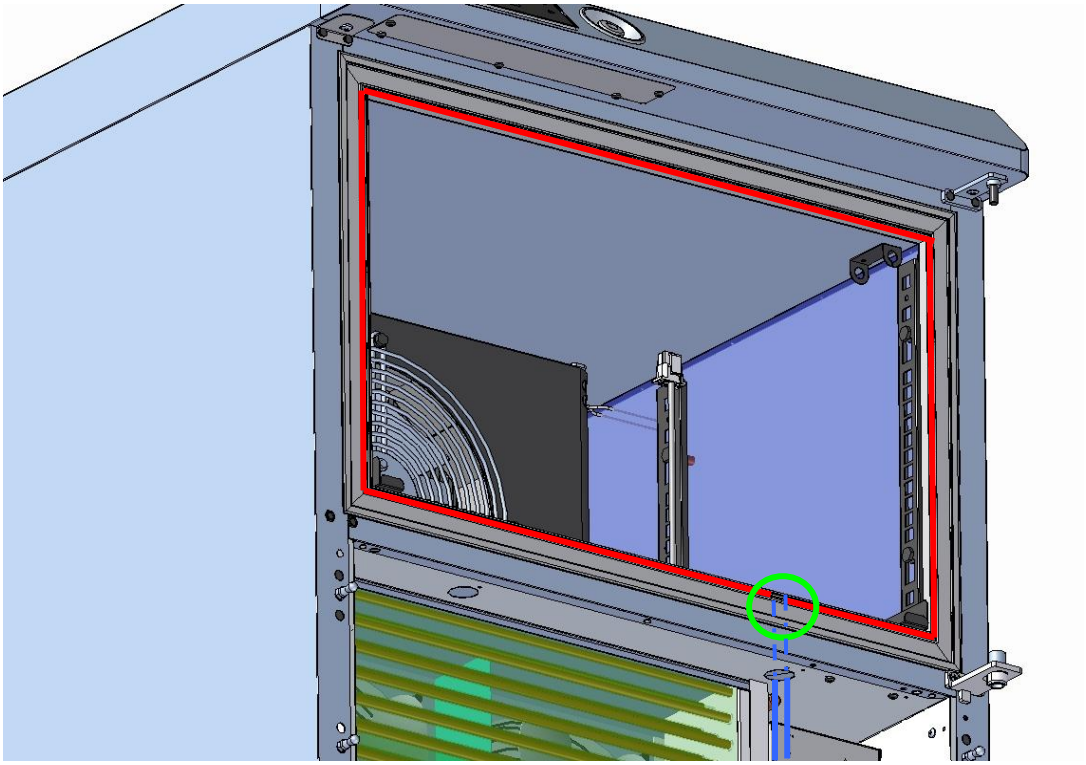


Figure 32

During assembly, the heating element is passed through the frame, in correspondence with the green circle, inserted inside the structure, from where it will then exit from the compartment below. Subsequently, following polyurethane injection, the cable will remain trapped inside the structure. To remove the heating element, you will have to remove the polyurethane part in this area.

Figure 33

V. Using a drill, delicately remove the polyurethane present in the resistance cable passage duct, taking care not to damage the frame and the surrounding plates.

Figure 34

VI. Remove the heating element from its housing, taking care not to damage the frame.

Figure 35

VII. Once the passage duct has been freed of the polyurethane, remove the old resistance.

VIII. Insert the metal connectors of the new resistance in the duct that has just been opened and insert them into the plastic mate-n-lok terminal in the compartment below. See section 3.2 for details regarding mate-n-lok connectors.

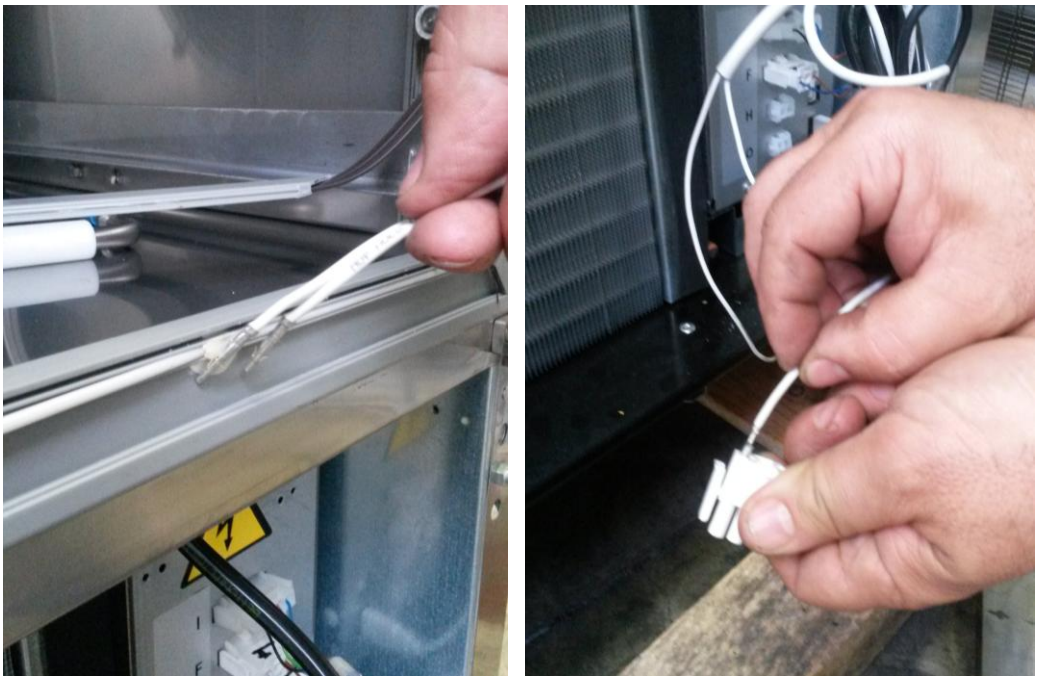


Figure 36

IX. The resistance is composed of a hot zone and a cold zone. The hot part is delimited by the two red reference marks.

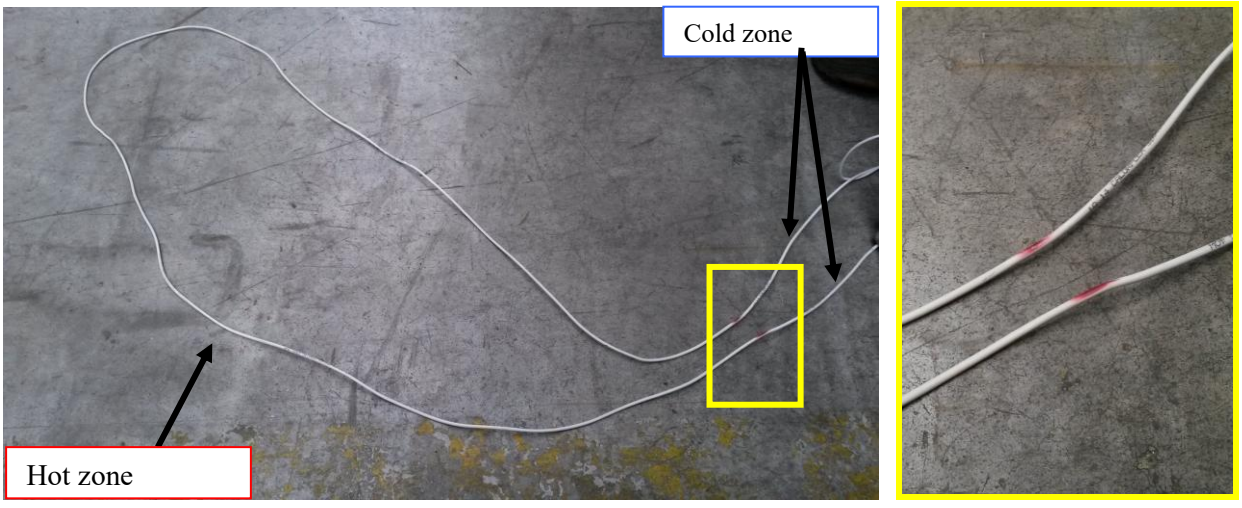


Figure 37

It is important to position the heating element in its housing so that the hot part covers the entire perimeter of the frame and the cold part is instead outside of it. **Avoid contact between the two hot zones of the heating element to prevent burning.**

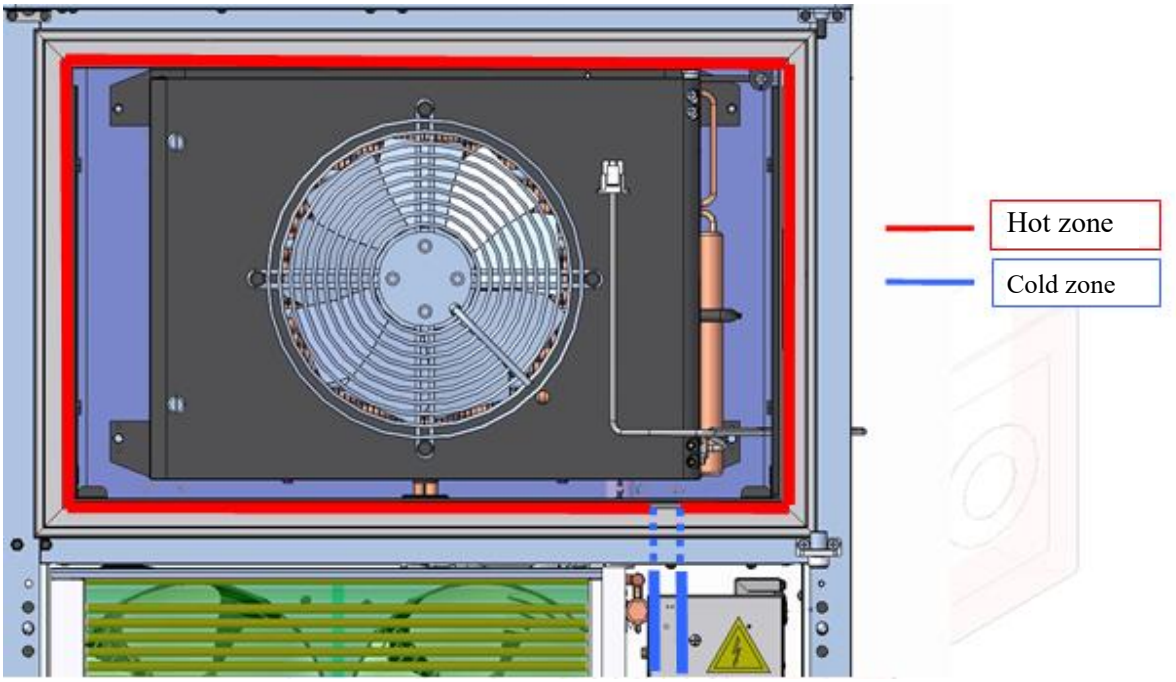


Figure 38

X. Fill the previously opened wire passage duct with stucco or silicone, sealing the refrigerated chamber as much as possible.

XI. Reassemble the frame cover, first encasing the bottom part in its housing (see figure) and then pressing on the top part.

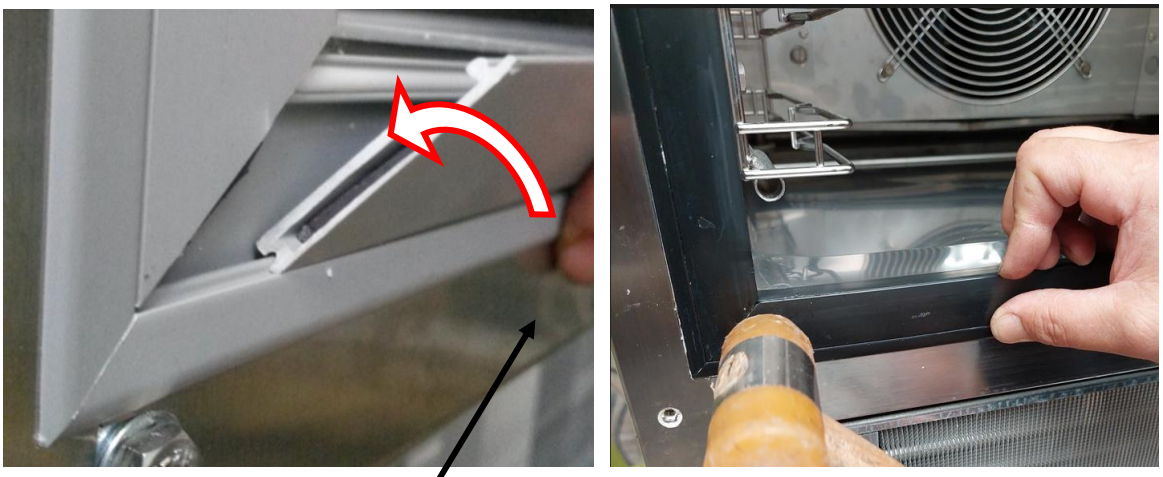


Figure 39

XII. Connect mate-n-lok terminal "H" to the electrical panel and re-close the condenser protective panel.

KPS42SG… - KPS72SG - KPS120SG

XIII. The electrical panel is found in the lower compartment in model KPS42…

Figure 40

XIV. Disconnect mate-n-lok terminal "H" from the electrical panel.

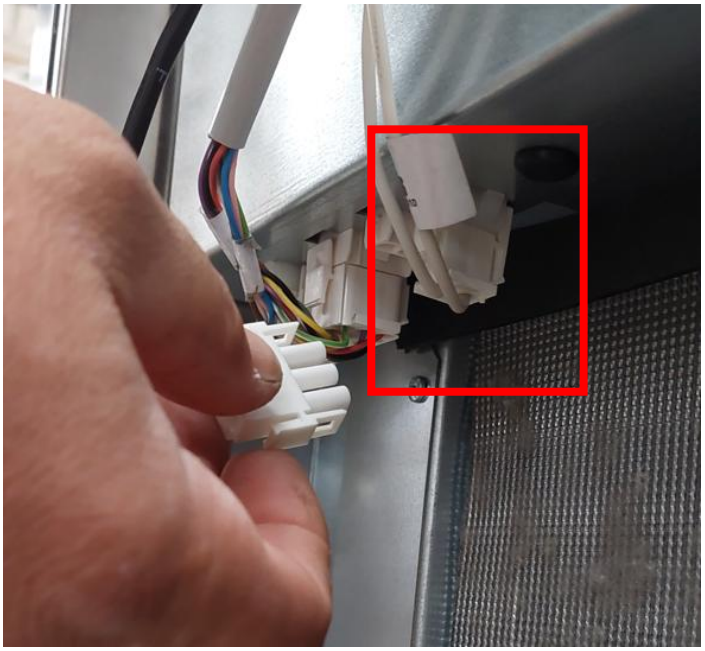


Figure 41

XV. Take the same precautions previously described for model KPS21SG when reassembling the new heating element.

3.7 DOOR/BRACKET MAINTENANCE

Proceed as follows to replace the door.

I. Dismantle the condenser protective panel and the wiring protective plate as described in section 3.4 paragraphs I and III.

II. Disconnect the “G” and “L” Mate-n-lok terminal and cut the cable grips.

Figure 42

III. Remove the metal connectors inside plastic “G” and “L” Mate-n-lok terminal. See section 3.2 mate-n-lok maintenance for details.

Figure 43

IV. Unscrew the two screws at the rear and that lock the upper support top and pull the surface backward (see figure).

Figure 44

V. Raise the surface and remove the surface, freeing it from the screws at the front and remove the door.

Figure 45

Figure 46

VI. You can adjust the position of the hinge along the fin to ensure a perfect seal.

Figure 47

VII. To correctly level the door, loosen screws and move the bottom door support along the slots.

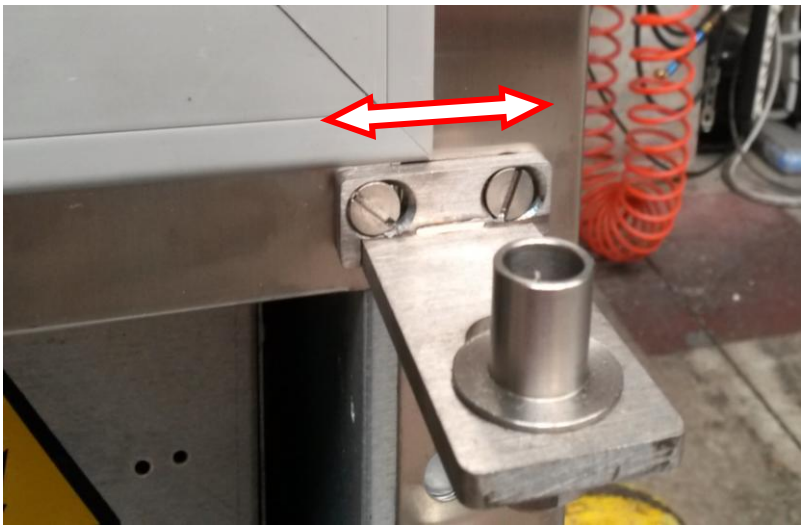


Figure 48

Make sure that the power supply cable bush has been treated with liquid Vaseline to avoid unwanted twisting of the cable.

3.8 ELECTRICAL PANEL AND SUB-COMPONENT MAINTENANCE

Proceed as follows to perform electrical panel maintenance.

KPS21SG

I. Dismantle the condenser protective panel and the wiring protective plate as described in section 3.4 paragraphs I - III.

II. Disconnect all mate-n-lok terminals and the USB cables connected to the panel.

Figure 49

III. Remove the screw shown in the figure and remove the electrical panel.

Figure 50

IV. Unscrew the top screws fastening the top panel plate.

Figure 51

V. Remove the top plate.

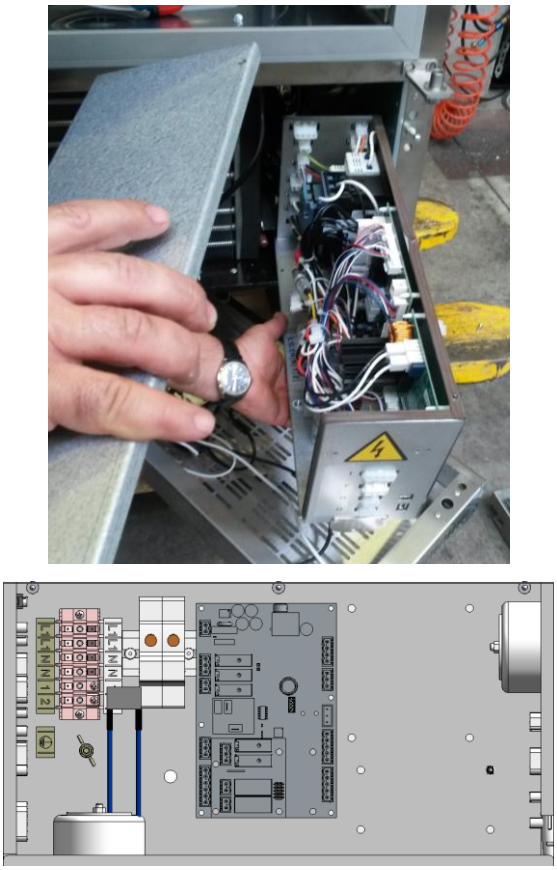


Figure 52

KPS42SG… - KPS72SG - KPS120SG

The electrical panel is located at the lower of the machine in the models shown above.

VI. Remove the instrument panel and the top protective plate as described in section 3.4 paragraph VII.

VII. Unscrew the screws shown in the figure to remove the electrical panel cover plate.

Figure 53

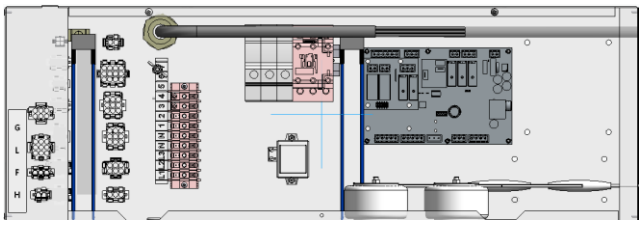


Figure 54

3.9 FUSE MAINTENANCE

Open the fuse holder.

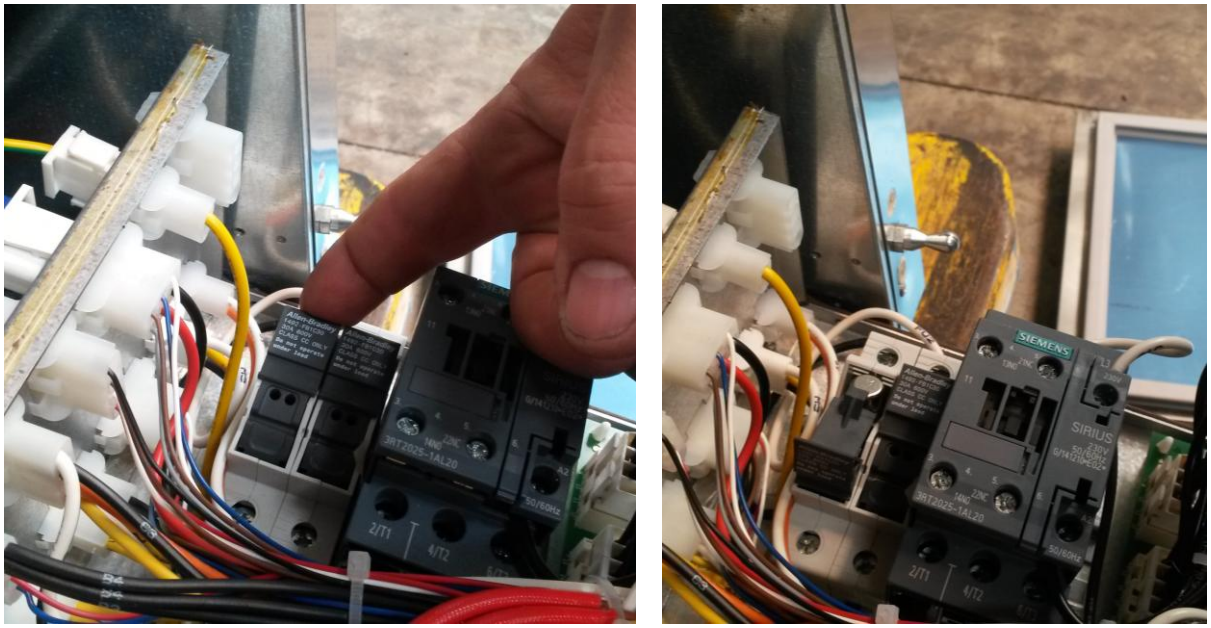


Figure 55

Remove the fuse to be replaced.

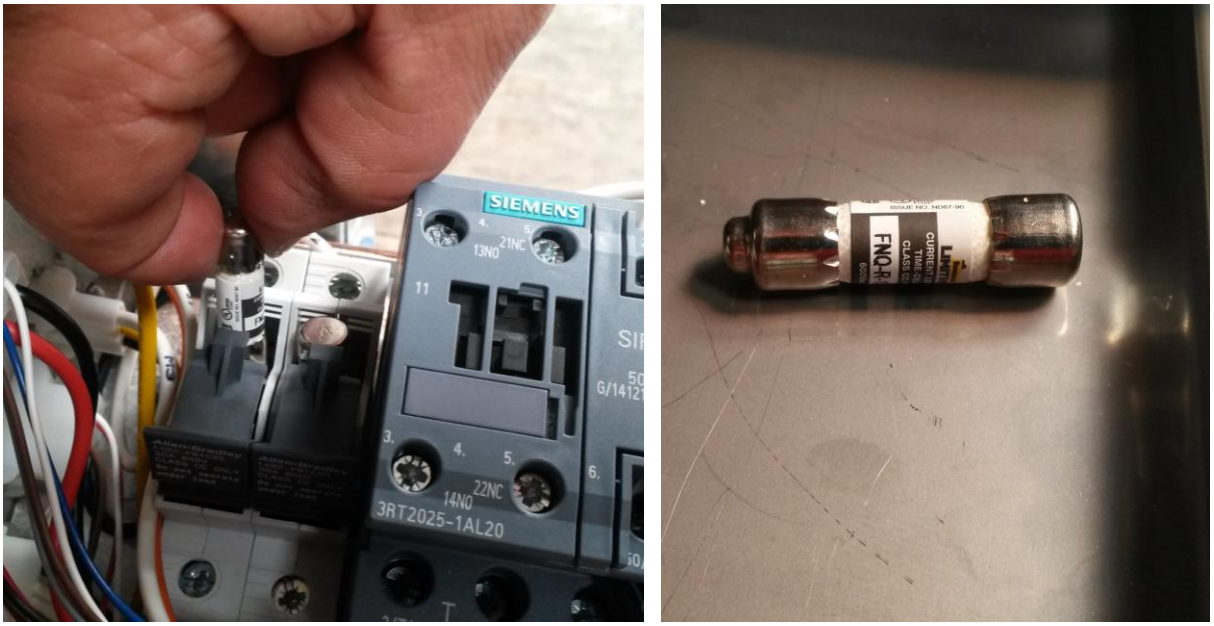


Figure 56

3.10 CONTACTOR MAINTENANCE

Loosen screws in order to disconnect contactor electrical connections.

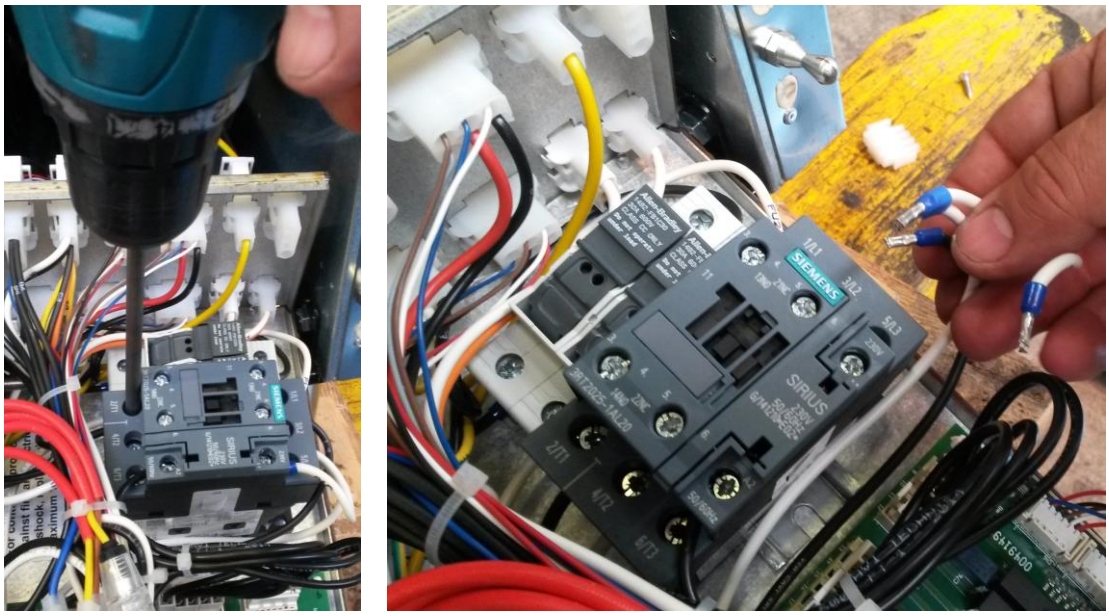


Figure 57

To remove the contactor, push forward and then lift the component as indicated in the figure. In models KPS42…, you will need to dismantle the fuse holders before removing the contactor.

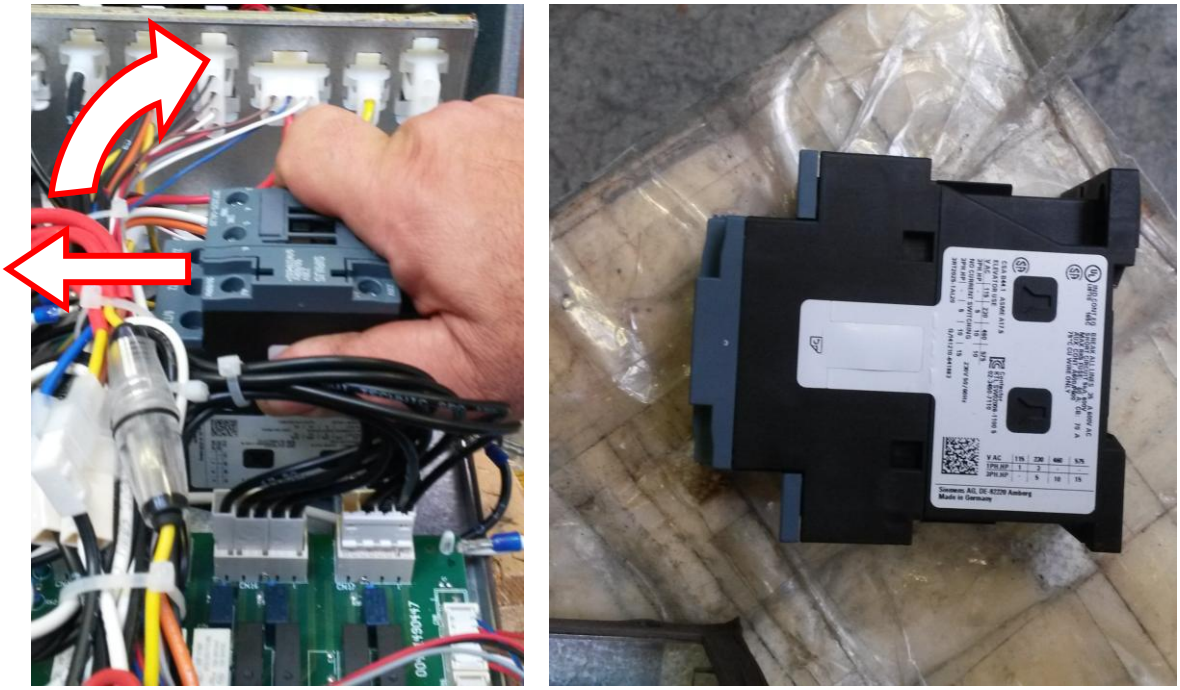


Figure 58

3.11 PROBE RESISTANCE TRANSFORMER MAINTENANCE

Unscrew the transformer fastening screw.

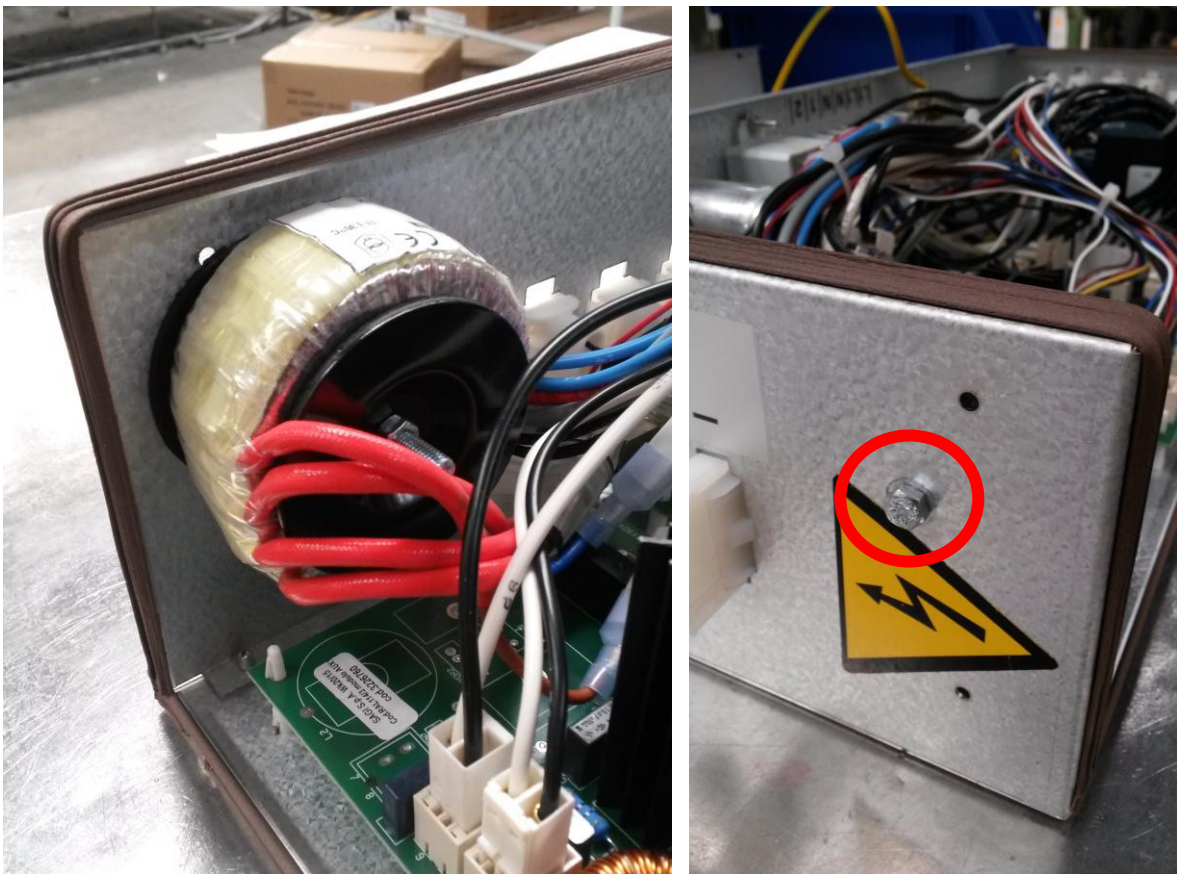


Figure 59

Cut grips and disconnect the 4 transformer connectors.

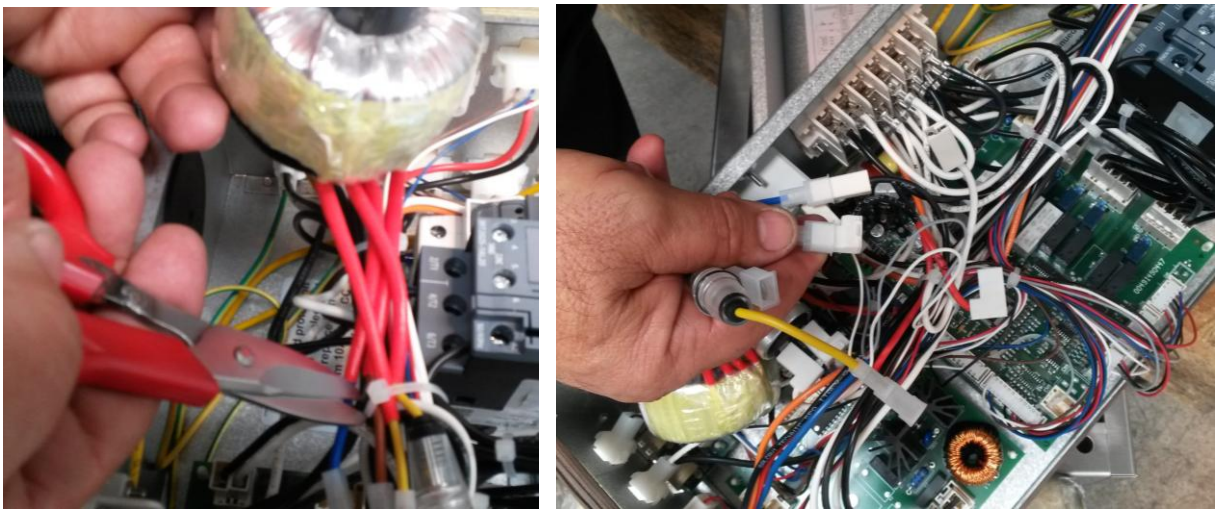


Figure 60

Before replacing the transformer, check fuse conditions and replace if necessary.

Figure 61

When assembling the new transformer, pay attention to the sequence of assembly of its components.

Figure 62

3.12 REMOVING THE MATE-N-LOK FEMALE CONNECTOR

Use a screwdriver on the fastening fins on both sides to remove the Mate-n-lok connector from the electrical panel.

remove the connector from inside the panel.

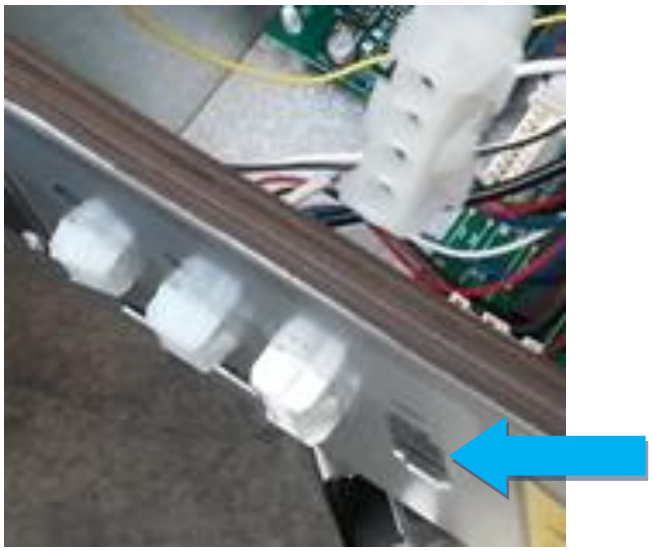


Figure 63

3.13 BOARD MAINTENANCE

Disconnect all connectors on the board to be removed.

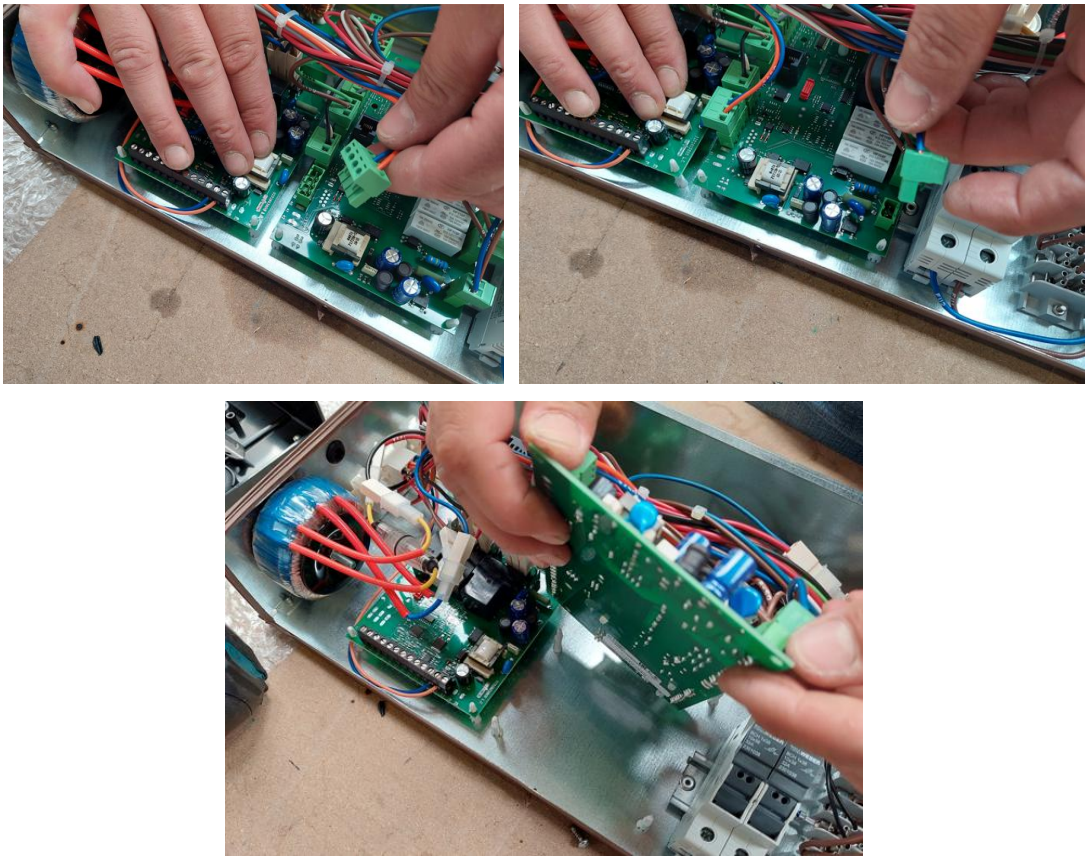


Figure 64

Use a screwdriver on the plastic fastening pin fins and lift the board.

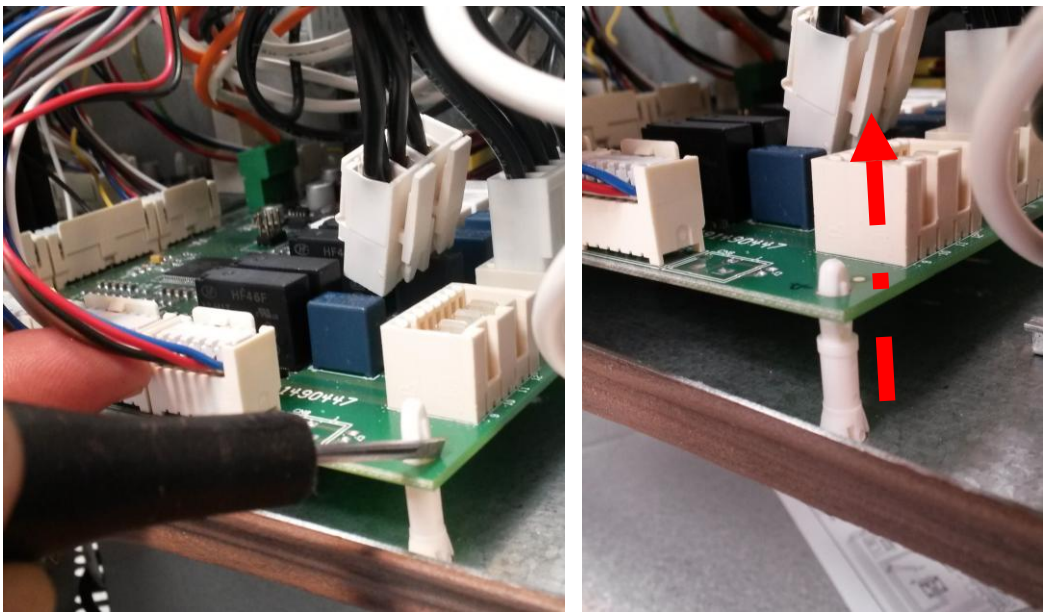


Figure 65

Repeat this operation on the four fastening feet and remove the board.

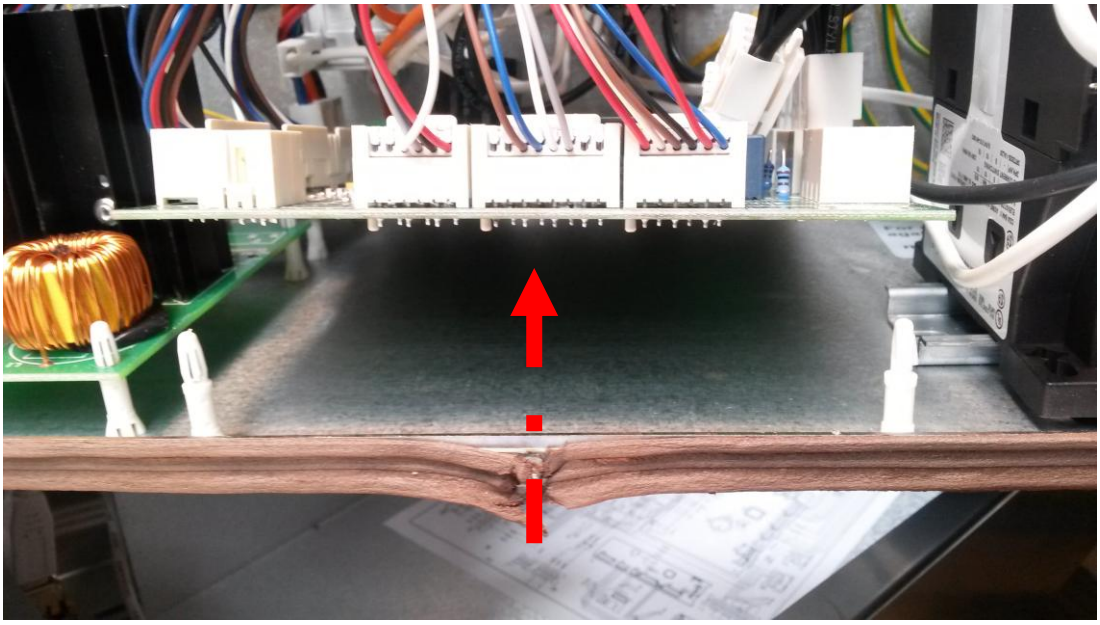


Figure 66

3.14 USB PORT MAINTENANCE

I. Remove the TFT video board support and then turn the USB holder fastening screws.

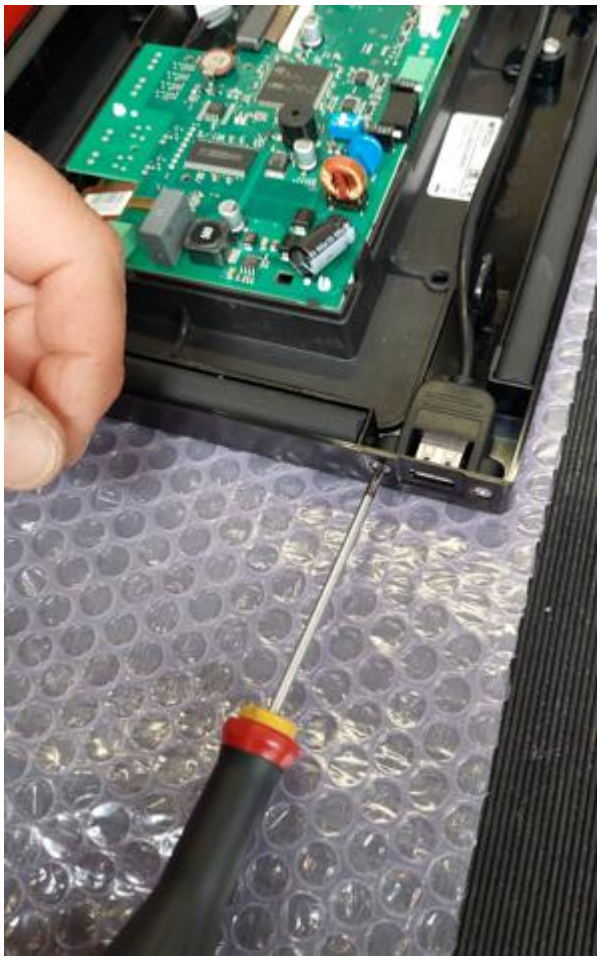


Figure 67

3.15 EVAPORATOR FAN MAINTENANCE

KPS21SG…

I. Remove any shelf supports or grilles present.

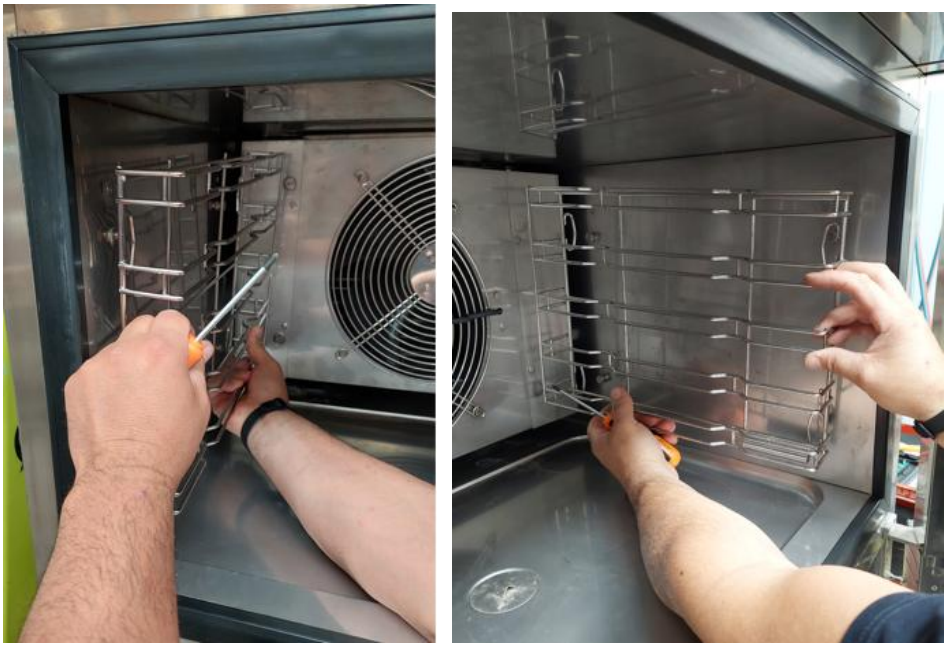


Figure 68

II. Remove the deflector fastening screws shown in the figure.

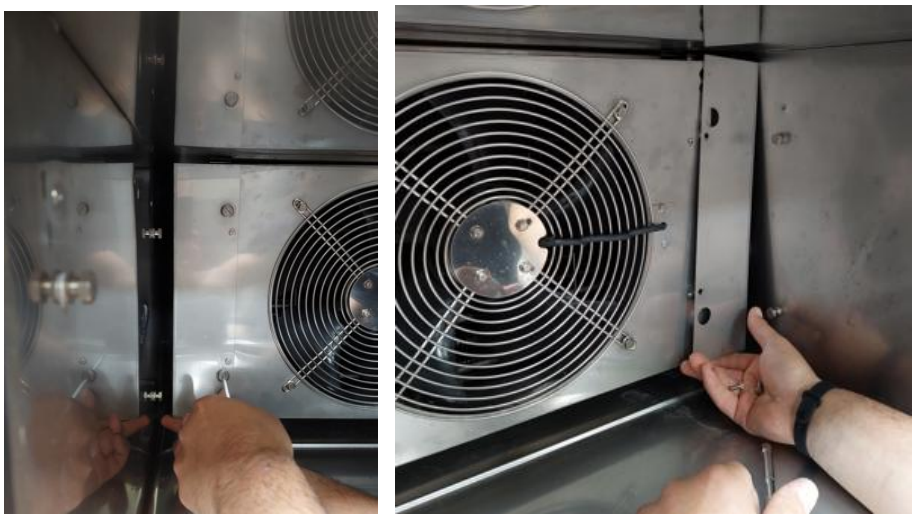


Figure 69

III. Rotate the fan support plate.

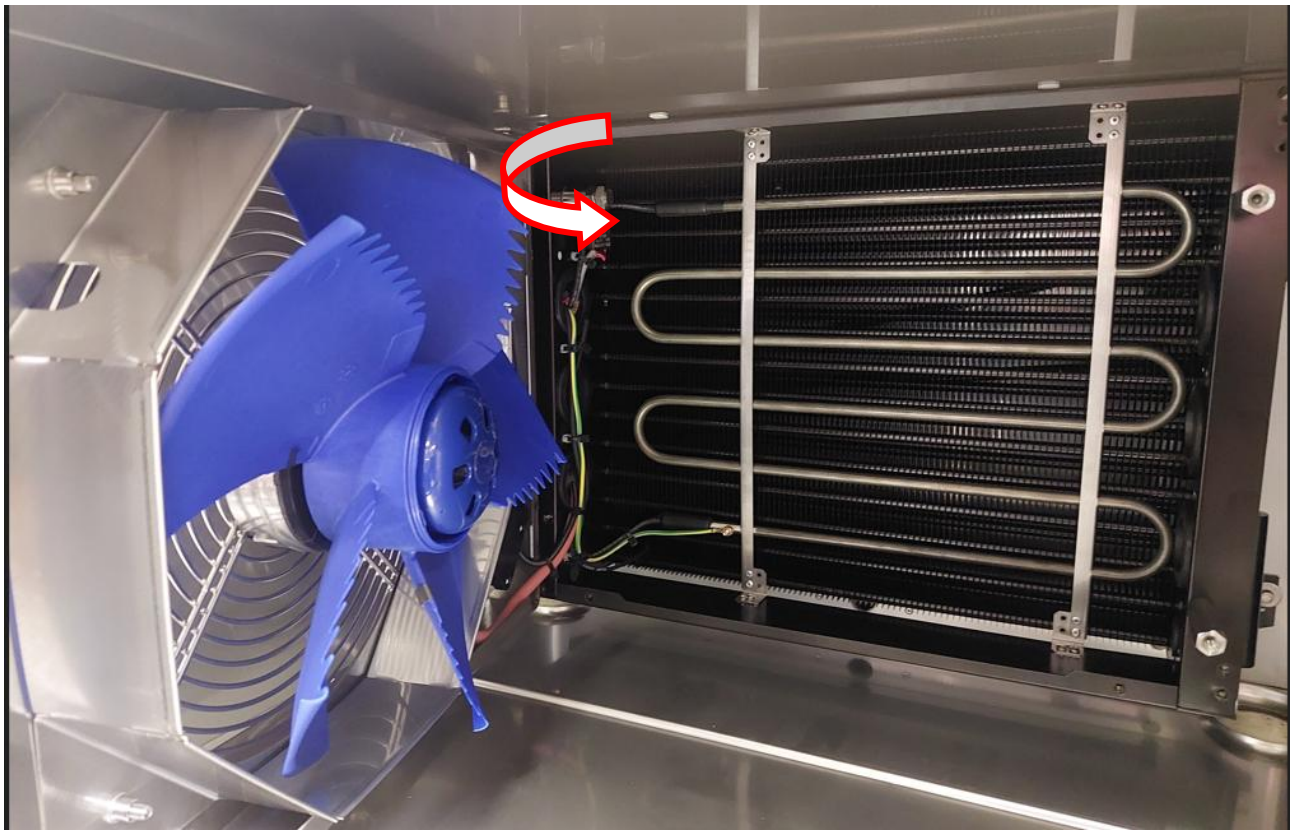


Figure 70

IV. Dismantle the grille with the fan, unscrewing the screws shown in the figure.

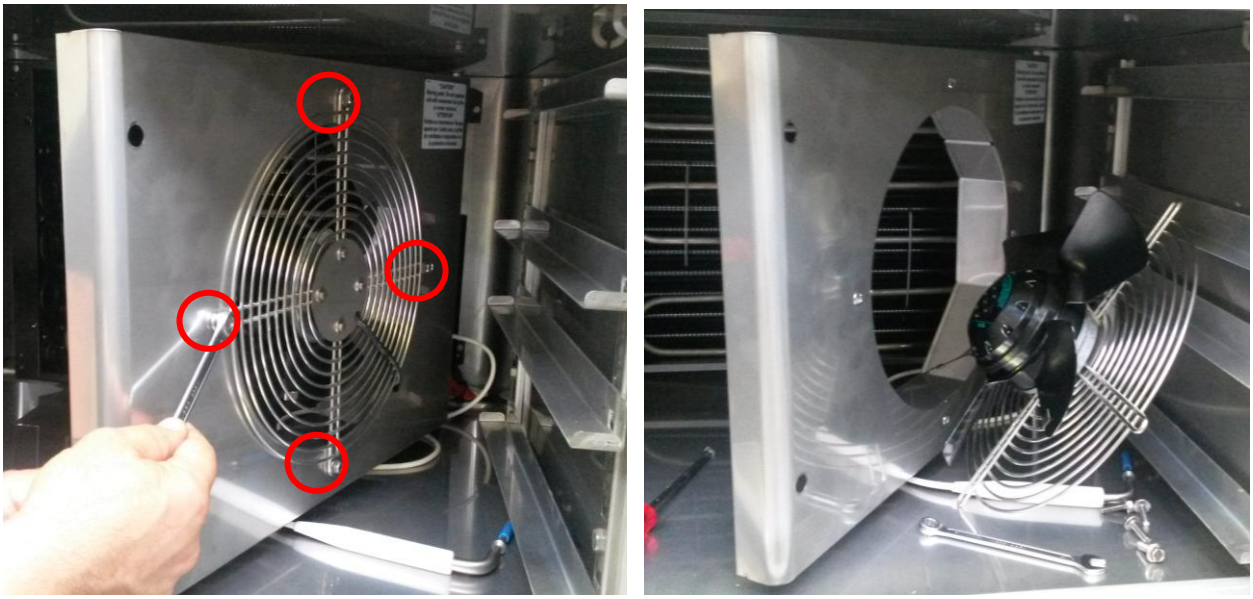


Figure 71

V. The replacement fan will be supplied with the plug cable ready to be reassembled.

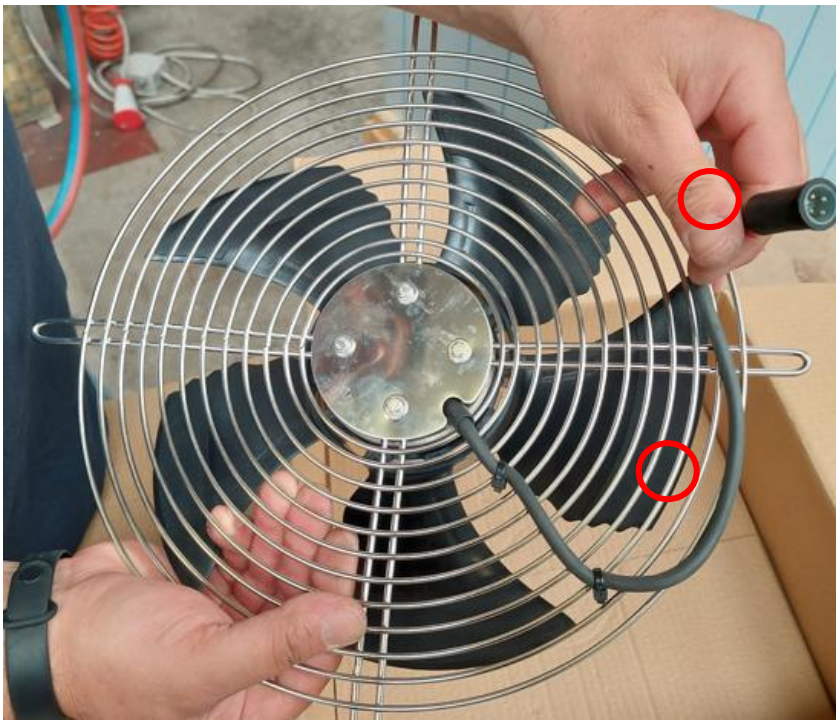


Figure 72

KPS42SG…

VI. Models KPS42SG… have a double fan for the evaporator but the procedure for their removal is the same with respect to models KPS21SG….

Figure 73

VII. Fan cables reach the electrical panel at the top of the refrigerated compartment.

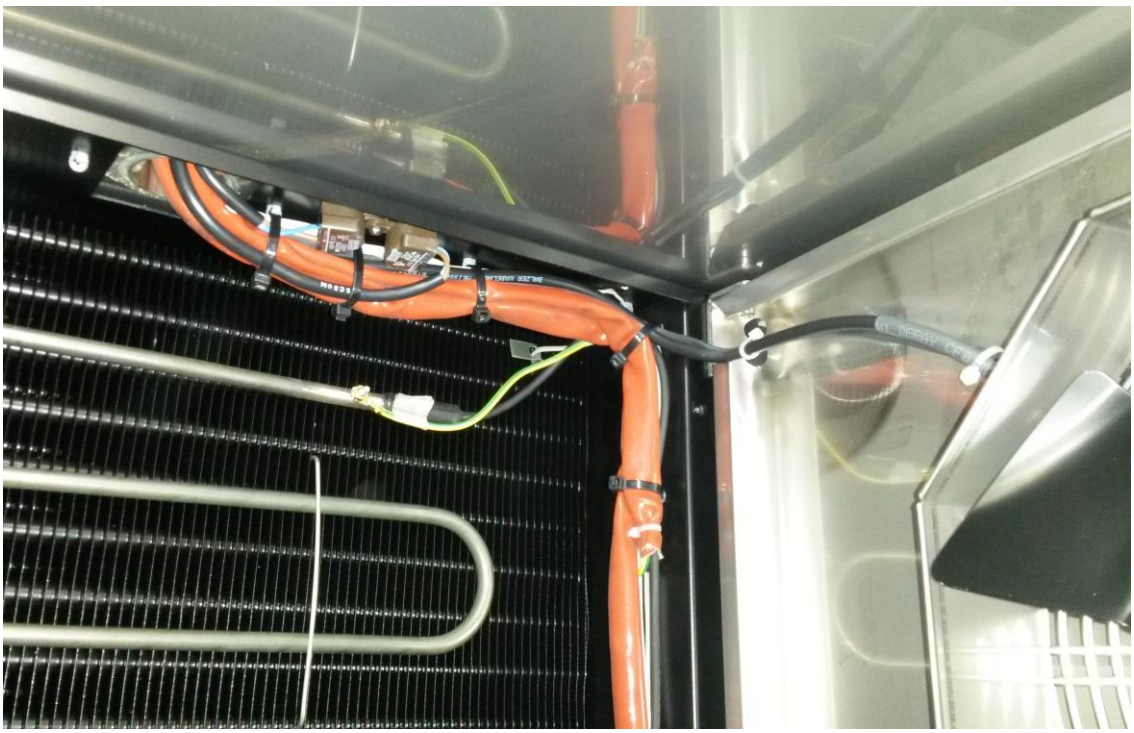


Figure 74

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3. MAINTENANCE: PART 2

3.18 NEEDLE PROBE AND CHAMBER/EVAPORATOR PROBE MAINTENANCE

NEEDLE PROBE

The needle probe is connected to the port via a connector on the counter-port.

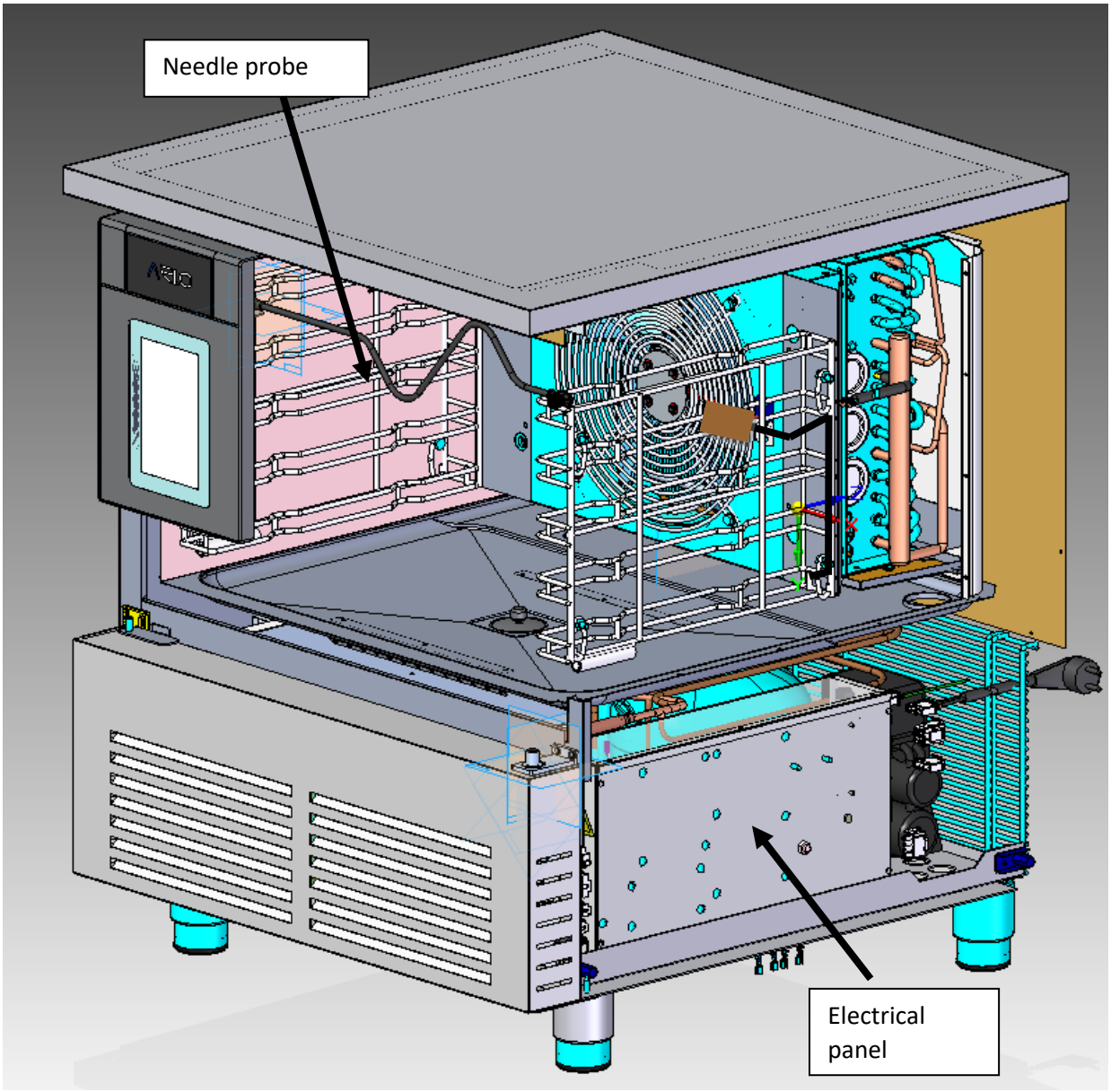


Figure 1

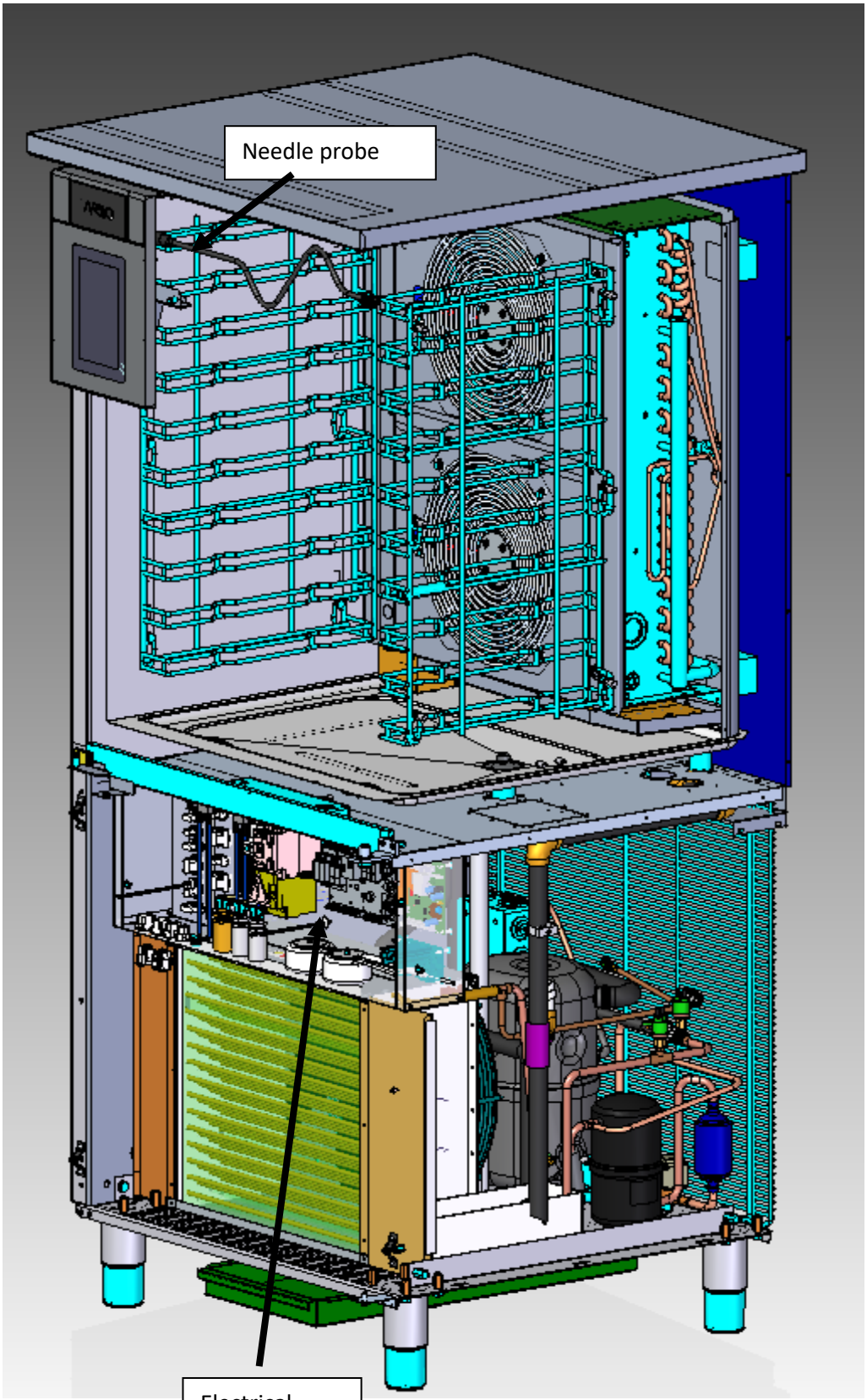


Figure 2

The multipoint needle probe is capable of detecting product temperature inside the refrigerated compartment at 3 different points.

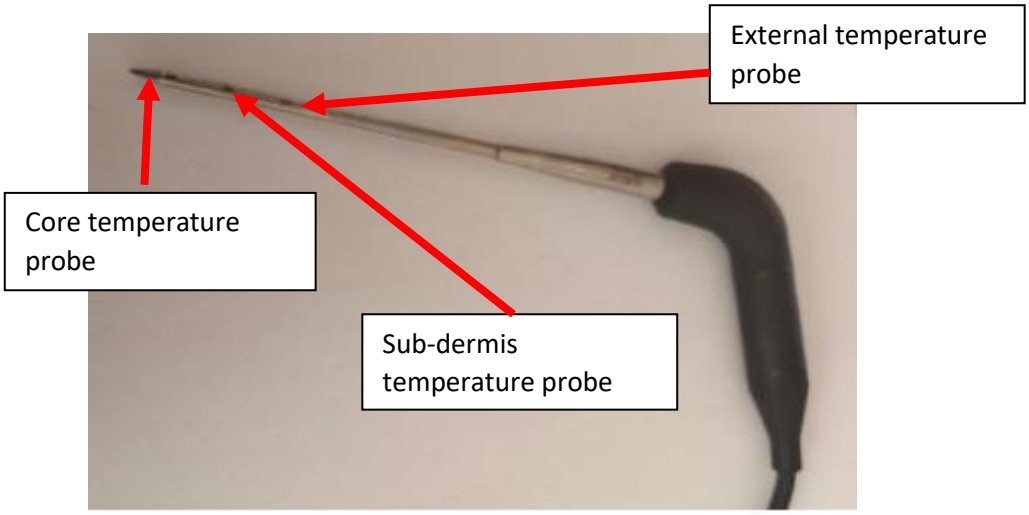


Figure 3

I. To disconnect the needle probe inside the refrigerated compartment, disconnect the intermediate connector as shown in the figure: rotate the black part of the connector until you hear a click and then remove the connector.

Figure 4

II. e needle probe can now be replaced, being careful with insertion, respecting the insertion method guided by the reference element.

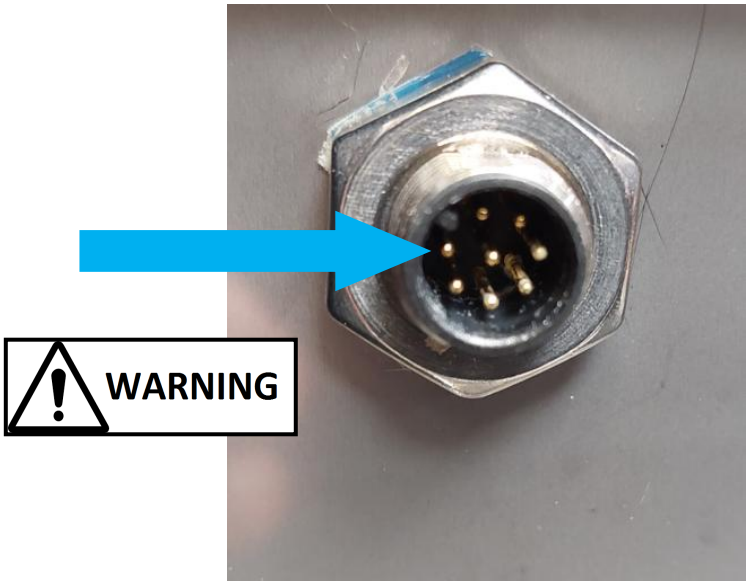


Figure 5

III. Rotate the black apart until it clicks to lock the connector.

CHAMBER AND EVAPORATOR TEMPERATURE PROBES

Figure 6

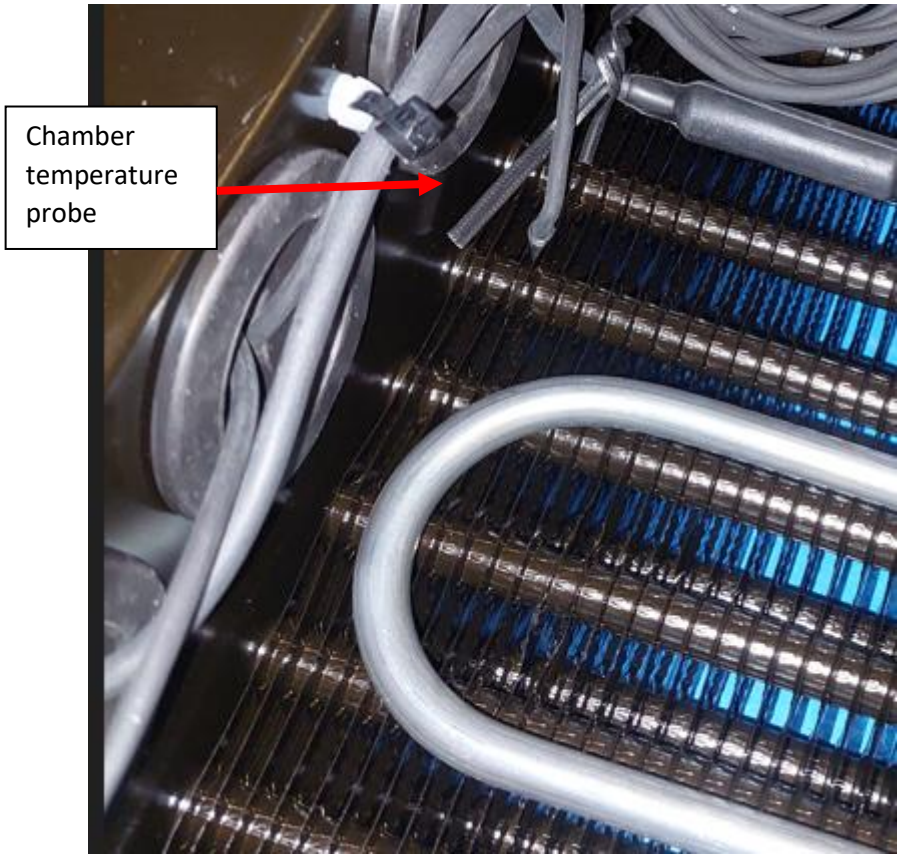


Figure 7

IV. Open the fins to access the defrost/evaporator probe.

Figure 8

V. Cut the grips inside the refrigerated compartment to free the cables on the two probes.

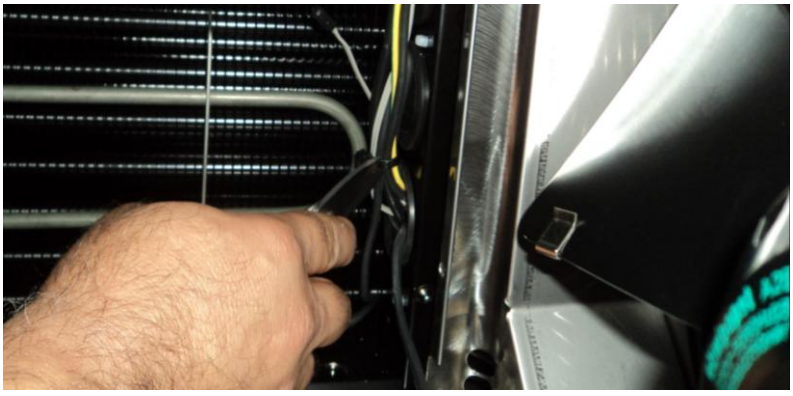


Figure 9

VI. After removing the protective grille (see sect. 3.21), cut the grips in the motor compartment and disconnect terminal "E". Remove probes.

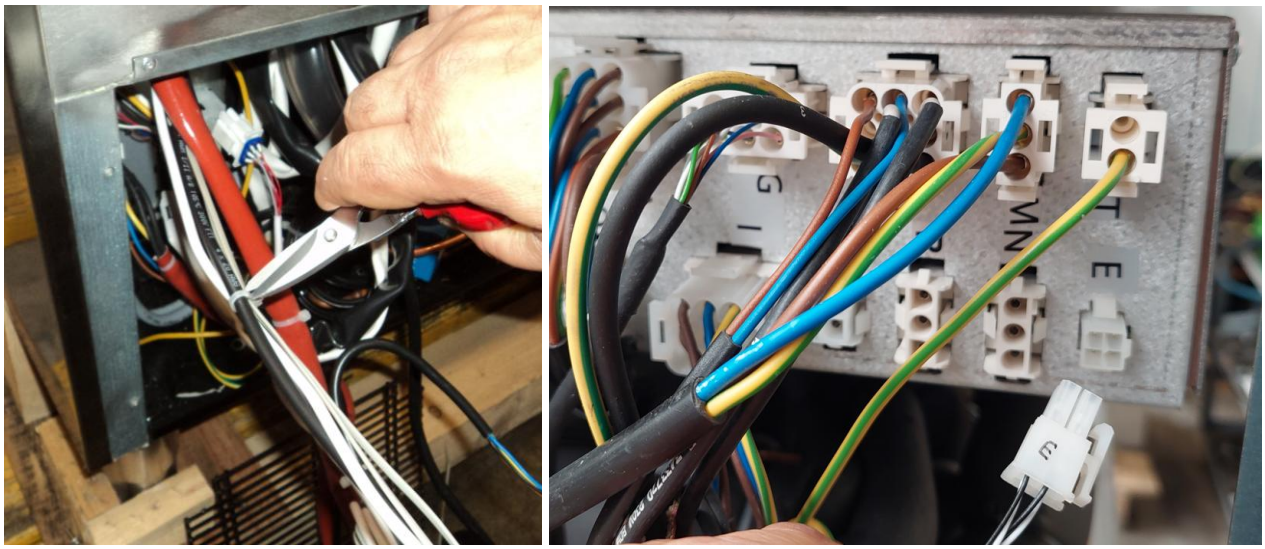


Figure 10

VII. The new probes will be provided with the mate-n-lok terminal already wired (see figure). Connect the terminal to the electrical panel and insert the new sensors in the refrigerated compartment. Restore wiring and grips.

Figure 11

BIMETALLIC THERMOSTAT

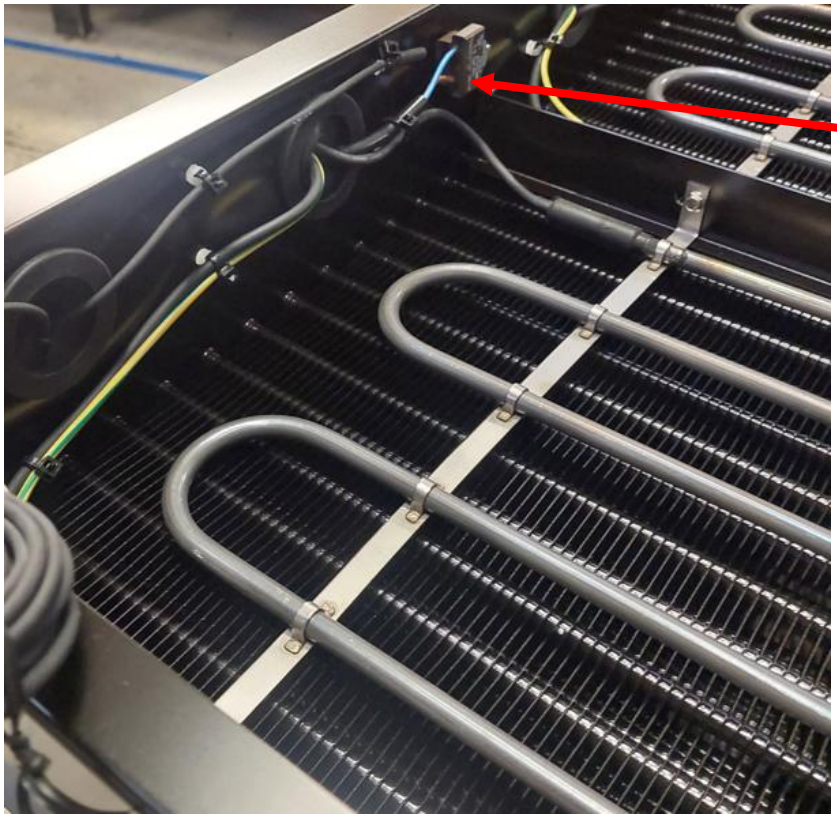


Figure 12

VIII. Remove the thermostat with a socket screwdriver (disassemble the nut and keep the screw in position).

Figure 13

IX. Cut the grips necessary to remove the bimetallic thermostat through the cable passage hole on the evaporator.

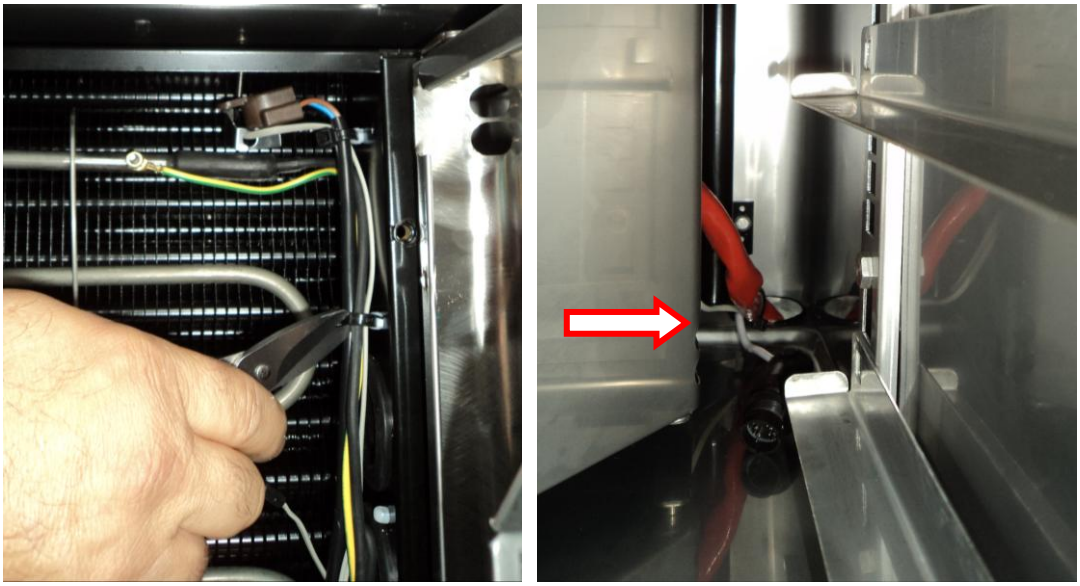


Figure 14

X. Disconnect Mate-n-lok connector "D". This connector is in common with evaporator resistance cables, so you need to remove the metal connectors on the thermostat inside the terminal. For details of this operation, see Mate-n-lok maintenance section 3.2. With reference to the picture below, the bimetallic thermostat cables are shown in blue and brown. Once the two cables have been disconnected from the connector, the bimetallic thermostat can be removed from the refrigerated compartment.

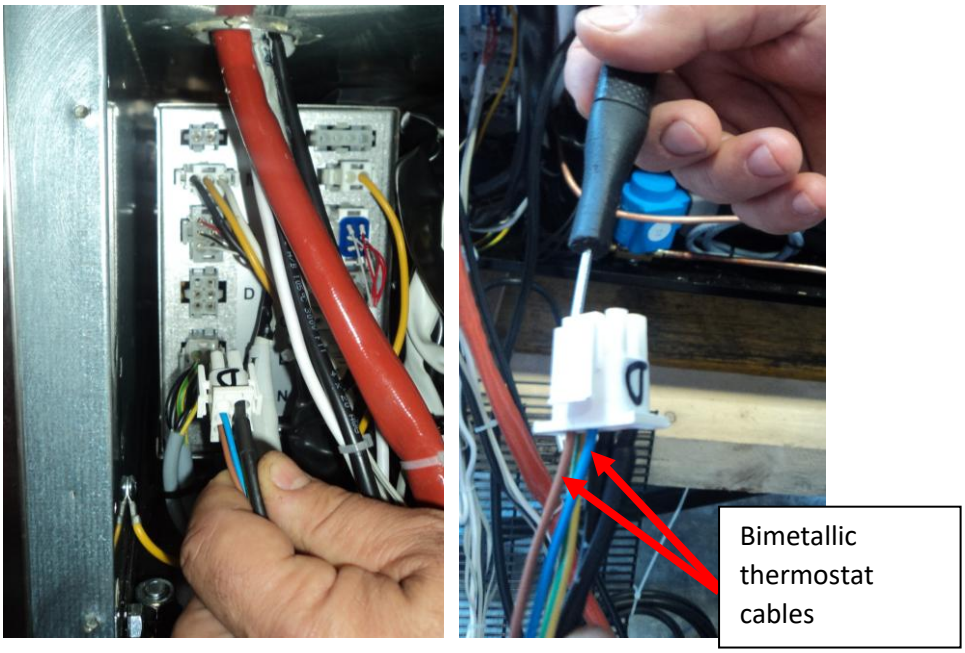


Figure 15

XI. The new bimetallic thermostat comes supplied as shown in the figure, without the plastic mate-n-lok connector.

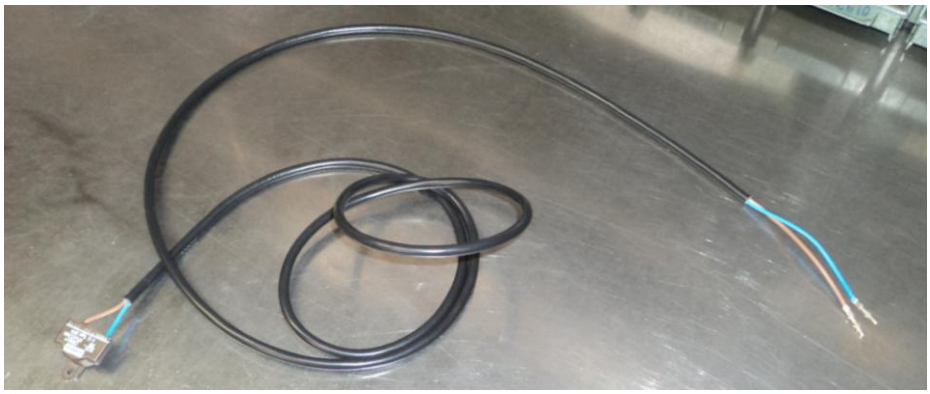


Figure 16

XII. Run the cable from the refrigerated compartment to the motor compartment, insert the metal connectors in plastic terminal "D" and reassemble the connector on the electrical panel. Assemble the new thermostat, restoring the previous situation (cable passage –grips).

3.19 EVAPORATOR RESISTANCE MAINTENANCE

KPS21SG…

I. Repeat the operations described in section 3.17 paragraphs I – III.

Figure 17

II. Remove the cross profiles holding the evaporator resistance in position, taking care not to damage the fins and evaporator tubes.

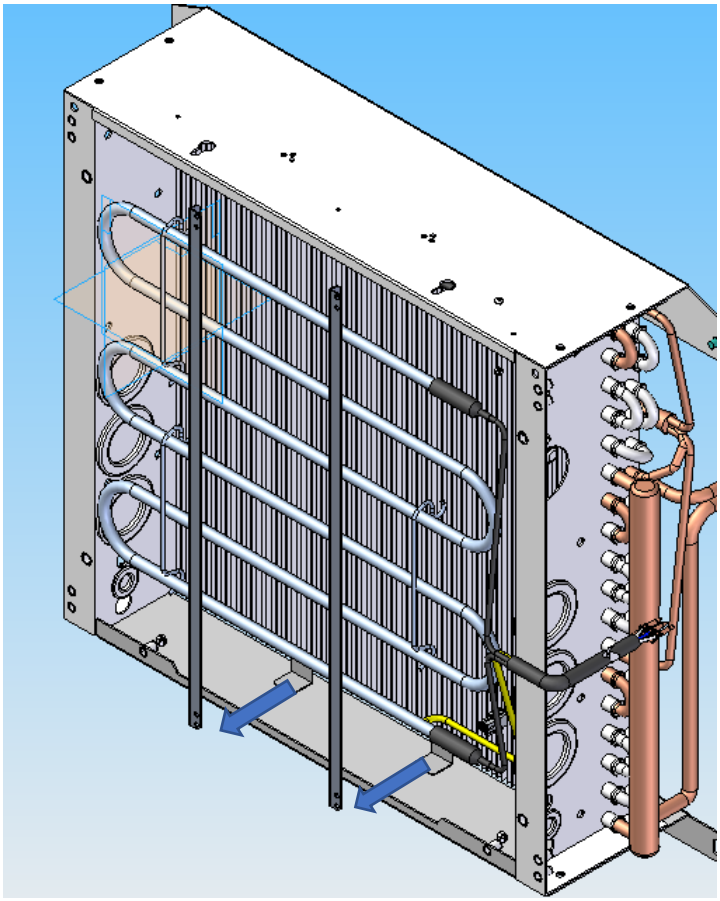


Figure 18

III. Remove the resistance and cut cable grips.

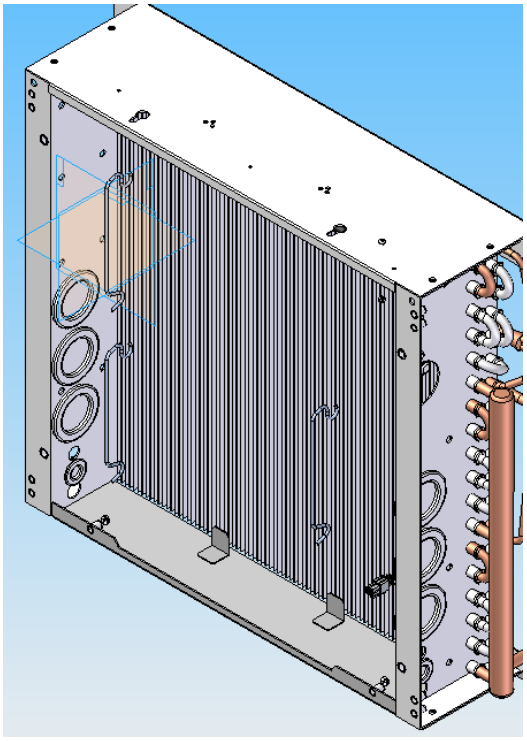


Figure 19

IV. Disconnect terminal "D" from the electrical panel and remove bimetallic thermostat cables (see section 3.18 paragraph XIV for details), which will be re-connected subsequently on the mate-n-lok connector provided with the new resistance.

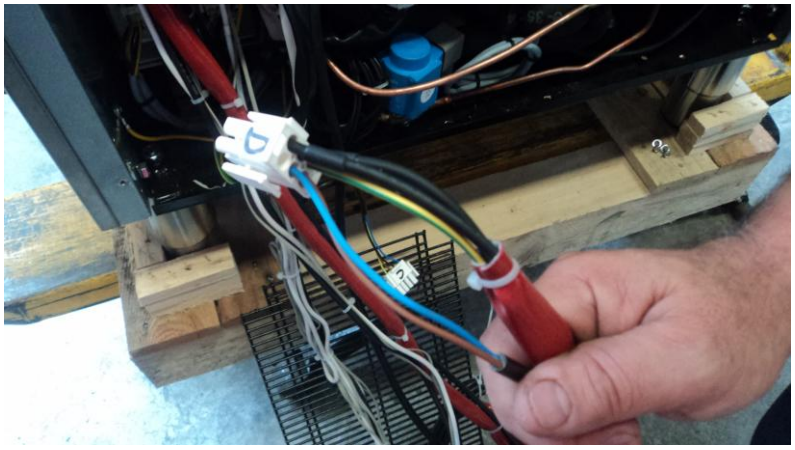


Figure 20

V. The new resistance is provided with the plastic Mate-n-lok connector already wired.

Figure 21

VI. Pass the new resistance cables (with the white connector assembled) from the refrigerated compartment to the motor compartment and re-connect bimetallic thermostat connectors.

VII. Assemble the resistance on the evaporator, re-assembling the previously disassembled sheet metal profiles.

WARNING

VIII. Re-connect mate-n-lok terminal "H" on the electrical panel. Reset the cable passage with appropriate grips.

KPS42SG… - KPS72SG - KPS120SG

IX. The models indicated above have 2 resistances for evaporator defrosting. Follow the previously indicated procedure to remove resistances.

Figure 22

X. The resistances are both wired on terminal D together with bimetallic thermostats.

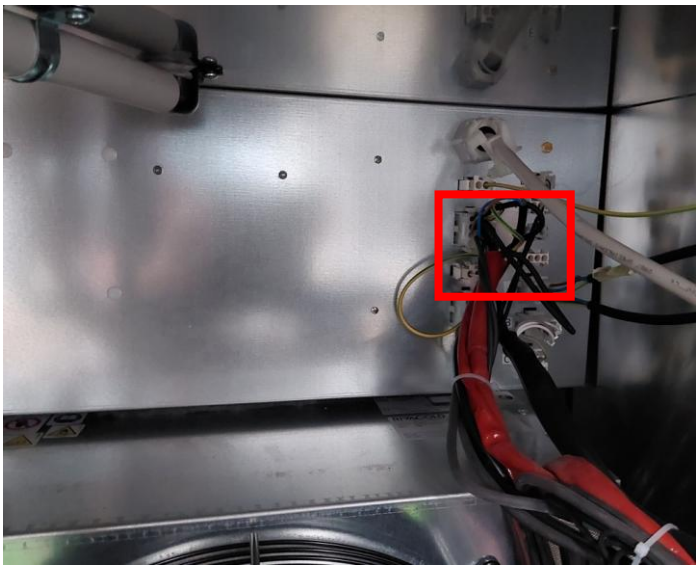


Figure 23

3.20 EVAPORATOR COIL MAINTENANCE

KPS21SG…

Proceed as follows to replace the evaporator:

I. Drain coolant from the circuit. If possible, use suitable equipment for recovering coolant, for example equipment shown in the figure.

Figure 24

II. Operate in the refrigerated compartment as described in section 3.17 paragraphs I – II - III.

III. Disconnect the evaporator fan cable as described in section 3.17 paragraph IV.

IV. Unscrew the screws indicated in the figure in order to disassemble and remove the fan from its panel.

Figure 25

V. Remove the bottom support shown in the figure to facilitate subsequent removal of the evaporator.

Figure 26

VI. Remove the needle probe, the chamber and evaporator temperature probes and the bimetallic thermostat as described in section 3.18.

VII. Remove the evaporator resistance as described in section 3.19.

VIII. Remove the protective grille on the motor compartment, cut the grips fastening the insulating sheath and unsolder the two evaporator tubes in the area shown in the figure.

Figure 27

IX. Unscrew the 4 screws fastening the evaporator to the structure with a socket wrench.

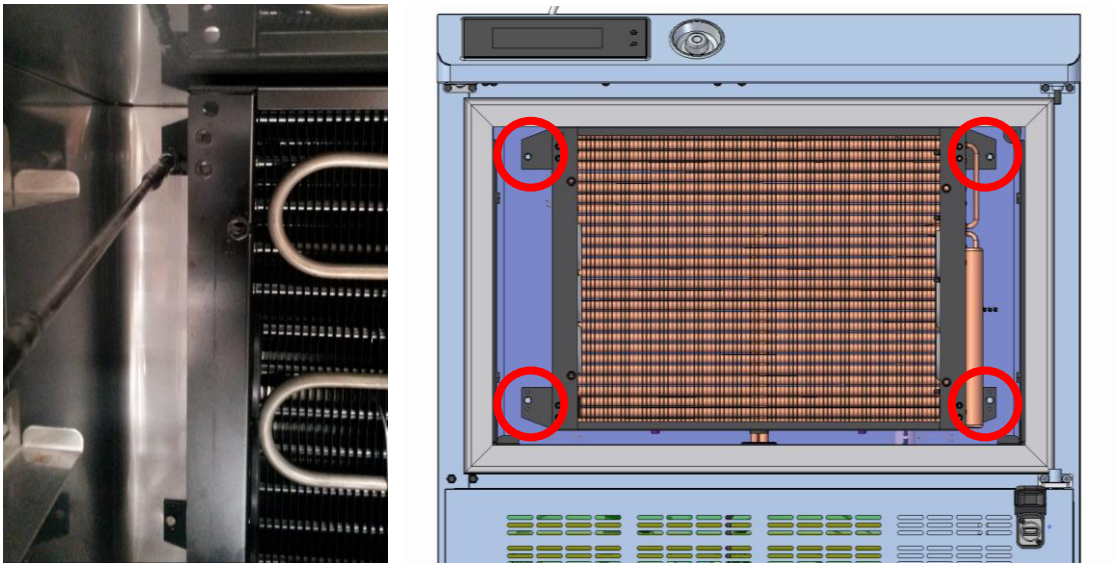


Figure 28

X. Remove the evaporator.

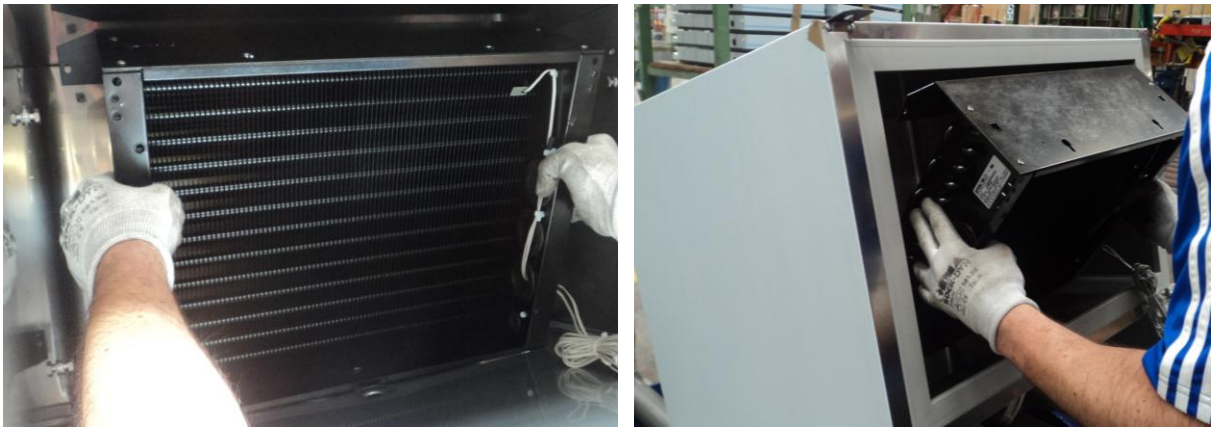


Figure 29

XI. Reassemble all sensors and the resistance on the bench on the new evaporator (see sect. 3.18 and 3.19).

XII. Assemble the new evaporator on the machine.

XIII. Weld piping, restoring the outgoing circuit.

XIV. Reassemble the fan unit on the evaporator.

XV. Refill coolant.

KPS42SG… - KPS72SG - KPS120SG

XVI. Remove the rear panel to access the area where the piping asses through the structure and remove the sealing paste that closes the passageways.

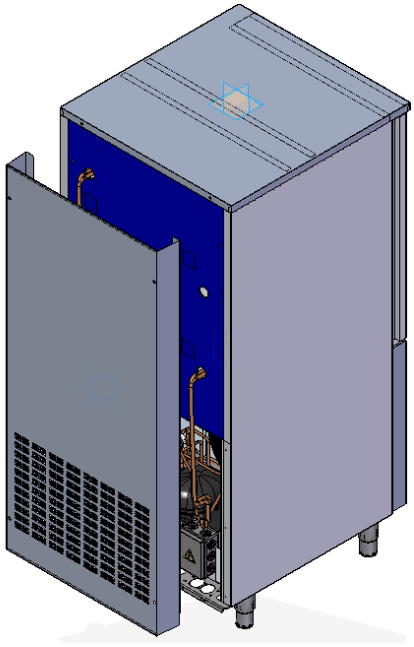


Figure 30

XVII. Disassemble the grille/tub support elements and then the fan guard by means of the support brackets as previously described

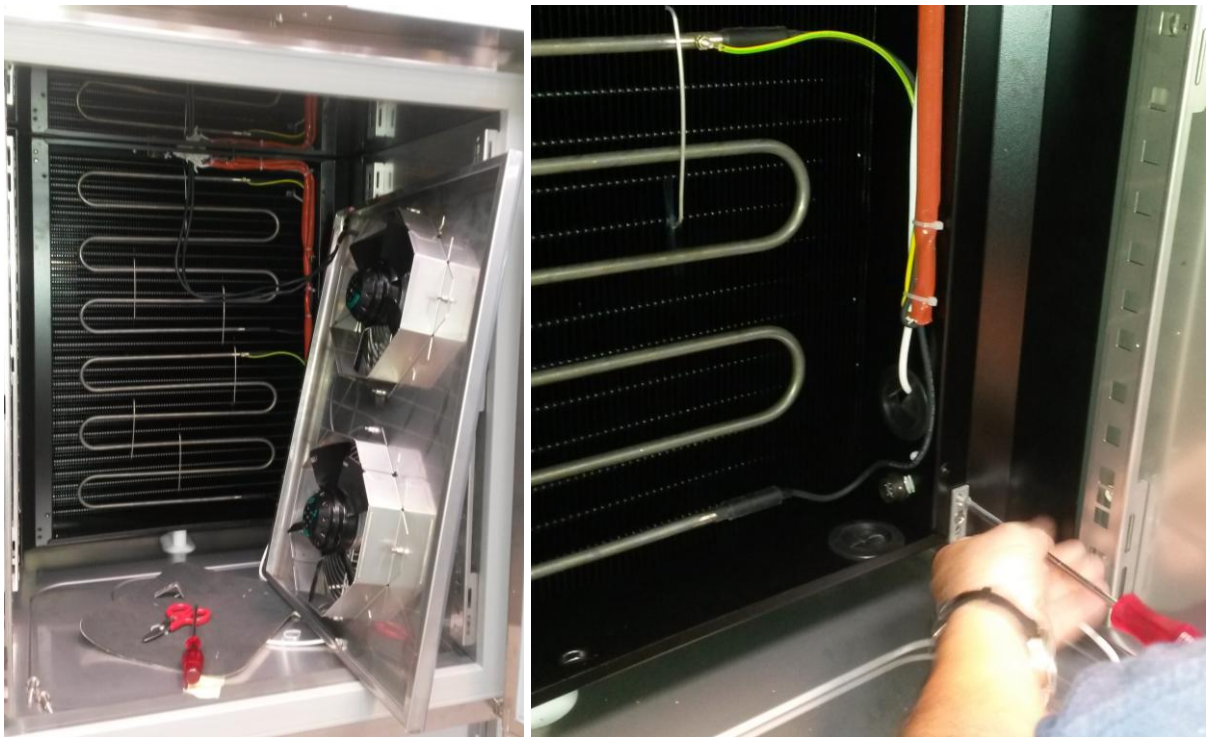


Figure 31

Figure 32

XVIII. Unsolder the evaporator pipes.

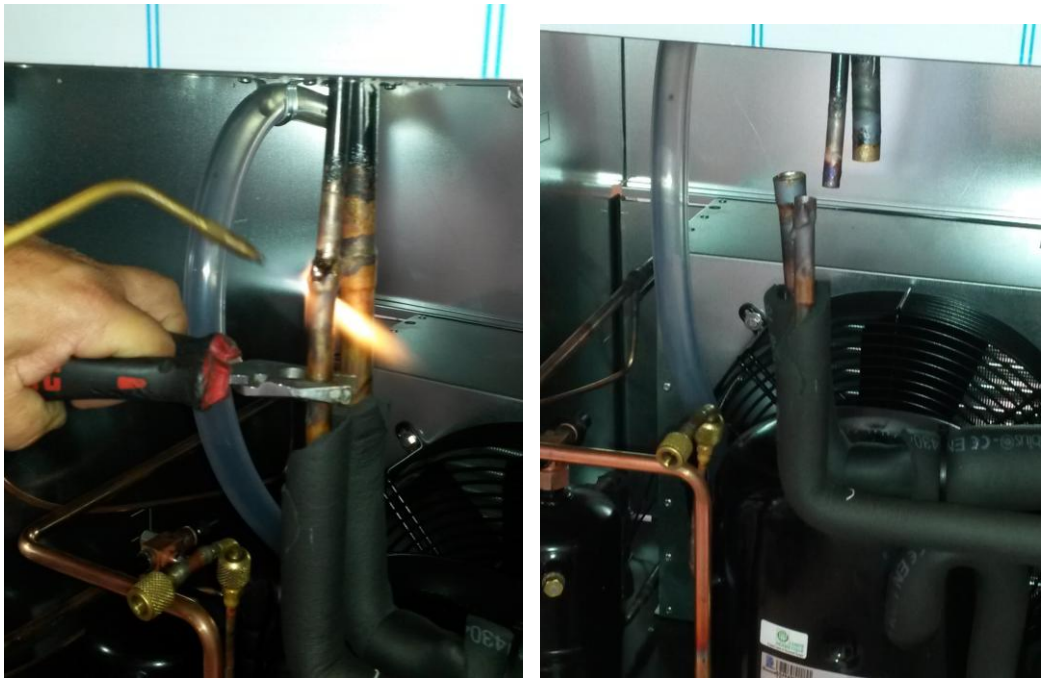


Figure 33

XIX. Unscrew (without removing) the top fastening screws on the evaporator. The evaporator has slots which allow for removal without completely removing screws. To remove the evaporator, move it in the direction indicated by the arrows.

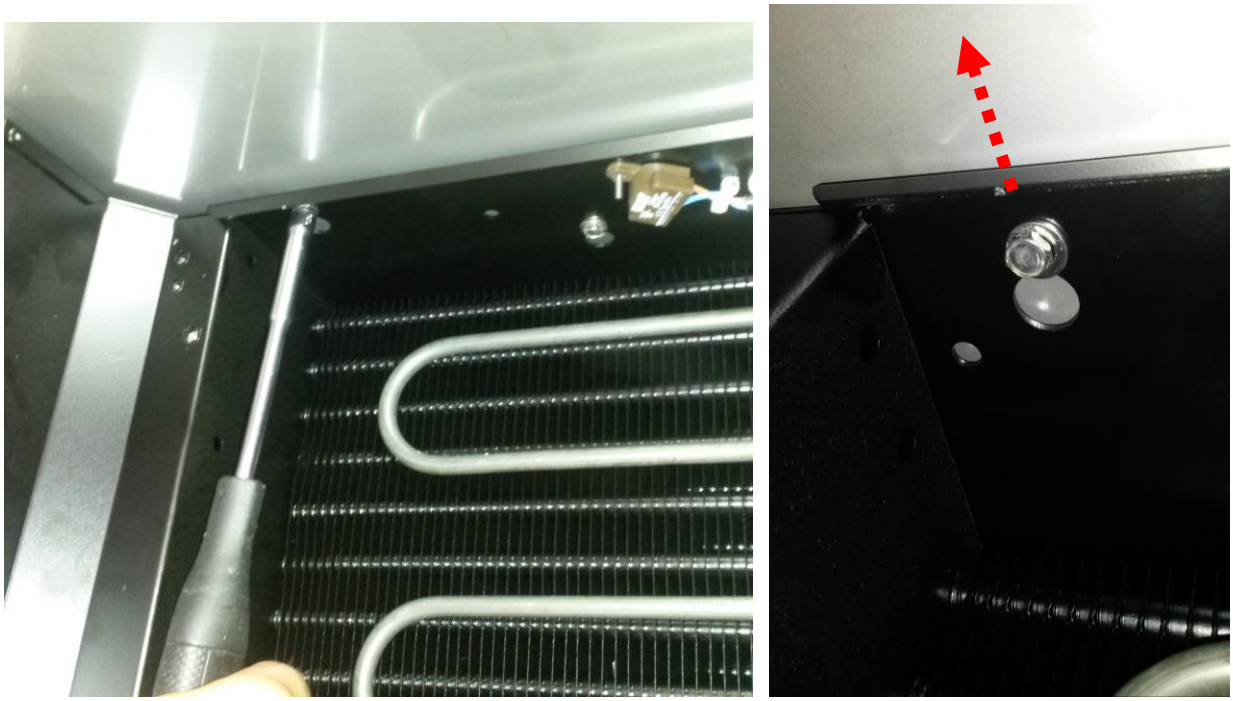


Figure 34

XX. Unscrew the fastening screws at the bottom of the evaporator.

Figure 35

XXI. Prepare the cables at the bottom of the machine so that they can be removed with the evaporator. Some mate-n-lok connectors are able to pass inside the duct without being dismantled.

XXII. Remove the evaporator and arrange it on the bench.

XXIII. Dismantle resistances and the probes/thermostats from the evaporator to be serviced and reassemble them on the new one. Restore the cable passage with anchoring supports, grips and fairlead sheaths.

Figure 36

XXIV. Reassemble the new evaporator coil inside the refrigerated compartment.

3.21 CLEANING DRAIN MAINTENANCE

KPS21SG…

Overturn the blast chiller to perform maintenance on the drain in the internal basin in the refrigerated compartment.

OVERTURNING

To improve accessibility to components inside the motor compartment, you can overturn the top structure, keeping the base plate and all components connected to it in position.

Remove the motor compartment protective grille as indicated in the figure.

Figure 37

Loosen (**without removing**) screws connecting the structure at the base plate at the rear of the machine.

Figure 38

Figure 39

Remove the condenser protective panel and the cable protective plate as indicated in section 3.4 paragraphs I - III.

Unscrew the screws connecting the structure at the base plate at the front of the machine.

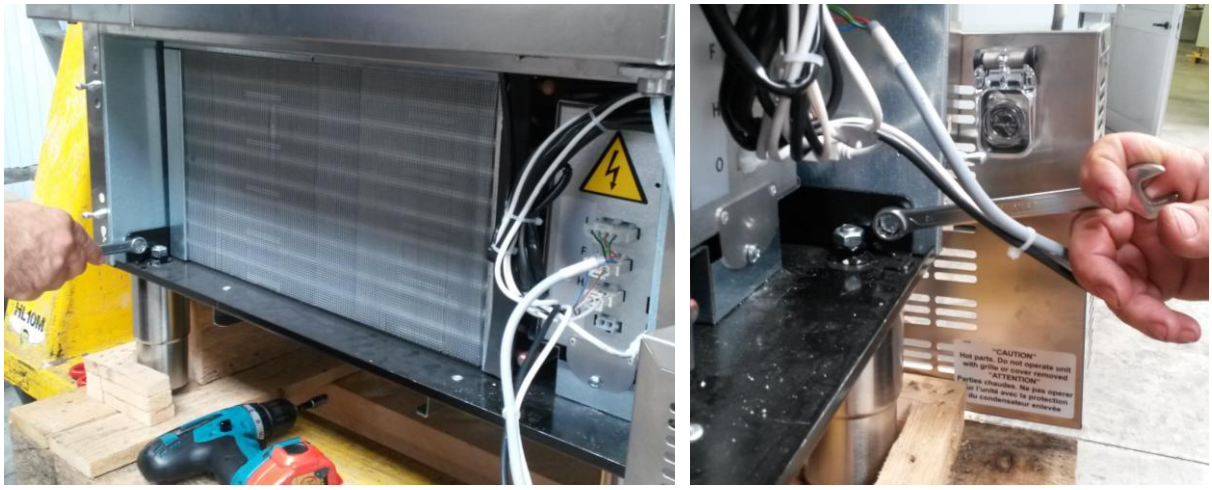


Figure 40

After having cut the grips, you can overturn the top structure, having it rotate with respect to the base (the previously loosened rear screws will act as a fulcrum for rotation).

WARNING

DO NOT INCLINE THE STRUCTURE MORE THAN 45 DEGREES TO PREVENT DAMAGE TO EVAPORATOR PIPING. SECURE THE STRUCTURE WITH FRONT AND REAR STOPS.

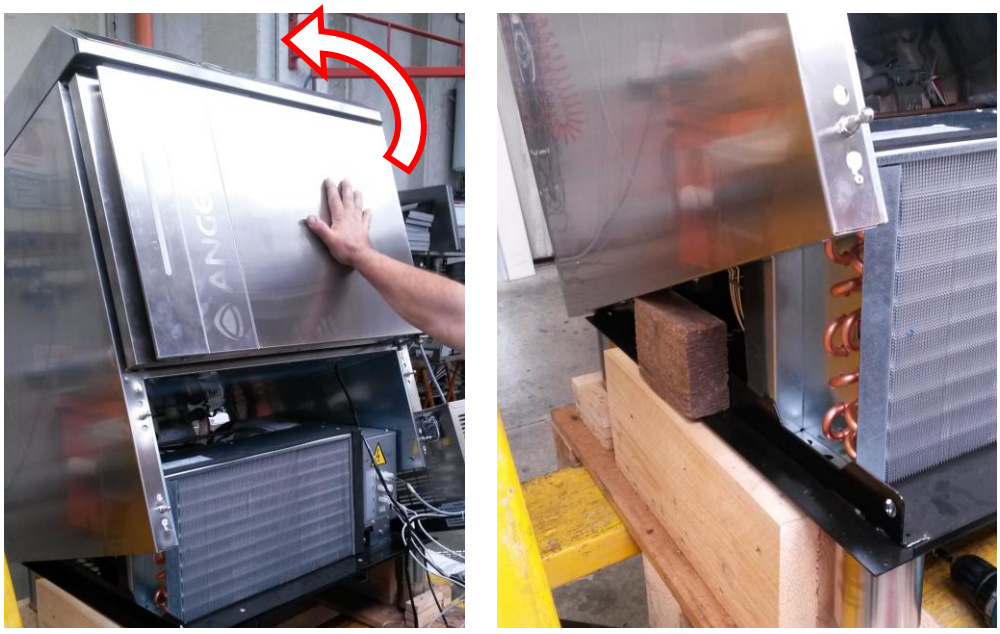


Figure 41

This operation facilitates access to components located at the front of the motor compartment.

Figure 42

I. Unscrew the screws indicated in the figure to proceed with drain maintenance (located under the refrigerated compartment).

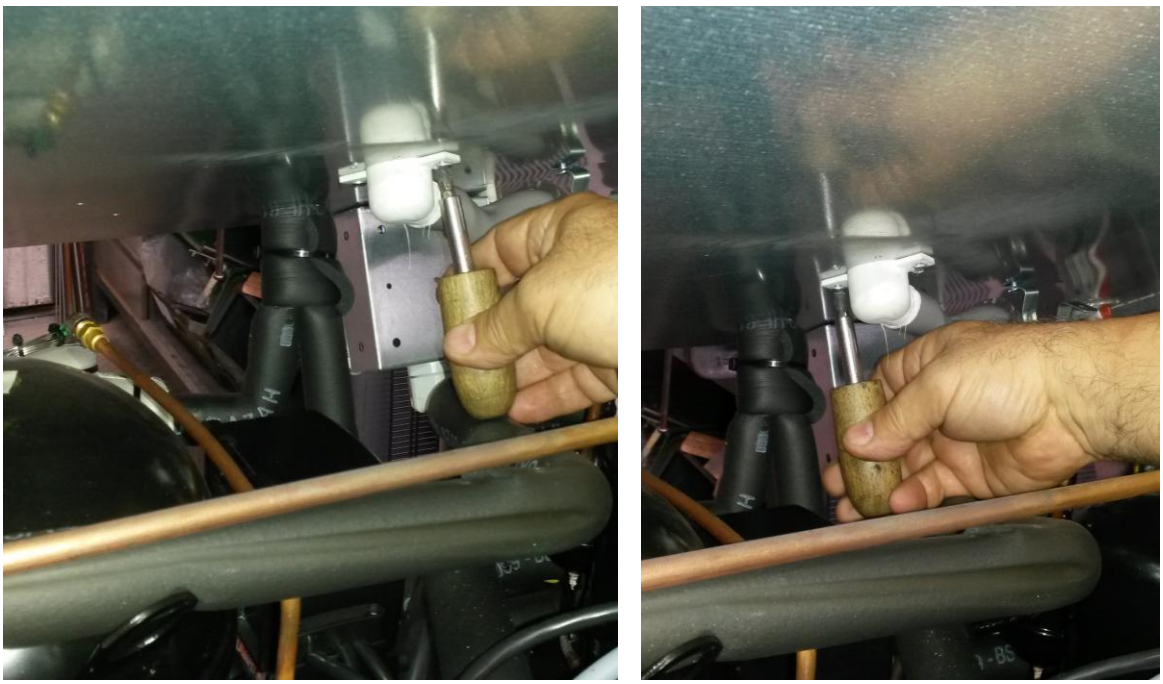


Figure 43

II. Remove and clean the drain and replace if necessary.

Figure 44

KPS42SG… - KPS72SG - KPS120SG

III. Remove the rear panel in order to perform maintenance on the cleaning drain on the above models.

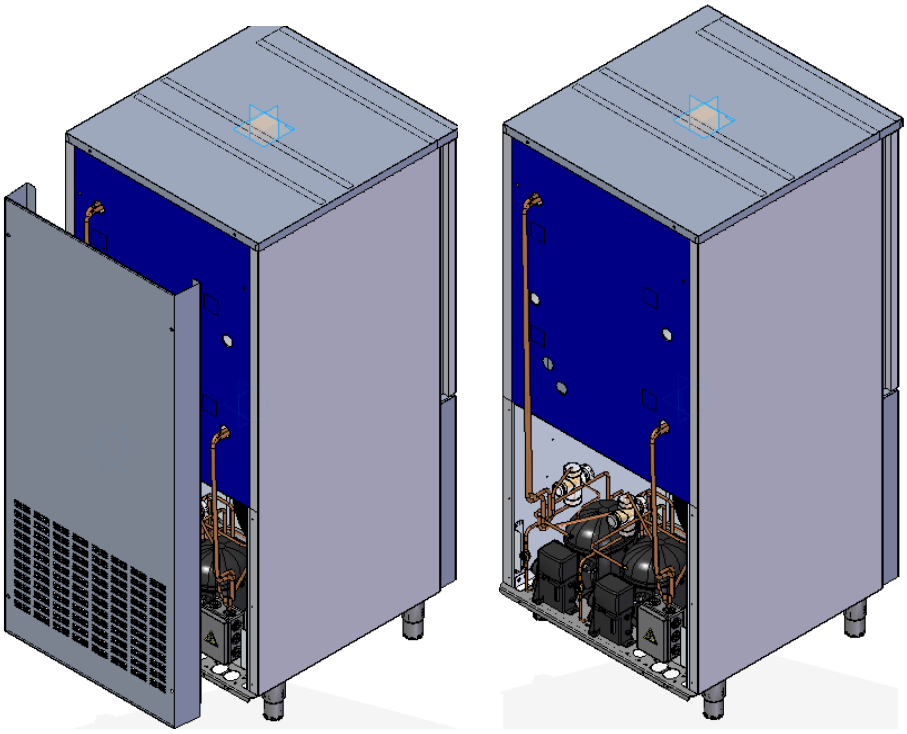


Figure 45

IV. Make sure that the drains are fixed to the structure.

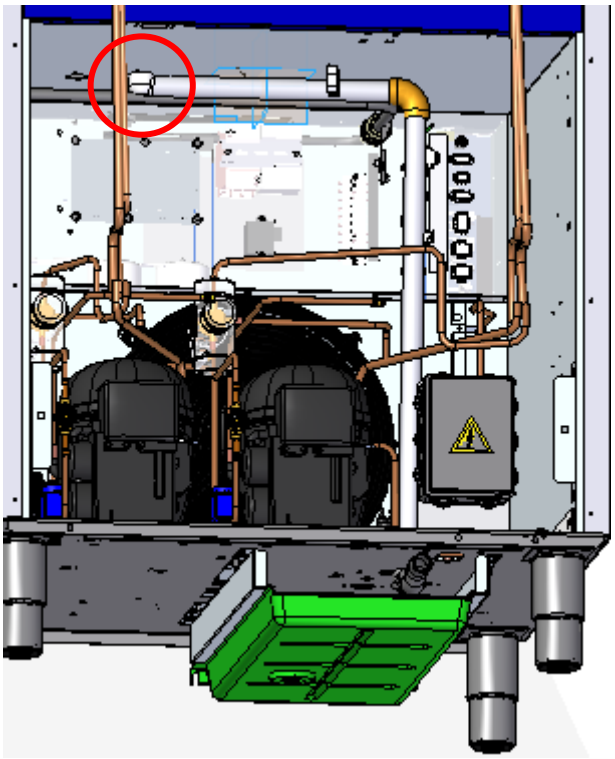


Figure 46

3.22 CONDENSER PROBE AND PRESSURE SWITCH MAINTENANCE

KPS21SG…

I. Overturn the structure to facilitate access to internal components (see section 3.21 "OVERTURNING" paragraph).

II. Unscrew the screw shown in the figure and remove the electrical panel.

Figure 47

III. The condenser probe is located inside the condenser output duct insulation sheath.

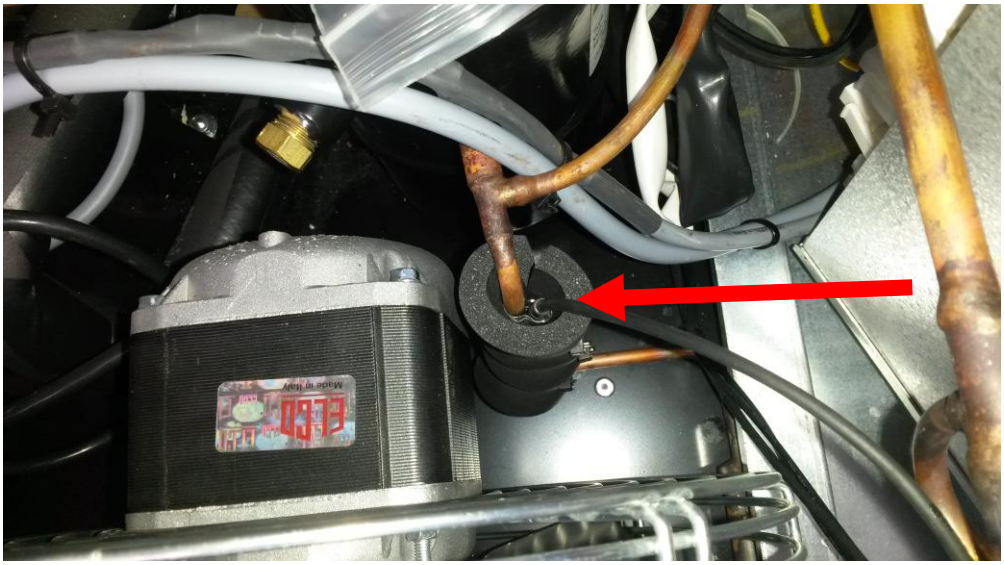


Figure 48

IV. To reach the condenser probe, cut grips and remove the sheath shown in the figure.

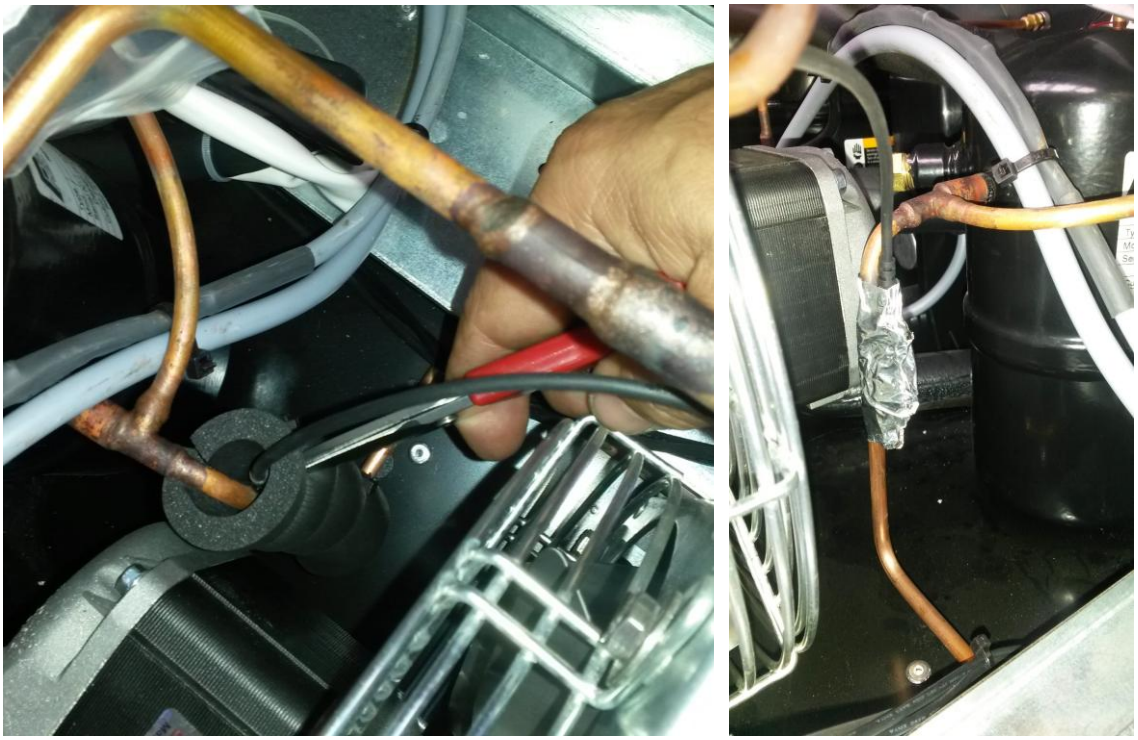


Figure 49

V. Cut the adhesive silver paper and remove the probe.

Figure 50

VI. Condenser pressure switch position

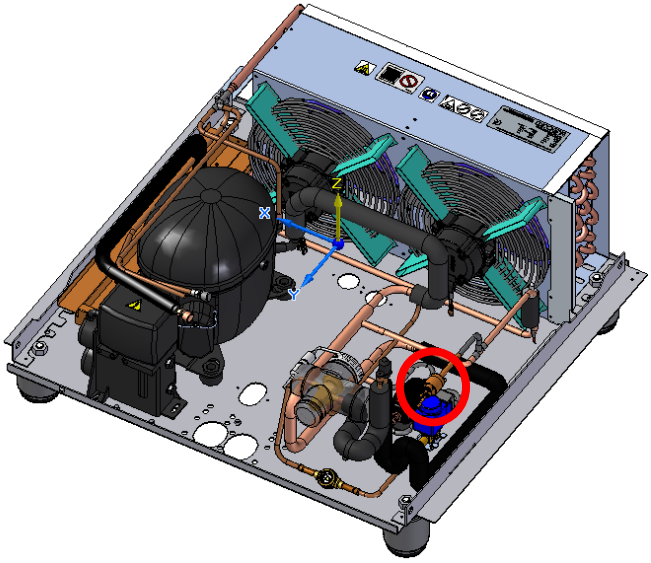


Figure 51

VII. The pressure switch is screwed into the circuit by means of a needle valve to prevent coolant from leaking when replacing components.

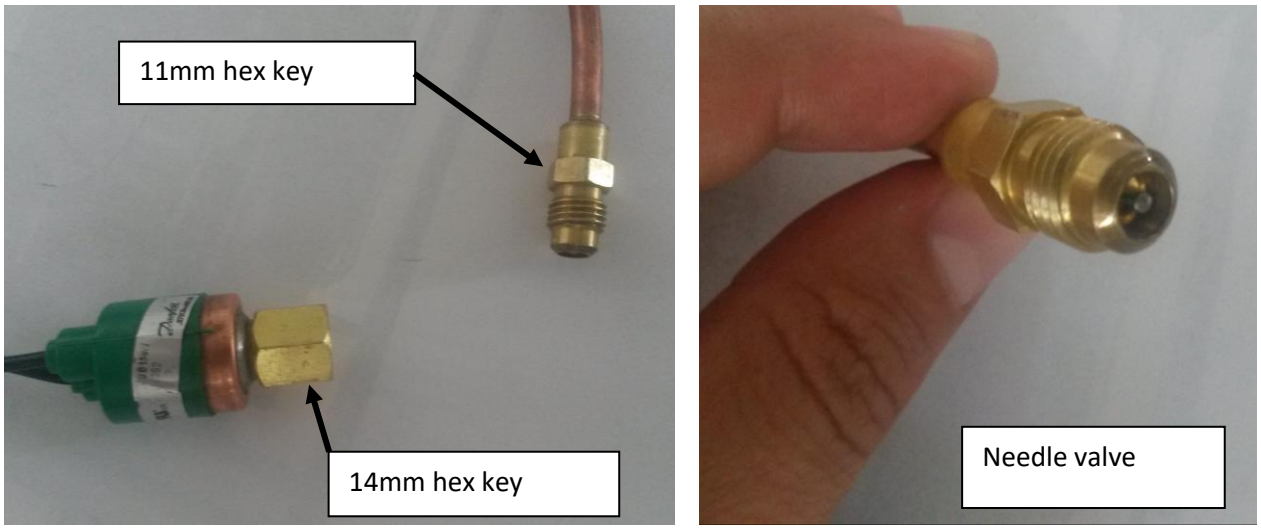


Figure 52

VIII. To remove the pressure switch, slightly loosen the 14 mm hex key, keeping the 11mm key blocked.

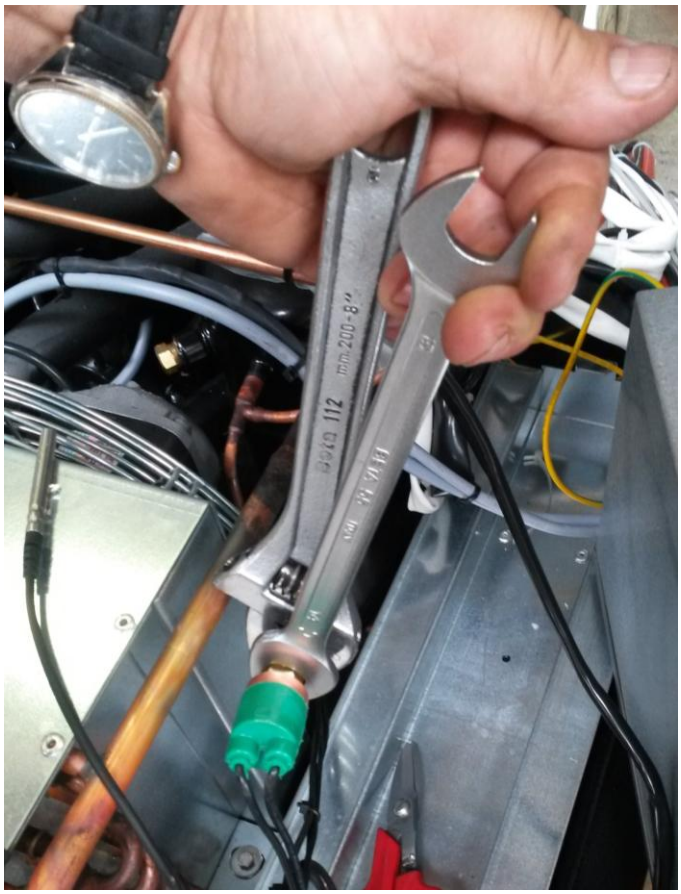


Figure 53

IX. **Once loosened, quickly unscrew the pressure switch by hand to minimise coolant leaks.**

X. The condenser probe and the pressure switch are wired in the same terminal "B". Disconnect the terminal from the electrical panel and remove components.

Figure 54

KPS42SG… - KPS72SG - KPS120SG

XI. After removing the rear panel, access the motor area where the high and condensation pressure switches are located.

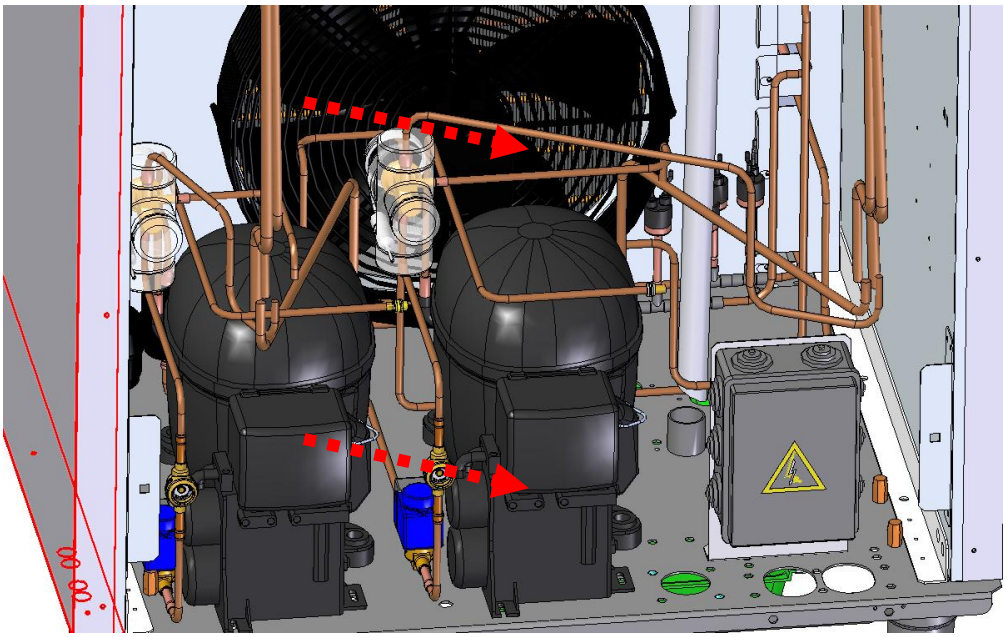


Figure 55

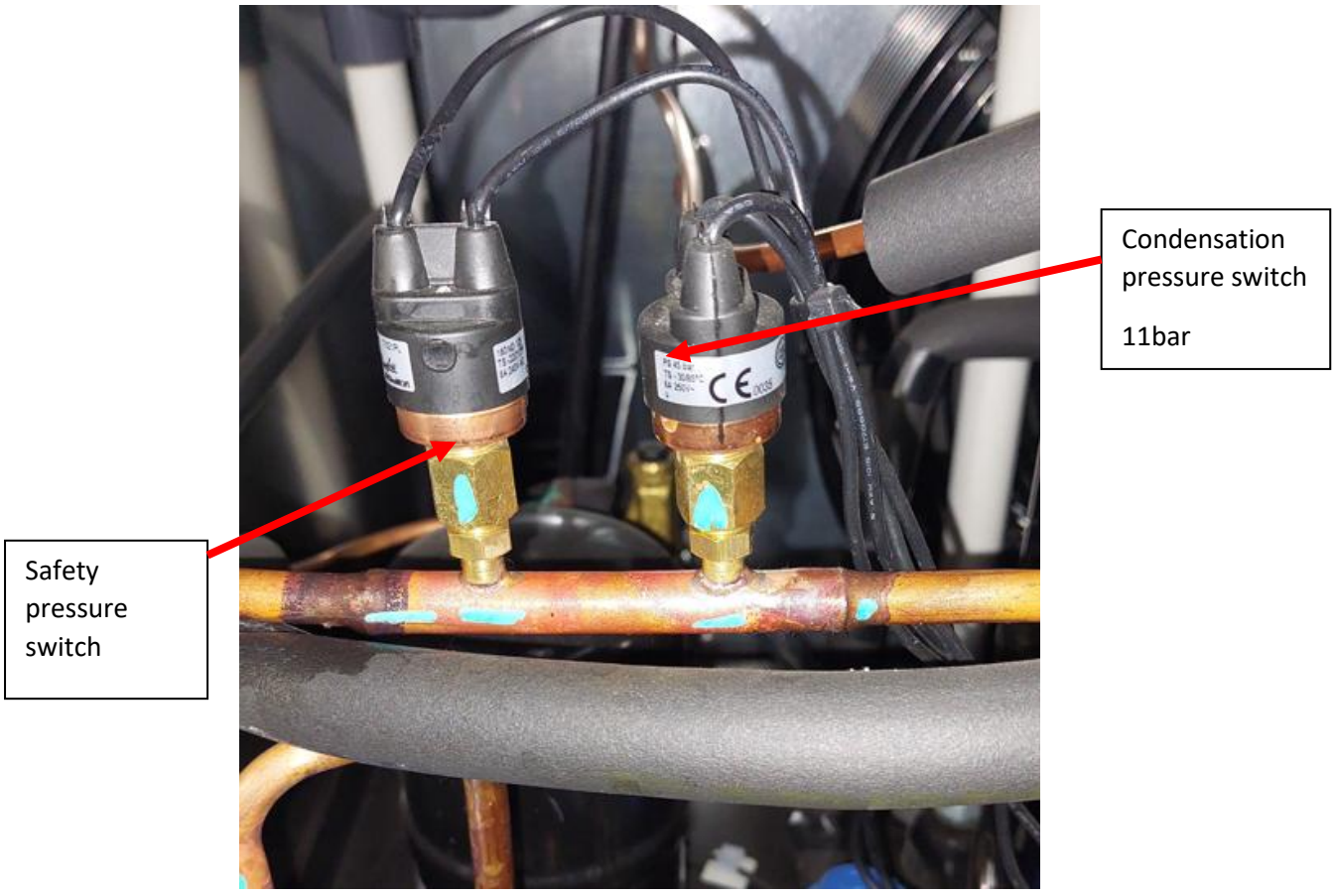


Figure 56

XII. Remove the pressure switch and the condenser probe according to the previously indicated procedure.

XIII. Remove the electrical box panel shown in the figure to access the terminal block.

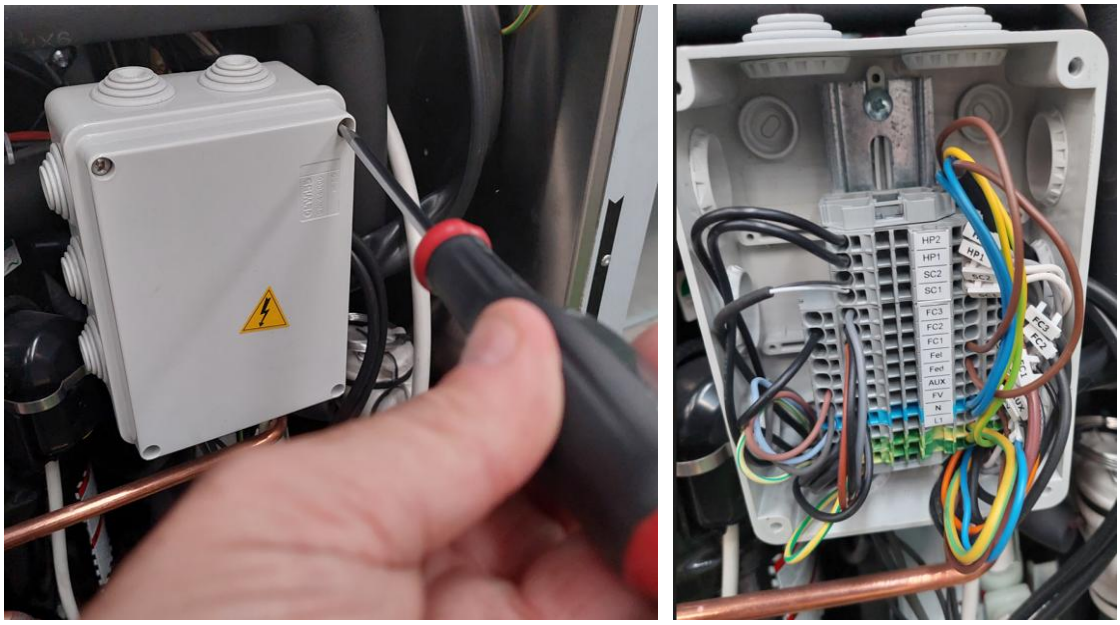


Figure 57

XIV. The pressure switch and the condenser probe correspond to the first four wires from the top (in any case, see the printed wiring diagram on the back of the previously removed panel).

XV. Open the spring contact with a screwdriver to disconnect wires.

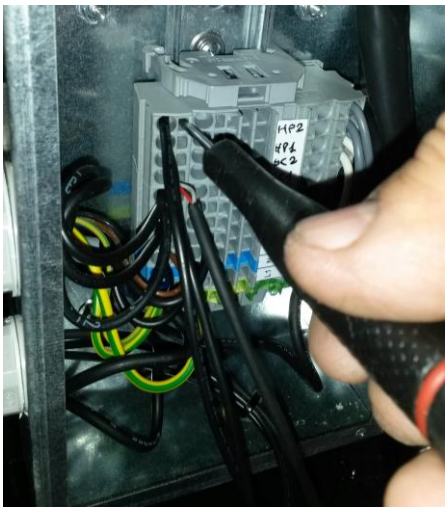


Figure 58

3.23 COMPRESSOR ELECTRICAL BOX MAINTENANCE

KPS21SG…

I. Overturn the structure to facilitate access to internal components (see section 3.21 "OVERTURNING" paragraph).

II. Compressor electrical box position

Figure 59

III. Unscrew the screws at the base of the electrical box using a long socket wrench.

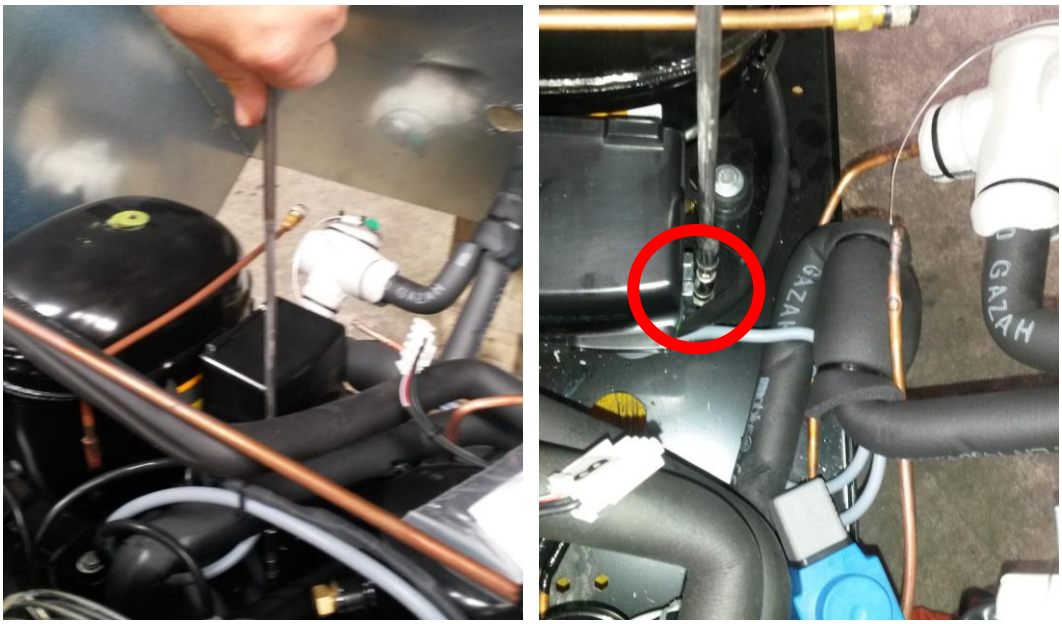


Figure 60

IV. Cut grips and remove the electrical box.

Figure 61

V. Unscrew the screw to access contacts inside the box.

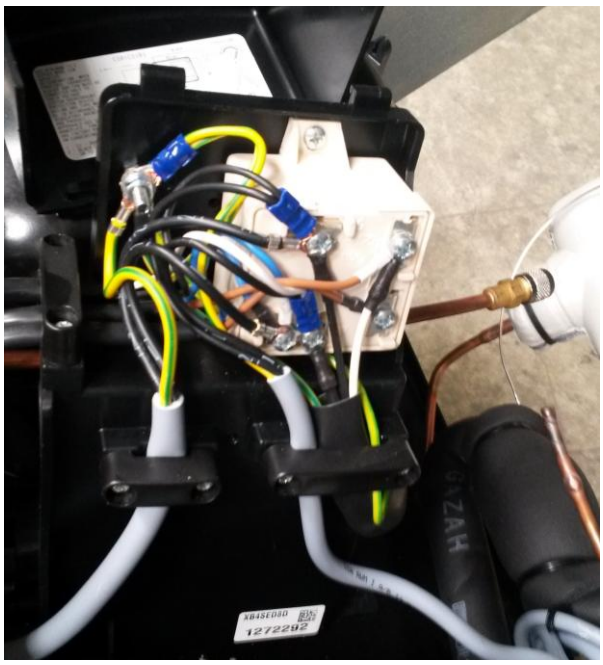
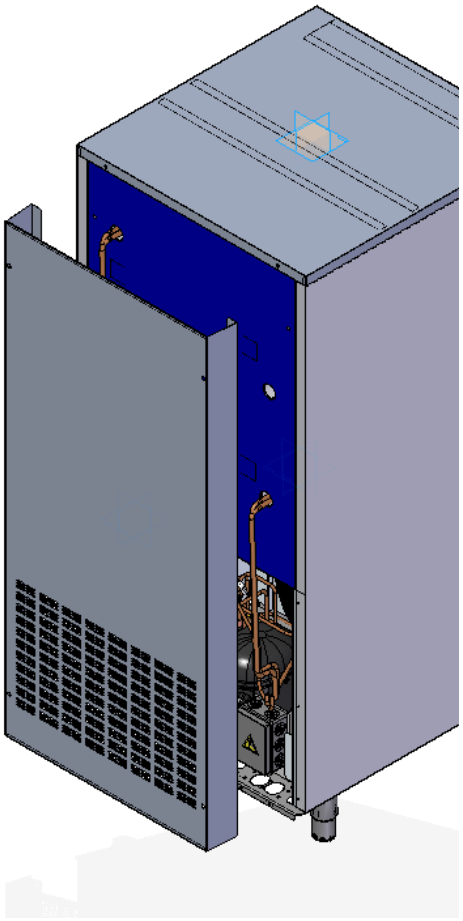


Figure 62

VI. Perform electrical connection maintenance as needed.

KPS42SG… - KPS72SG - KPS120SG

VII. Remove the rear panel to access the compressor electrical box.



VIII. Unscrew the screws at the base of the electrical box and proceed as previously indicated.

3.24 SOLENOID VALVE MAINTENANCE

Proceed as follows to perform solenoid valve maintenance:

I. Remove the motor compartment protective grille as described in section 3.21.

II. Unscrew the screw shown in the figure and remove the solenoid valve connector.

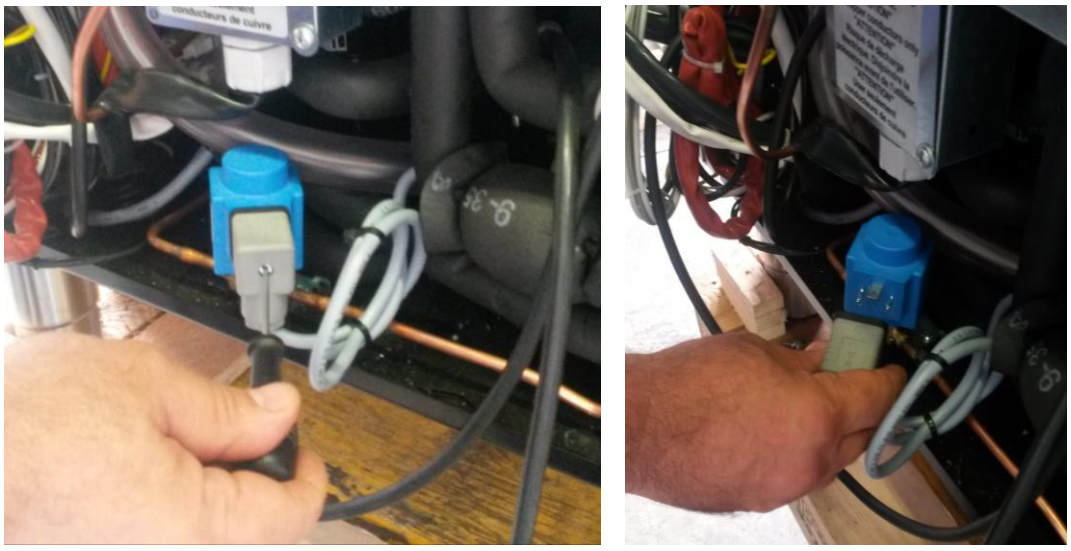


Figure 63

III. Remove the actuator, levering on the valve body with a screwdriver as shown in the figure.

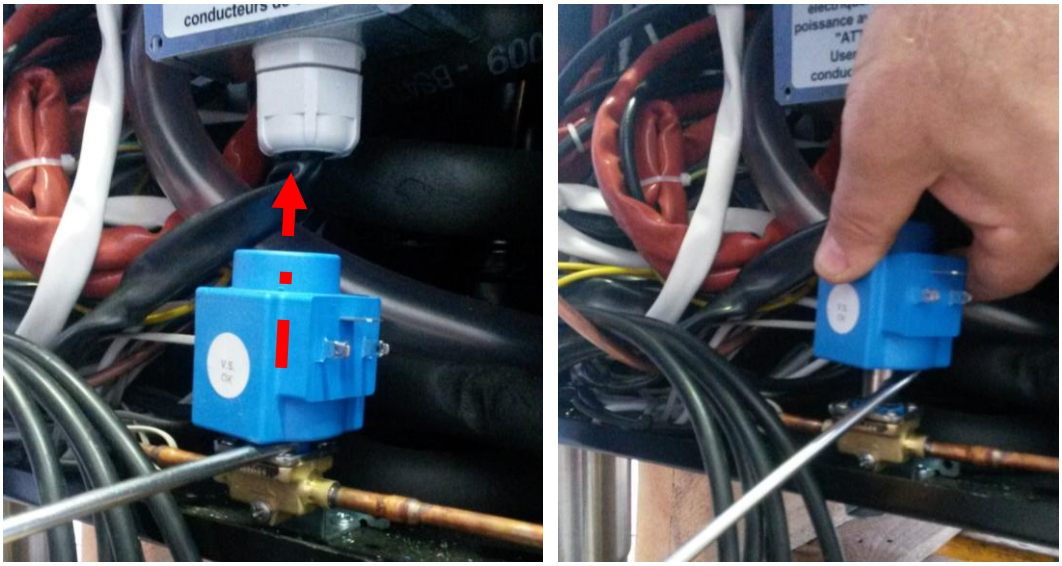


Figure 64

IV. Remove and replace the valve actuator.

Figure 65

V. If necessary, replace the valve body discharging gas inside the circuit and unsoldering piping at the points indicated in the figure.

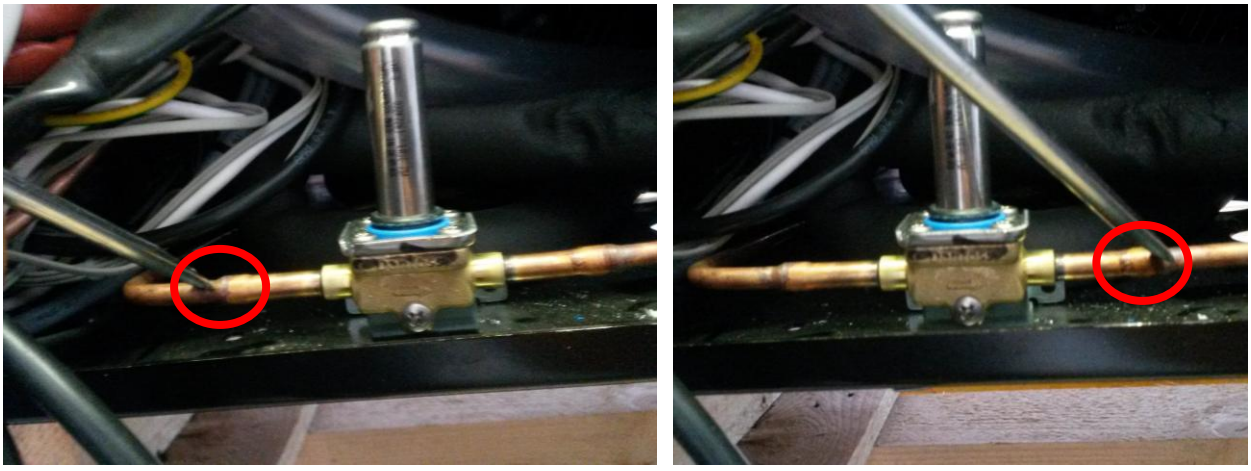


Figure 66

VI. Unscrew the fastening screw and replace the valve body.

Figure 67

VII. Assemble the new valve, paying attention to the flow direction, and weld piping restoring the circuit.

VIII. Refill coolant and check for leaks.

3.25 CONDENSER FAN MAINTENANCE

KPS21SG…

I. To access condenser fans, overturn the structure as described in section 3.21 "OVERTURNING".

Figure 68

II. Unscrew the 4 screws securing the fan.

Figure 69

III. Cut the electrical cable grips and remove the fan.

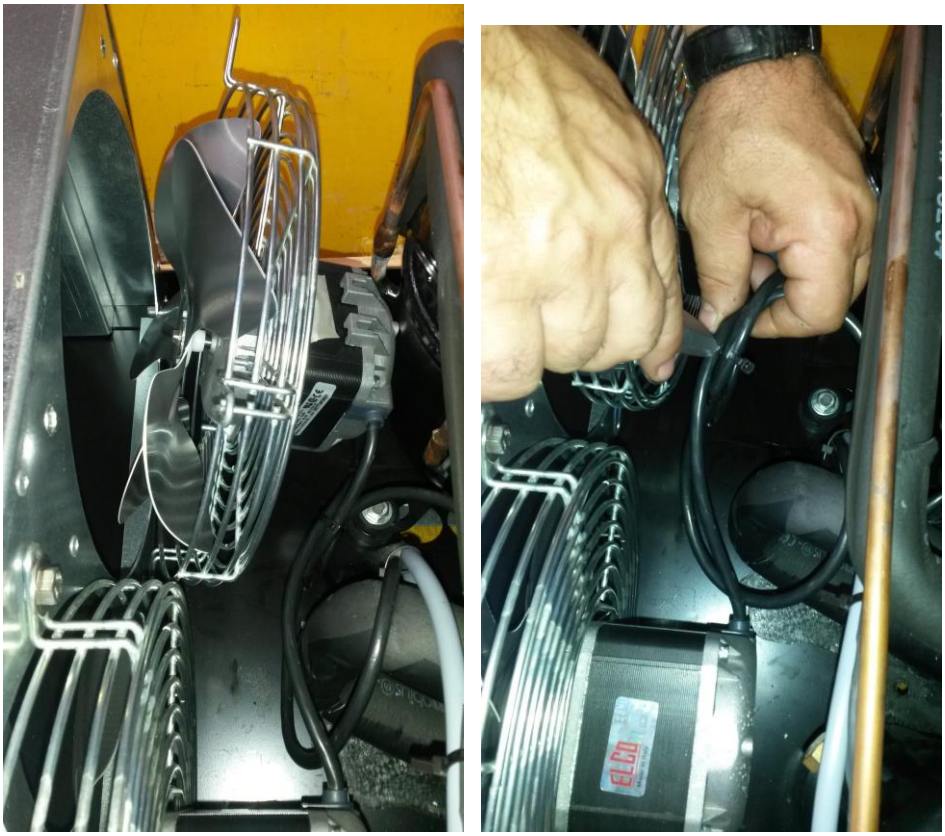


Figure 70

Figure 71

IV. Looking at the machine from the refrigerated compartment opening side, the left fan is wired in the compressor electrical box (see section 3.23) while the right fan is connected to the electrical panel by means of mate-n-lok connector "A" (connector common to compressor cables).

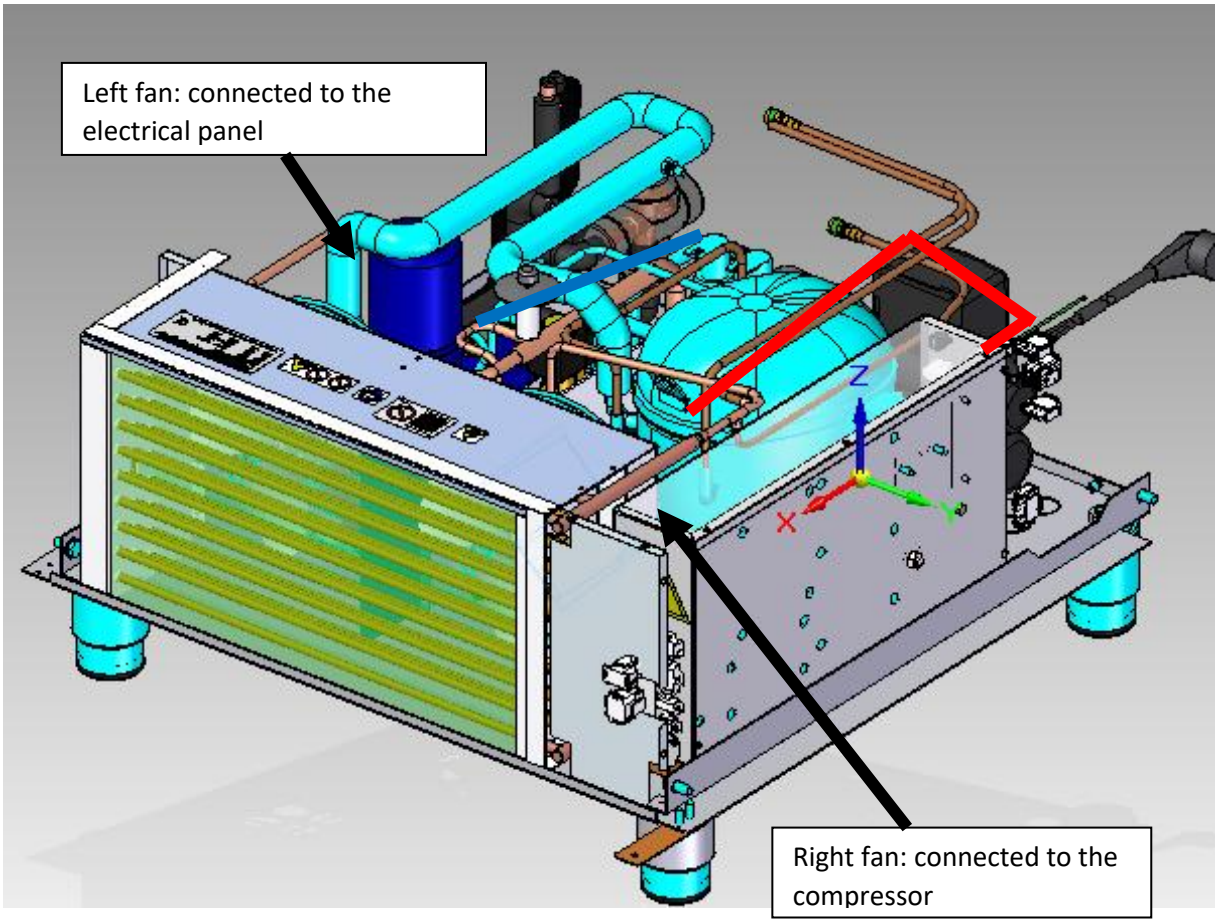


Figure 72

V. If necessary, remove the fan as indicated in the figure.

Figure 73

VI. If necessary, remove the motor as indicated in the figure.

Figure 74

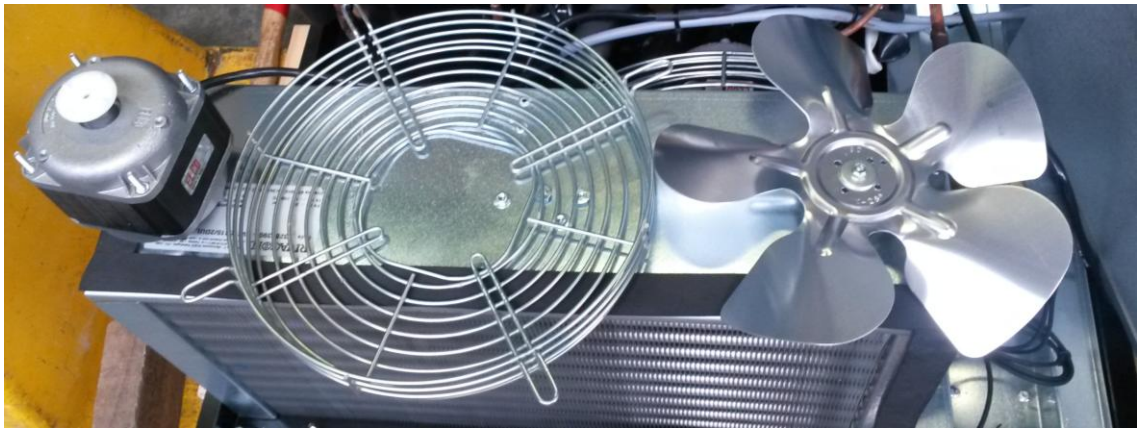


Figure 75

KPS42SG…

VII. Remove the condenser protective panel and the rear plate as indicated in section 3.22 paragraphs XI – XII.

VIII. Unscrew the 4 screws securing the fan.

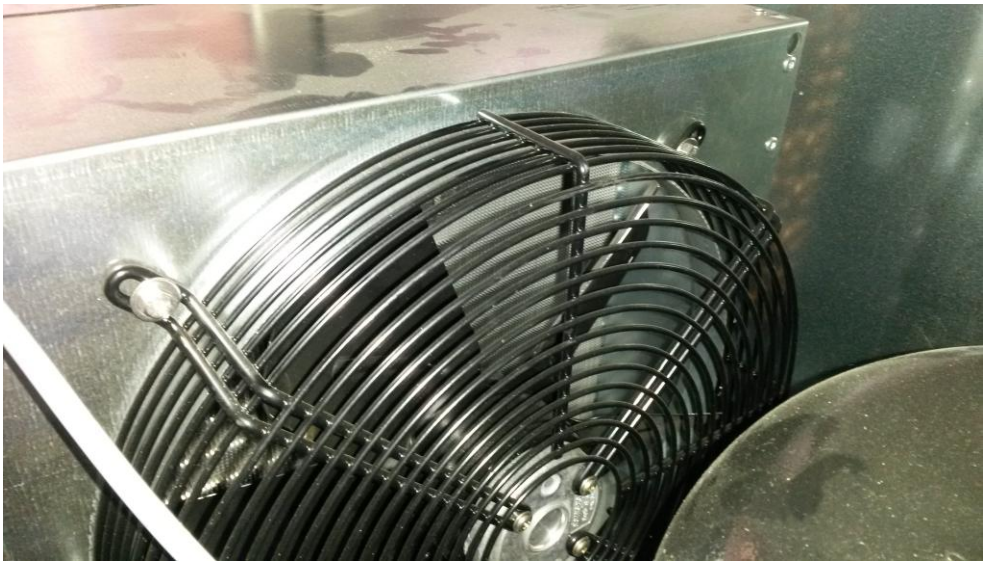


Figure 76

IX. Open the electrical box in the motor compartment to disconnect the fan cable (see the wiring diagram on the protective plate) and remove the fan.

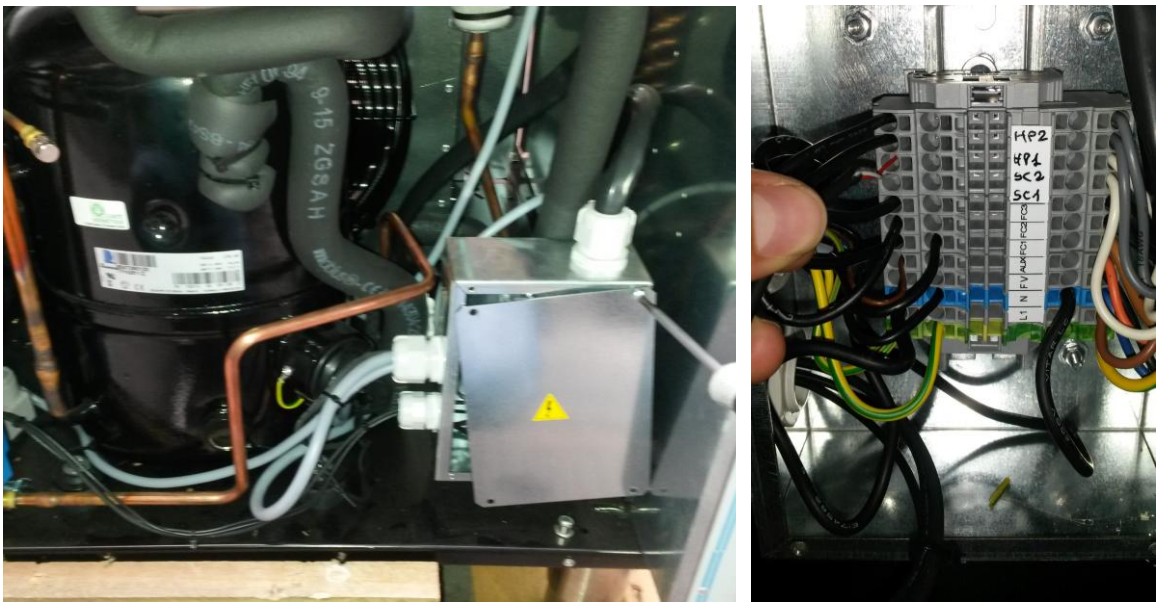


Figure 77

KPS120SG – KPS72SG

X. Remove the rear panel to access the motor area.

3.26 CONDENSING COIL MAINTENANCE

KPS21SG…

Proceed as follows to replace the compressor:

I. Drain coolant from the thermodynamic circuit, if possible collecting it with suitable equipment.
II. Overturn the top structure (see section 3.21 OVERTURNING).
III. Use a drill to remove the electrical panel support plate (see figure), removing the rivets fastening it to the structure, taking care not to damage any connected components.

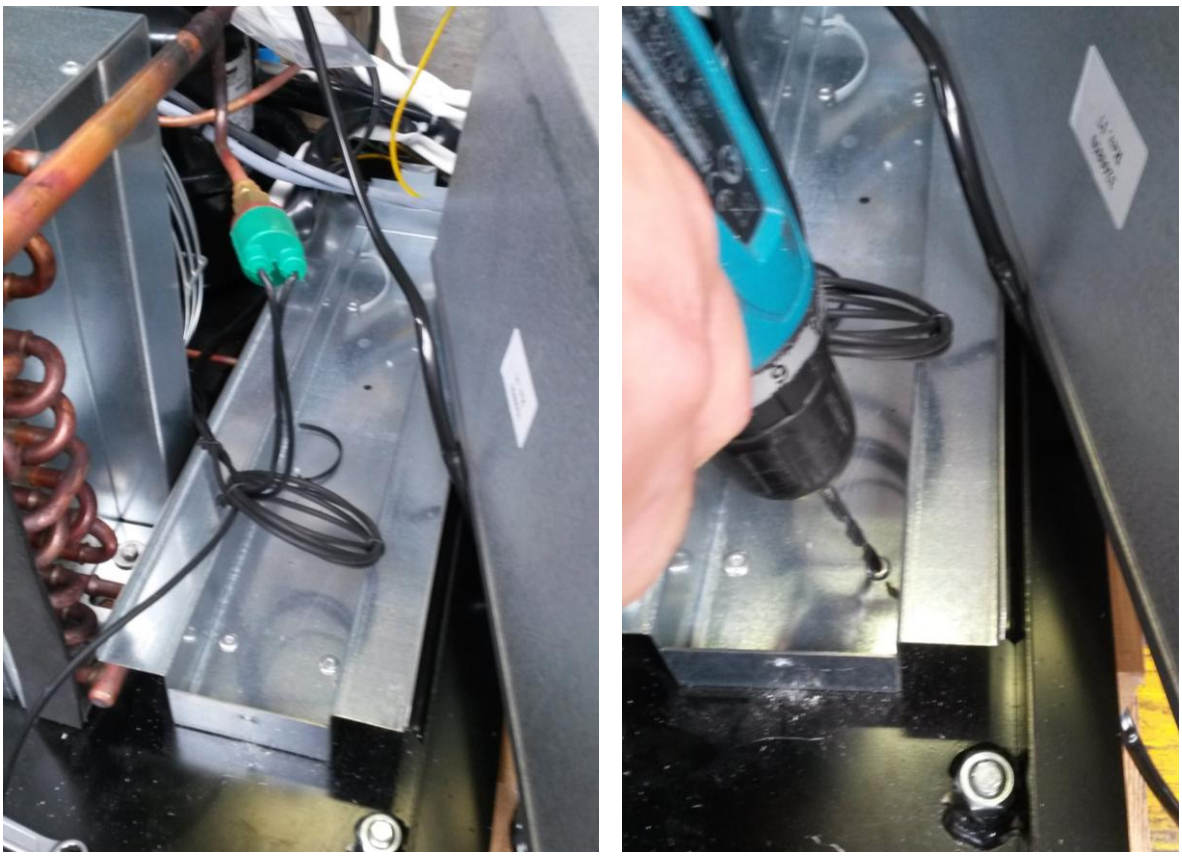


Figure 78

IV. After having drained coolant, unsolder condenser piping in the area indicated in the figure.

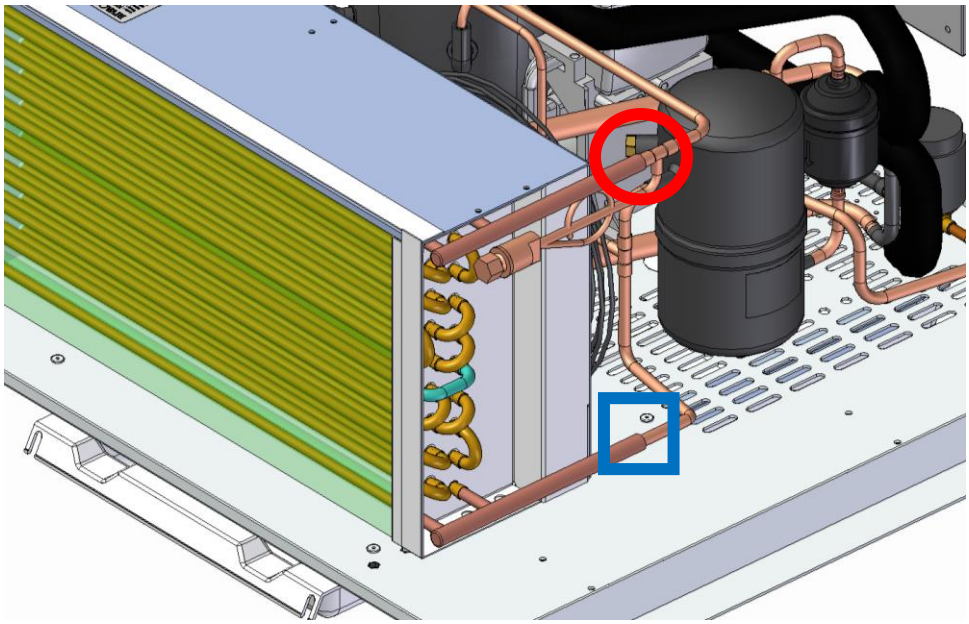


Figure 79

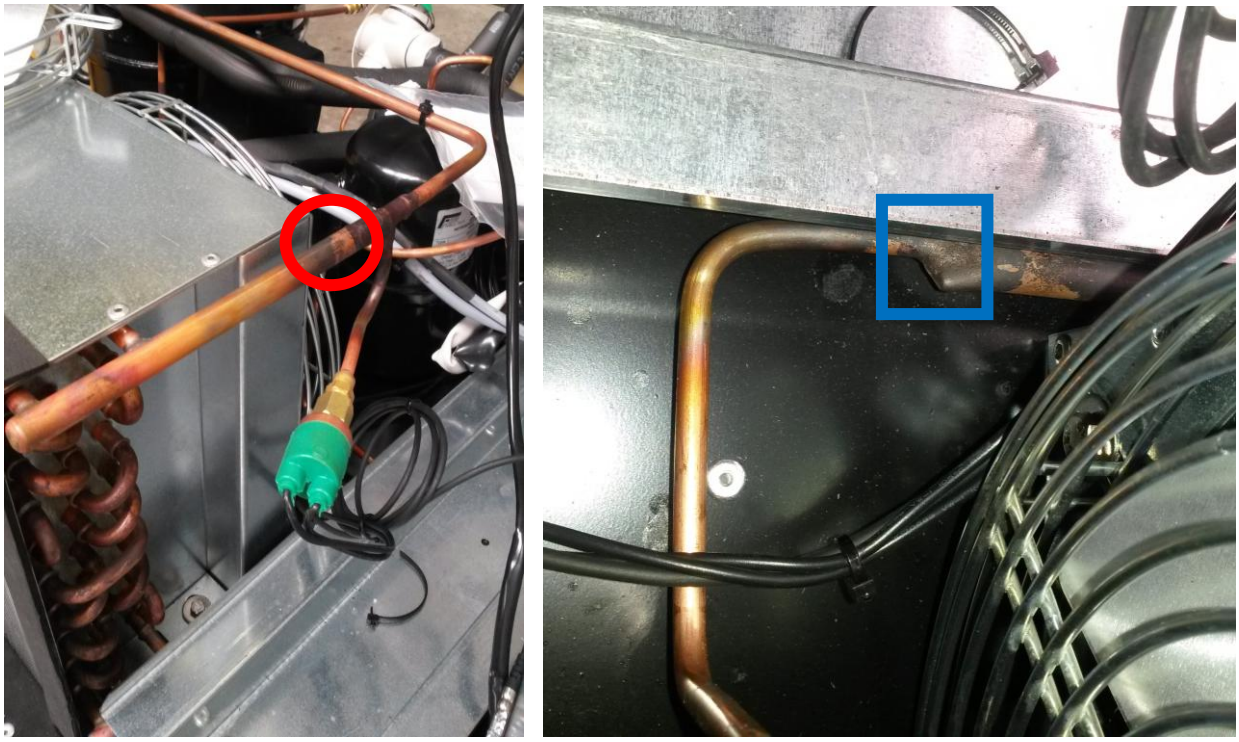


Figure 80

V. Unscrew the 4 screws fastening the condenser to the base plate with a jointed socket wrench.

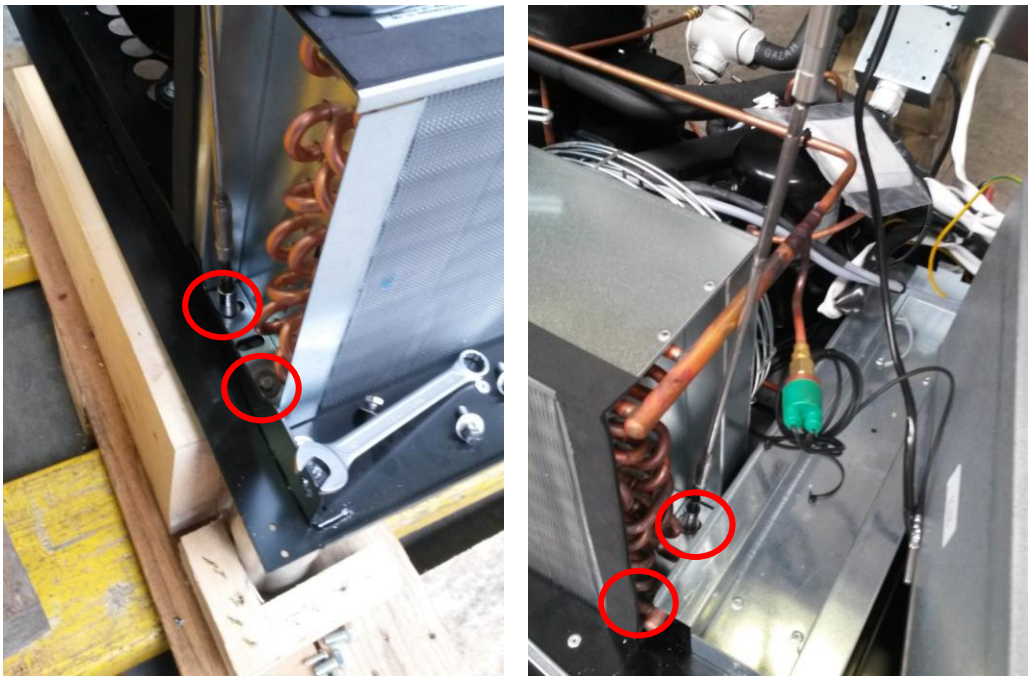


Figure 81

VI. Remove the condenser.

Figure 82

VII. Secure the new condenser to the base plate.

VIII. Weld piping, restoring the thermodynamic circuit.

IX. Fill coolant and check for the presence of any circuit leaks as described in section 3.30.

KPS42SG… - KPS72SG - KPS120SG

X. Remove the condenser protective panel and the top plate as indicated in section 3.22 paragraphs XI – XII.

XI. Dismantle the plates on the sides of the condenser, removing the rivets with a drill.

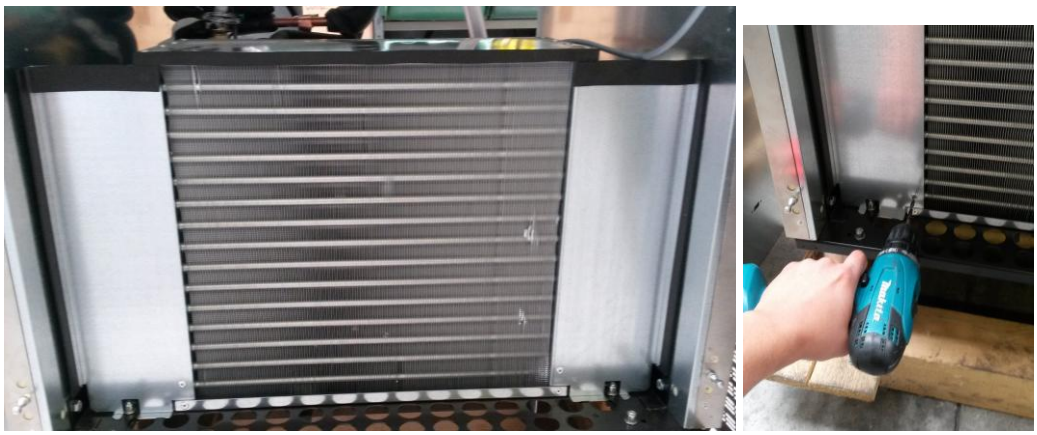


Figure 83

XII. Unsolder condenser piping in the area indicated in the figure.

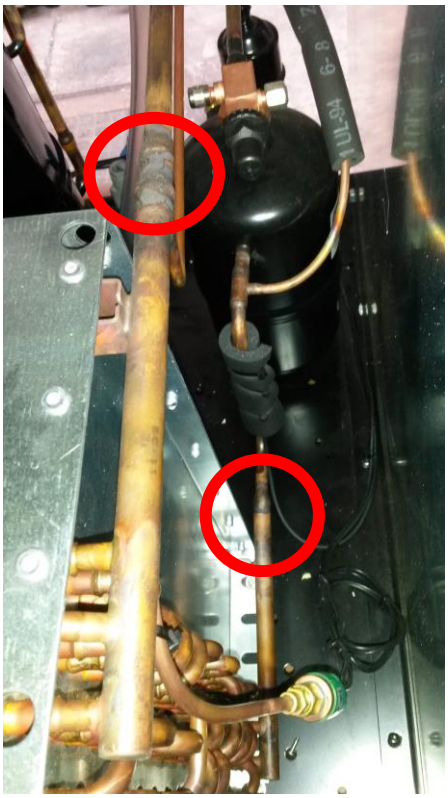


Figure 84

XIII. Unscrew the screws at the base of the condenser and remove the device.

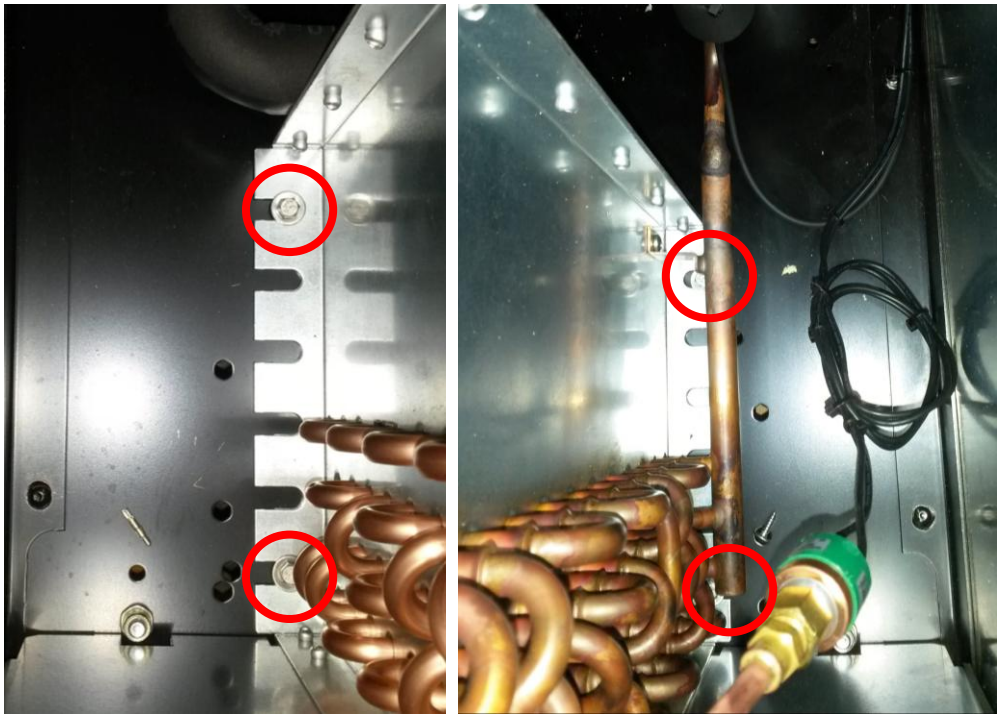


Figure 85

3.27 COMPRESSOR MAINTENANCE

KPS21SG…

Proceed as follows to replace the compressor:

I. Drain coolant from the thermodynamic circuit, if possible collecting it with suitable equipment.
II. Overturn the top structure (see section 3.21 OVERTURNING).
III. Unsolder compressor piping in the area indicated in the figure.

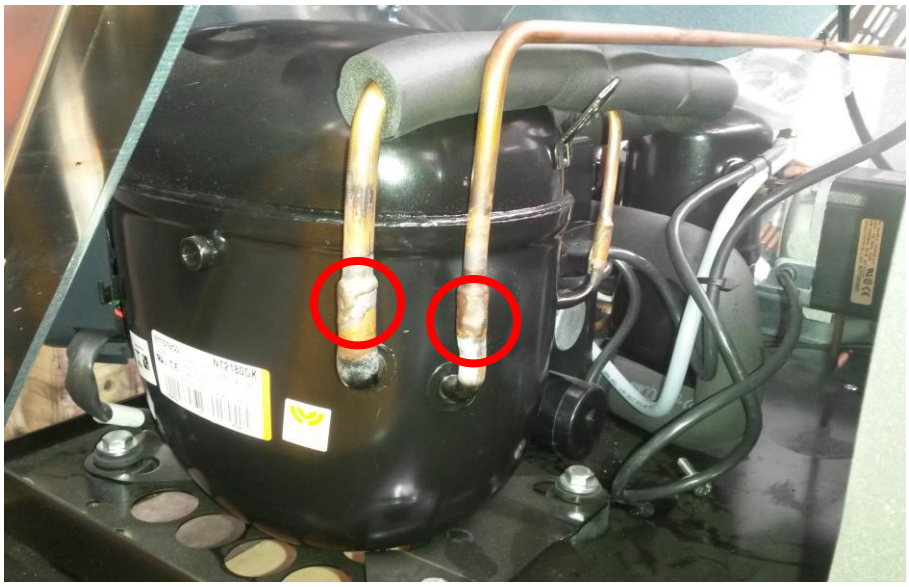


Figure 86

IV. Cut grips and disconnect the 2 cables shown in the figure of the compressor electrical box.

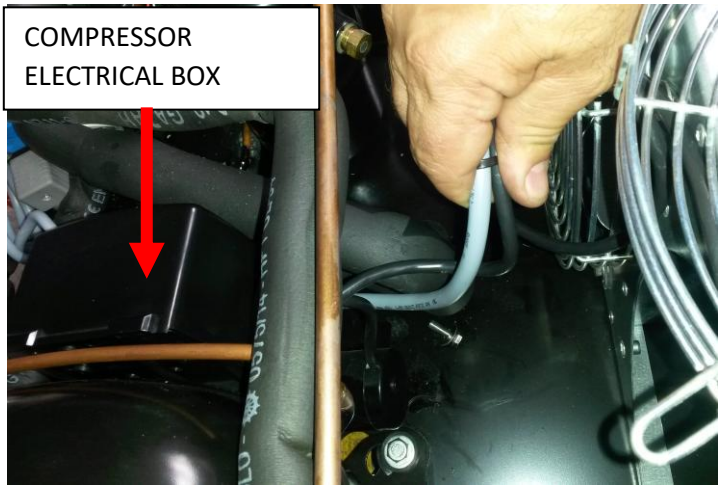


Figure 87

V. Unscrew the 4 screws fastening the compressor to the base.

Figure 88

VI. Remove the compressor and its electrical box (see section 3.23 to remove the electrical box).

VII. Position the new compressor and secure it to the base.

VIII. Weld piping, correctly restoring the thermodynamic circuit.

IX. Restore electrical connections.

X. Fill coolant and verify the absence of any circuit leaks as described in section 3.30.

KPS42SG… - KPS72SG - KPS120SG

XI. Remove the rear panel as indicated in section 3.21 paragraph III.

XII. Disconnect compressor electrical cables.

XIII. After having drained coolant, unsolder piping in the area indicated in the figure.

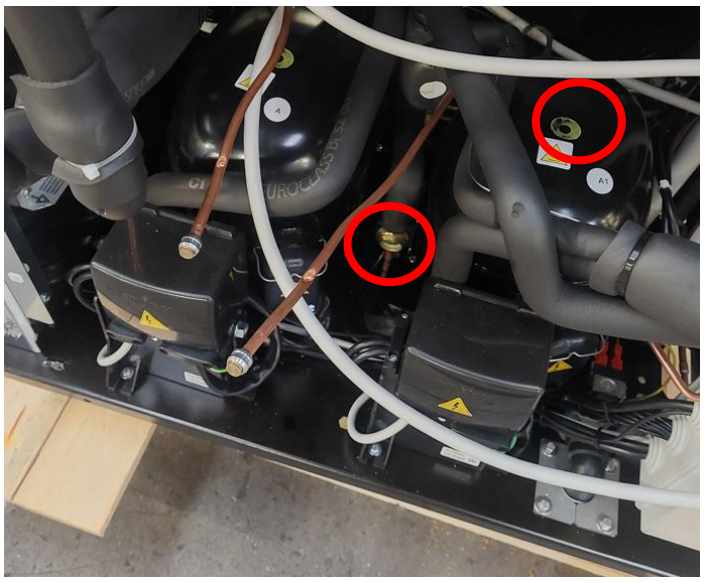


Figure 89

XIV. Unscrew the 4 fastening screws at the base of the compressor and remove the component.

Figure 90

3.28 THERMOSTATIC VALVE MAINTENANCE

KPS21SG…

I. Dismantle the motor compartment protective panel as described in section 3.21.

II. To perform thermostatic valve maintenance, discharge all coolant from the circuit, if possible collecting it with suitable equipment.

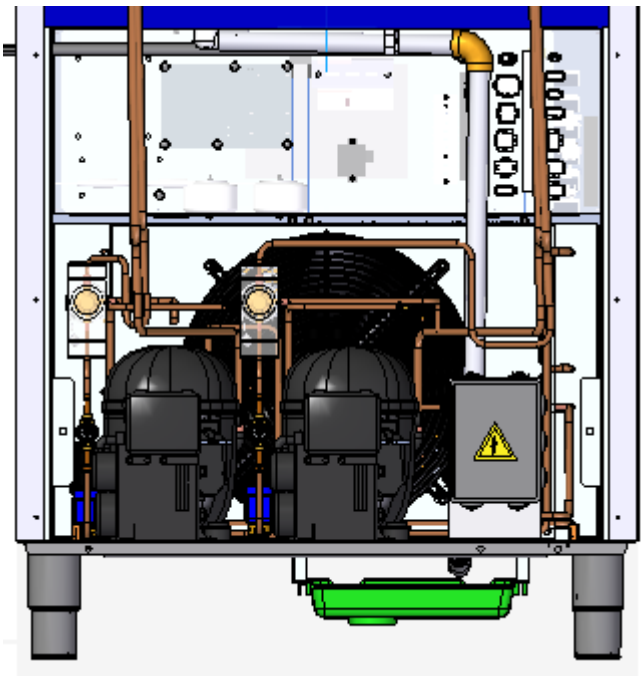


Figure 91

III. Cut the grips to remove the insulation sheath from the thermostatic valve.

Figure 92

IV. Cut the grips to remove the insulation sheath from the bulb probe.

Figure 93

V. Unscrew the screw shown in the figure to remove the bulb probe from the terminal.

Figure 94

VI. If the entire valve block needs to be replaced, unsolder the piping in the area highlighted in the figure.

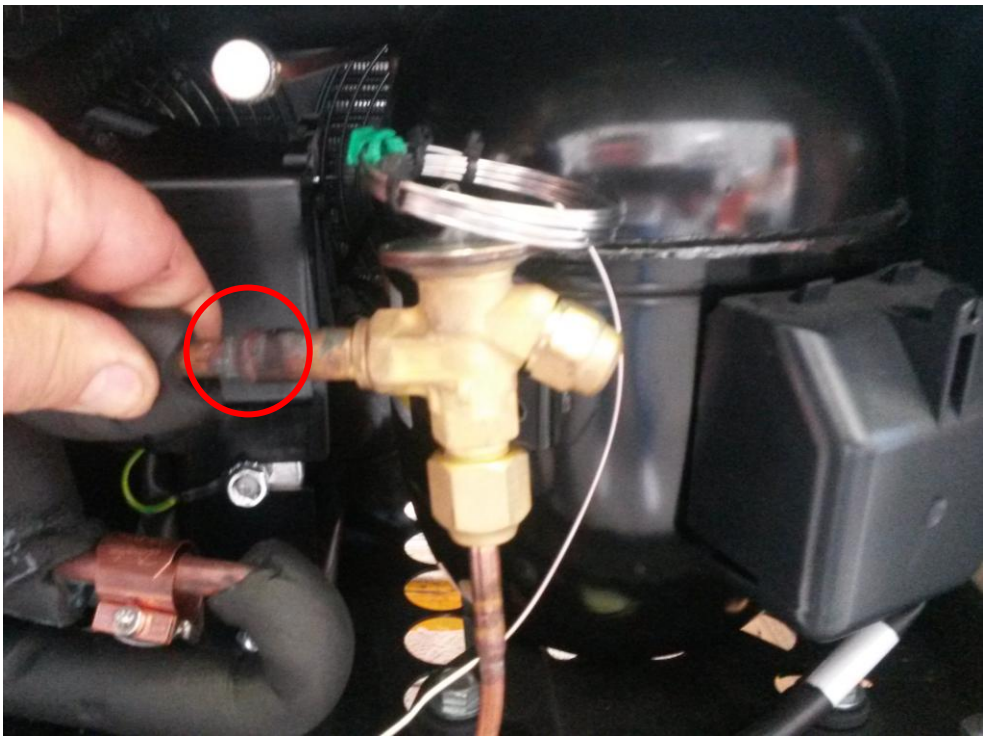


Figure 95

VII. Unscrew the nut, keeping the valve body blocked as shown in the figure.

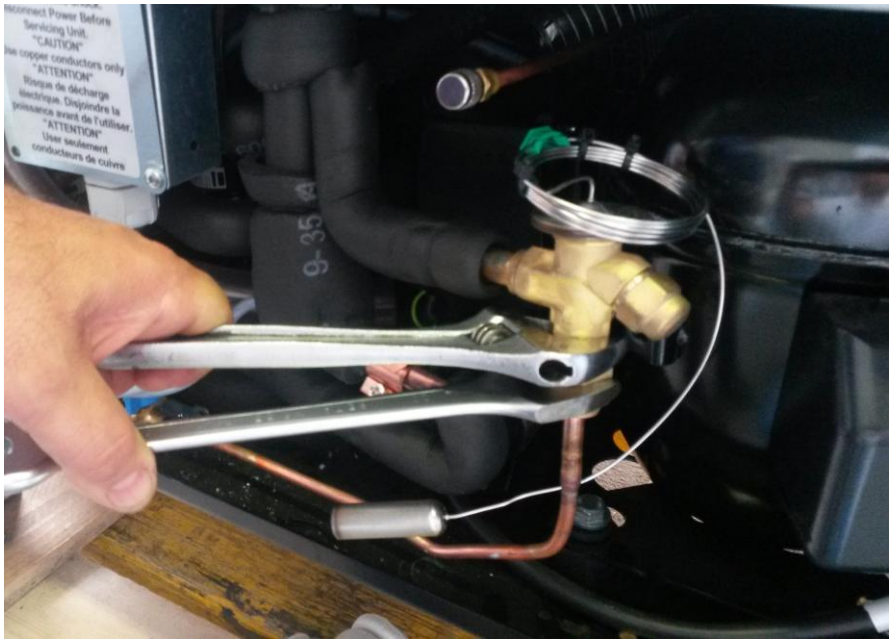


Figure 96

VIII. Detail of the thermostatic valve

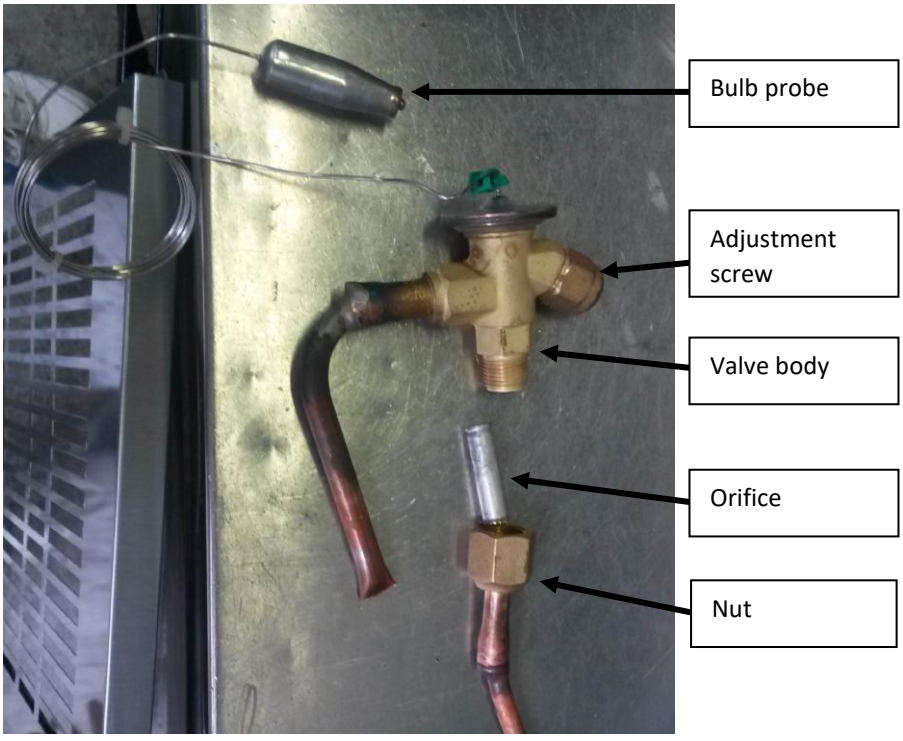


Figure 97

IX. To adjust the valve, unscrew the nut shown in the figure and turn the screw inside it.

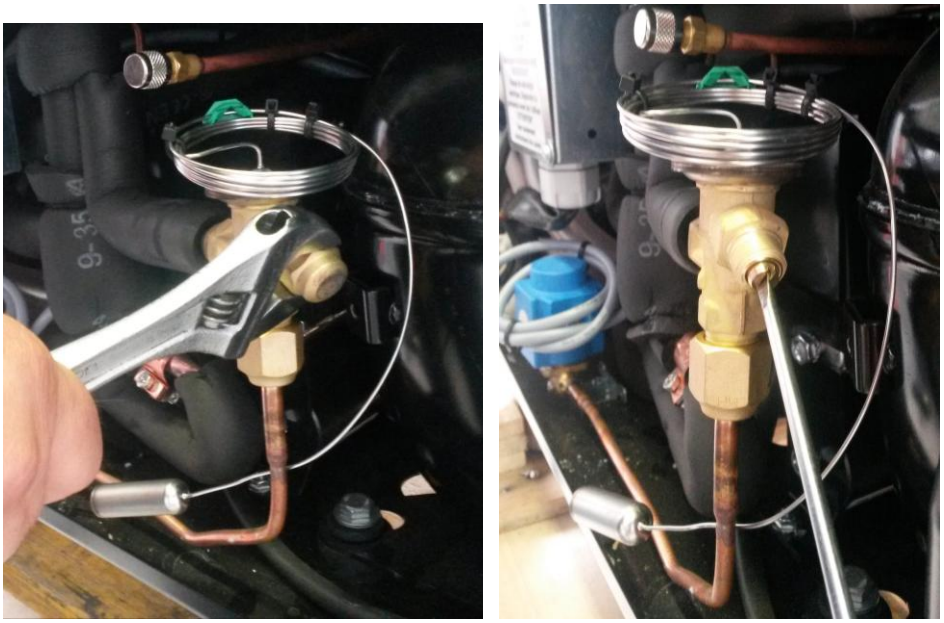


Figure 98

KPS42SG… - KPS72SG - KPS120SG

X. The thermostatic valve has a pressure equalization pipe, to be unsoldered in the event of valve removal.

Figure 99

THERMOSTATIC VALVE ADJUSTMENT

Model	Valve adjustment
KPS21SG…	Close ½ turn.
KPS42SG…	Close 1 turn.
KPS72SG **KPS120SG**	Close 1 turn.

3.29 CHECKING FOR LEAKS/LOSSES AND REFRIGERANT CHAR

Please refer to the HC Guide manual for more information.

The thermodynamic systems on the new blast chillers are filled with R290 hydrocarbon fluid.

WARNING - When working with hydrocarbons it is IMPORTANT that the environments be well ventilated using ATEX ventilation systems – Open the cabinet doors and ventilate.

WARNING – Make sure there are no drains or connections from the room where you are working to any underlying environments.

WARNING - Make sure that there are no ignition points in the work area for a radius of at least 3 metres.

WARNING – Make sure you have the right equipment.

WARNING – Make sure the cabinet and operator are grounded to eliminate the problem of electrostatic charges.

WARNING – Ensure recovery or venting of the refrigerant charge.

WARNING – Technicians using HCs must be qualified to work with flammable refrigerants, have the analytical skills to assess risk, have access to and be familiar with the meaning of the material safety data sheets (MSDS) and act accordingly. Obtain the MSDS (material safety data sheet) for the refrigerant in order to be informed of the dangers of the refrigerant as a fluid heavier than air, toxicological information, etc. Obtain the manual for the cabinet.

LIST OF REQUIRED EQUIPMENT	BEWARE OF SOURCES OF IGNITION
Combustible gas leak detector	A spark can come from an electrical source such as
Tools that do not generate sparks	Contactors – Relays
Needle valve – check the condition of the seals	
PPE (personal protective equipment) - specifications in MSDS	Defrosting elements – Wire resistances – Door switches
Dedicated R-290 manifold pressure gauges	Lamps
Class B dry powder (bicarbonate-sulphate-phosphate) fire extinguisher for flammable liquids –	Electrical sockets – Sources of static electricity

able to lower the upper flammability limit	
Thermometer / digital meter	Sources of open flame ignition
ATEX vacuum pump	Deep fryers
	Cigarettes – lighters – Gas appliances – Hotplates
	Abrasive tools – Heat guns – Torches

R290 refrigerant is an HC hydrocarbon. It has a significant difference compared to HFC or CHFC fluorocarbon fluids, which must be taken into account for maintenance management, storage, installation, repair and disposal.
Workplaces must be treated equally, with special attention to the aspects of flammability and their consequences. A risk analysis regarding the use of HC refrigerants must be carried out taking into account the above-mentioned aspects.
It is essential to carefully consult the equipment manual.
Only technicians trained in the use of flammable refrigerants are authorised to use R290 refrigerant fluid and to maintain the circuits.

3.30 SPECIFIC EQUIPMENT AND TOOLS

Only use equipment and components certified for danger zones (e.g. vacuum pump, electrical components and parts, original spare parts).

Normal vacuum pumps can be used outside flammable zones but the ON/OFF switch cannot be used, as this is usually the only source of ignition on the pumps. It is however always advisable to use a suitable vacuum pump.

Use leak detectors suitable for HC refrigerants. If the leak cannot be located with an electronic detector, remove the charge, purge and fill with nitrogen and use a spray to detect leaks.

Wear an antistatic bracelet.
Ensure equipotentiality with the machine and the ground.

Use refrigerant recovery machines suitable for HC (they can also be used for HFC).

Recovery machines for HFC cannot be used with HC fluid as they are fitted with potentially dangerous switches, pressure switches and relays.

Recovery units: these must be suitable for HC (nominal pressure, capacity of the check valves, etc.)

Always check local, storage and transport legislation

Internal refrigeration unit volume

The loss of HC from the evaporator inside the cabinet can cause a flammable mixture. The presence of any source of ignition (thermostats, ON/OFF switches, etc.) can cause flames or explosions.
All electrical parts must be encapsulated or comply with fire or explosion prevention regulations.

External refrigeration unit volume

The possibility that a leak of HC outside the cabinet could form an inflammable mixture with air is remote considering the small charge.
Systems integrated into other structures may be more susceptible to this possibility.

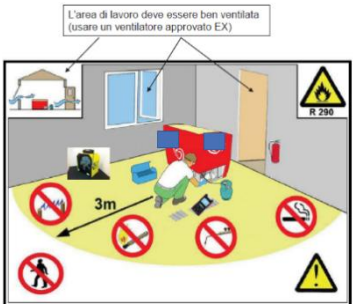
3.31 IDENTIFYING MICRO LEAKS

In case of a micro leak in the evaporator or condenser or at a high point in the circuit, a pressure test can be performed using a mixture of 95% nitrogen with 5% traces of hydrogen or helium.

The pre-mixed tracer gas is available on the market.

The advantage of using a gas with trace amounts of helium and hydrogen is that both have small molecules, low speed and molecular mass, so that they can be tested for leaks and fast diffusion.

Preventive actions



1. **Have available original spare parts recommended by the manufacturer (for example thermostats – temperature sensors – heating elements – lamps – switches – door micros – etc.)**

2. **Inform the operators of the operations to be carried out.**

3. **Carry out a risk assessment of the various activities and adopt countermeasures.**

4. **Keep people not involved in the operations away.**

5. **Make sure there are no ignition points within a 3 metre radius.**

6. **Make sure the work area has sufficient openings and is suitably ventilated.**

7. **Mark out the work area as a danger zone/area where flammable materials are present; make sure there are no drains or rooms below where refrigerant could collect; if possible, move the cabinet to a specialised workshop or a safe area.**

8. **Display warning signs (for example No smoking – No open flames).**

9. **Ventilate the work area using ATEX components.**

10. **The work area must always be checked with an HC leak detector positioned at a lower level, as HCs have a higher density than air.**
The sensors must have an audible and visual alarm and activate when the concentration is greater than 20% of the LFL.

11. **Use adequate PPE (safety goggles and gloves) and obtain the technical manual and safety data sheet for R290.**

12. **Adopt suitable measures to ground the devices to eliminate electrostatic charge problems.**

    Beware of electrostatic charges from capacitors.

13. **Avoid working in confined spaces. Work with a partner. Do not use flammable materials such as paper or plastic.**

14. **Use a suitable extinguisher.**

3.32 SUPPORT FOOT MAINTENANCE

KPS21SG…

I. Remove the front and rear protection, depending on the foot to be removed (see section 3.4 paragraph I for the front panel and section 3.21 for the rear panel).

II. Raise or position the machine so that it is not resting on the support feet to be dismantled.

III. Unscrew the nut securing the threaded pin on the foot.

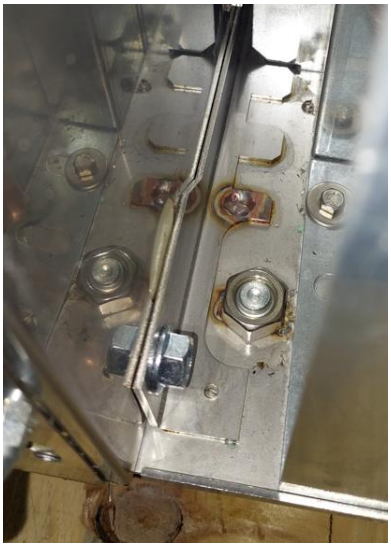


Figure 100

IV. Unscrew the foot and replace.

Figure 101

KPS42SG… - KPS72SG - KPS120SG

I. To remove foot, simply unscrew the 4 screws securing the flange to the base of the motor.

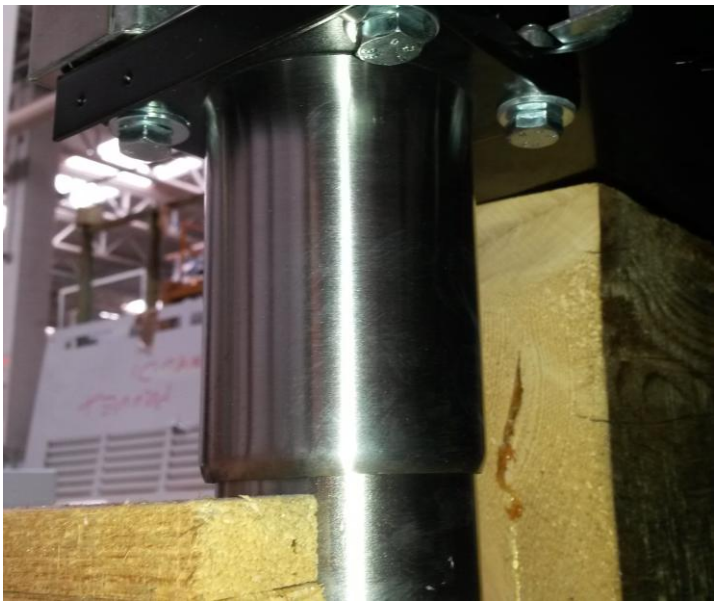


Figure 102

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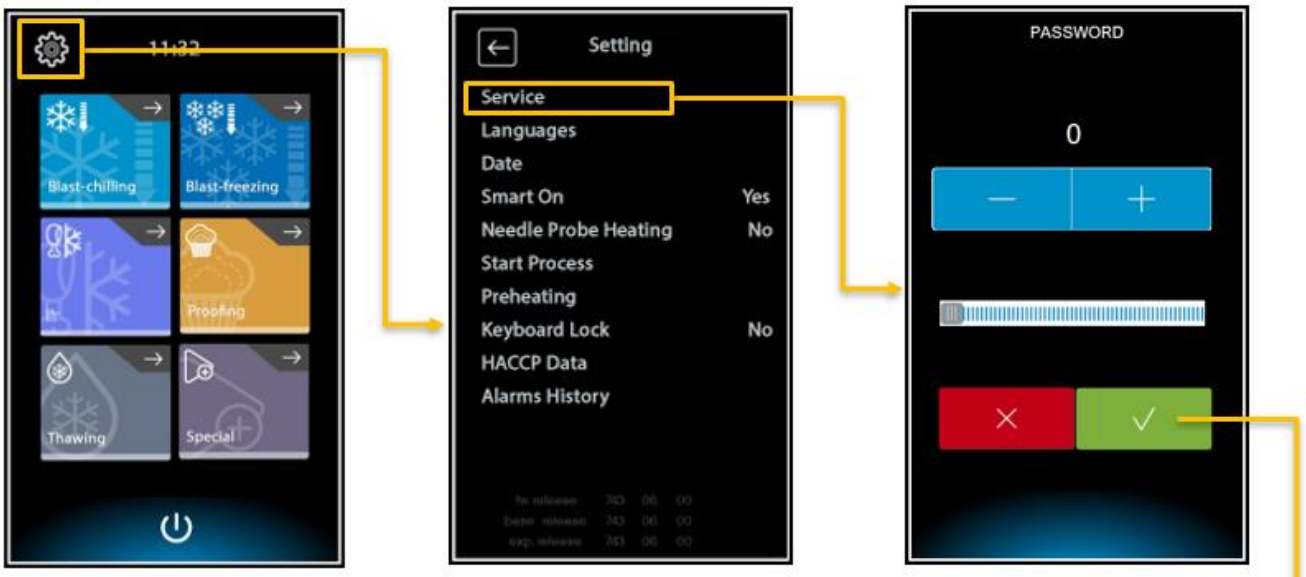
4. PARAMETERS – BOARD ALARMS

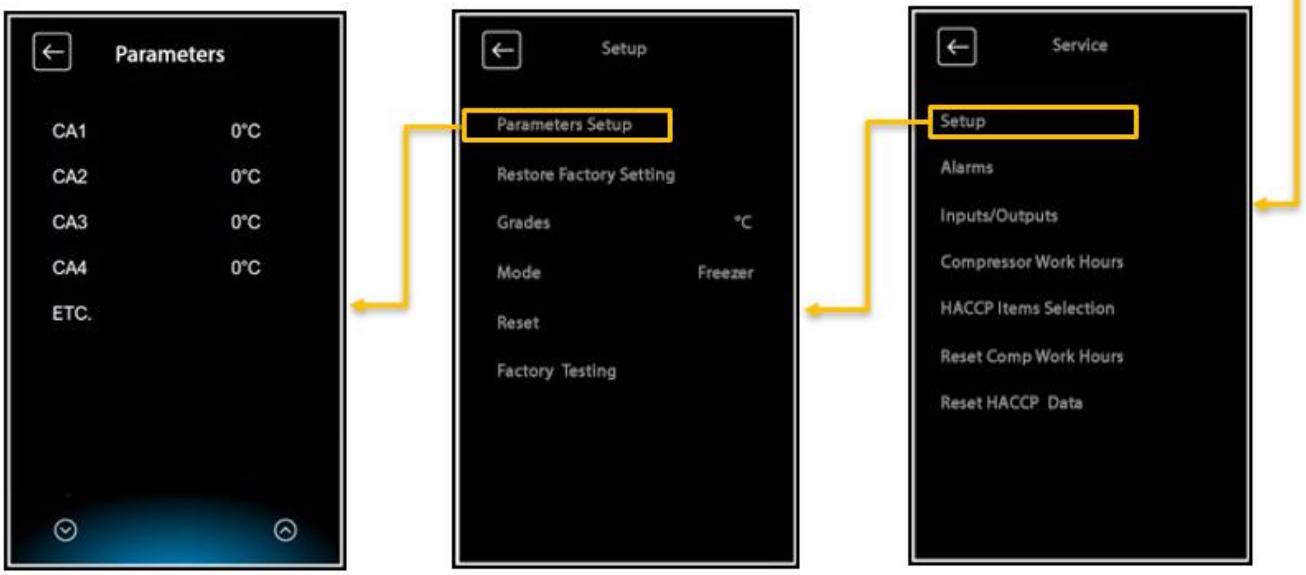
4.1 PARAMETERS

Select **SETTINGS** from the main menu. Select **SERVICE.**

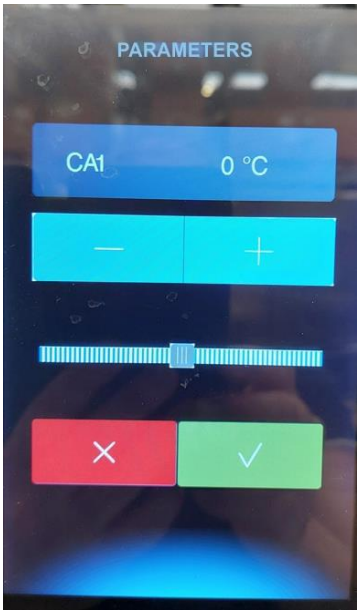
Set the password “-19” to access the Service menu.



PARAMETERS CONFIGURATION and other items can be selected in the SETUP menu.



Select one of the parameters in the list.
A screen for changing the parameter is displayed. This operation can be carried out incrementally using the + and - keys or with the scroll bar mode.
When editing is complete press V to confirm or X to cancel editing



	Label	Name	Value	Unit of measurement
	CA1	Chamber offset	0	°C
	CA2	Evap Probe offset	0	°C
	CA3	Cond Probe Offset	0	°C
	CA4	Needle 1 Probe offset	0	°C
	CA5	Needle 2 Probe offset	0	°C
	CA6	Needle 3 Probe offset	0	°C
	P0	Probe type	NTC	
	P2	Celsius/Fahrenheit	°C	
	P3	Needle probe type	multipoint	
	P4	Enable Evaporator	Yes	
	P5	Enable Condenser	Yes	
	P9	Number of Needles	3	
	P10	RH Probe presence	Yes	
	P11	Lower Humidity Trans. Calib. Limit	20	
	P12	Upper Humidity Trans. Calib. Limit	100	
	P13	Humidity Probe offset	0	
		Main regulator		
	r0	Hysteresis	2	°C
NU (ex customised)	**r1**	Blast Chilling Duration	90	min
NU (ex customised)	**r2**	Freezing Duration	240	min
NU (ex customised)	**r3**	Set Needle Blast Chilling End	3	°C
NU (ex customised)	**r4**	Set Needle Freezing End	-18	°C
	r5	Maximum duration blast chilling at temperature (starts from temperature r15)	90	min
	r6	Maximum duration freezing at temperature (starts from temperature r15)	240	min
NU (ex customised)	**r7**	Preset chamber setpoint in blast chilling	0	°C
NU (ex customised)	**r8**	Preset chamber setpoint in freezing	-40	°C
NU (ex customised)	**r9**	Setpoint cabinet in Hard	-20	°C
NU (ex customised)	**r10**	set positive conservation chamber	2	°C
NU (ex customised)	**r11**	set negative conservation chamber	-20	°C
PRE-COOLING	**r12**	set Pre-cooling cycle chamber	-25	°C
NU (ex customised)	**r13**	set hard core	30	°C
NU (ex customised)	**r14**	Hard Duration %	40	%
NEEDLE	**r15**	Core Temp for time count	100	°C
	r17	Needle Chamber Delta for Insertion	7	°C

	r18	Second Test duration	56	sec
NU (Ex sanitisation)	**r19**	Set Chamber first sanit phase	-40	°C
SANITISATION	**r20**	Set Sanitisation cabinet (pre-regulation F35)	25	°C
	r21	Sanitisation duration (F36)	180	min
	r22	Set chamber sanitisation cons (F37)	-20	°C
	r23	Maximum first sanitisation phase duration	5	h
NU	**r24**	Duration Ice Cream Hard	10	min
THAWING	**r25**	Set Chamber low load thawing start	85	°C
	r26	Set Chamber medium load thawing start	80	°C
	r27	Set Chamber high load thawing start	70	°C
	r28	Set Chamber low load thawing end	65	°C
	r29	Set Chamber medium load thawing end	85	°C
	r30	Set Chamber high load thawing end	80	°C
	r32	Low Load Thawing duration	30	min
	r33	Medium Load Thawing duration	30	min
	r34	High Load Thawing duration	30	min
LEAVENING		**LEAVENING**		
	r35	Leavening Set Offset (Added to the set of reactivation, leavening and holding to raise the cabinet temperature to improve the leavening process. The rising display stops at the setpoint. 0= function excluding free temperature).	4	°C
NU	**r36**	Set customised Needle Cycle	0	°C
NU	**r37**	Customised Cycle duration	0	min
NU	**r38**	Set Chamber customised Cycle Cons	5	°C
	r39	maximum cabinet temperature setpoint	85	°C
THAWING		**THAWING**		
	rS1	setPoint 1 surface	9	°C
	rS2	setPoint 1 core	-1	°C
	rS3	setPoint 2 surface	8	°C
	rS4	setPoint 2 core	0	°C
	rS5	setPoint 3 surface	7	°C

	rS6	setPoint 3 core	1	°C
	rS7	setPoint 4 surface	6	°C
	rS8	setPoint 4 core	2	°C
	rS9	setPoint 5 core	5	°C
	rS10	setPoint 5 surface	3	°C
	rS11	setpoint 1 thawing chamber	-30	°C
	rS12	setpoint 2 thawing chamber	12	°C
	rS13	setpoint 3 thawing chamber	10	°C
	rS14	setpoint 4 thawing chamber	8	°C
	rS15	setpoint 5 thawing chamber	6	°C
	rS16	setpoint 6 thawing chamber	4	°C
	rS17	setpoint 7 thawing chamber	3	°C
	rS18	setpoint 8 thawing chamber	2	°C
	rS19	setpoint chamber for postponed thawing	-16	°C
	rS20	setpoint holding post thawing	2	°C
	rS21	blast chilling time for 1st phase timed thawing	120	min
	rS22	2nd phase thawing time	60	min
	rS23	3rd phase thawing time	60	min
	rS24	4th phase thawing time	180	min
	rS25	5th phase thawing time	60	min
	rS26	6th phase thawing time	60	min
	rS27	7th phase thawing time	120	min
	rS28	8th phase thawing time	120	min
		COLD REGULATION		
	rC0	Cold regulation hysteresis	2	°C
	rC1	setpoint stop in leavening	-16	°C
TBV	**rC2**	lock phase duration in leavening	30	min
	rC3	setpoint lock in leavening	-5	°C
	rC4	neutral leavening cold zone	1	°C
	rC5	Evaporator shut-down threshold compressor slowing down (the compressor stops to avoid freezing the product below this threshold)	-3	°C
		HOT REGULATION		
	(r35)	Parameter offset SETPOINT + reading locked in leavening (Prestep 3 inserted in free pos to not vary modbus)		
	rH0	Hot **Leavening** Hysteresis	1	°C

	rH3	Set Reactivation Cabinet	16	°C
starts with dfrost if Tevap low	**rH4**	Set Leavening Cabinet	28	°C
	rH5	Set Holding cell Holding (Set>20°)/ slowing down(Set<20°)	25	°C
	rH6	Neutral Leavening Zone Call: hot cyclic if T < | SE T- rH6 - rH0 |	1	°C
TBD	**rH7**	Lock duration (rC2 ?)	120	min
	rH8	Reactivation duration	180	min
	rH9	Leavening duration	120	min
	rH10	Enable SOFT regulation. Replaced new regulation with def.	5	min ?
Reactivation-leavening and Leavening	**rH11**	Input temperature 1st heating reactivation-leavening via defrosting. Check done on evaporator probe if <rH11, defrosting that is initiated to reheat does not lock the display the T for its duration. The lock function at SET is subsequent to the end of defrost	20	°C
Reactivation-leavening and leavening	**rH12**	Output temperature 1st heating reactivation-leavening via defrosting. At the end of regulation there is a pause d7 for hot recovery.	20	°C
Slow cooking	**rH13**	Set chamber **Slow Cooking** holding	60	°C
	rH14	Cycle time leavening heating group Always valid with hot heating groups active Time on leavening heating group	20	sec
	rH15	Manages the fans in parallel with the heating groups + 5" of fans ON to dissipate extra heat. The breakaway time must be counted in the management if the PWM output of the evaporator fans is used.	10	sec
THAWING		**HOT THAWING REGULATION**		
	rH16	Neutral thawing cold zone	1	°C
	rH17	Hot Thawing Hysteresis	1	°C
	rH18	Cold Thawing Hysteresis	2	°C
	rH19	Time thawing heating group cycle	30	sec
	rH20	Time on thawing heating group	4	sec

	rH21	Neutral thawing hot zone	1	°C
	rH22	Soft hot control	0	%
SLOW COOKING		**COOKING**		
	rH28	Hot counting start differential cooking and holding only (no leavening using rH0). =0 reached SET - ZN signals pre-heating and starts counting without waiting for SKIP. >0 once the SET-rH28 temperature has been reached, counting starts and does not signal pre-heating.	0	°C
	rH29	Setpoint cooking phase 1	80	°C
	rH30	Setpoint needle cooking phase 1	60	°C
	rH31	Cooking phase 1 duration	120	min
	rH32	Setpoint cooking phase 2	80	°C
	rH33	Setpoint needle cooking phase 2	60	°C
	rH34	Cooking phase 2 duration	0	min
	rH35	Hot cooking differential	2	°C
	rH36	Neutral cooking zone	1	°C
	(rH13)	Setpoint holding (stayed in original pos.)		
	rH37	Enable Soft Cooking Temperature 0=no 1 =Yes Reduces/increases intervention time by 4/4 to 1/4 if there is overshoot. Transition to phase with lower cooking temperature	0	%
TBV STEP 4	**rH38**	0= natural cooling to conservation 1= cooling with compressor.	0	
	rH39	Time Hot heating group cycle	60	sec
	rH40	Time On Hot heating groups	30	sec
	rH41	Time Choco cooking cycle	60	sec
	rH42	Time On heating groups in choco	30	sec
	rH43	Time Yogurt cooking cycle	60	sec
	rH44	Time On Yogurt heating groups	30	sec
	rH45	Time Pasteurizer cooking cycle	60	sec
	rH46	Time On Pasteurizer heating groups	30	sec
	rH47	Time Holding cooking cycle	60	sec
	rH48	Time On Holding heating groups	30	sec

	rH49	Time Drying cooking cycle	60	sec
	rH50	Time On Drying heating groups	30	sec
TBV	**rH51**	Enable regulation 2 hot outputs Cooking	0	
	rH52	Enable regulation 2 hot outputs Thawing	0	
	rH53	Enable regulation 2 hot outputs Leavening	0	
	rH54	Enable regulation 2 hot outputs Special	0	
HUMIDITY		**HUMIDITY**		
leavening	**rU1**	Min Chamber Temp for Leavening humidity	2	°C
leavening	**rU2**	Leavening Humidification Period	120	sec
leavening	**rU3**	Time Leavening Humidification	3	sec
leavening	**rU4**	Enable Humidification in lock phase	0	
leavening	**rU5**	Set Humidification in Lock	0	%
leavening	**rU6**	Set Humidification in Reactivation	0	%
leavening	**rU7**	Set Humidification in Leavening	0	%
leavening	**rU8**	Set Humidification in Holding	0	%
Cooking	**rU9**	Set Humidification in Cooking Phase 1	80	%
Cooking	**rU10**	Set Humidification in Cooking Holding	80	%
Cooking	**rU11**	Set Humidification in Cooking Step 2	80	%
Proving	**rU12**	Dehumidification in leavening 0= no 1 = compressor ON) Switches on compressor + hot heating groups (cyclic)	0	
Proving	**rU13**	Injection in leavening duration In interval rU2	5	sec
Common	**rU14**	Neutral humidity zone with RH probe (1= 1st above and 1st below) cooking and leavening	1	%
Proving	**rU15**	Dehumidification differential with RH probe leavening	5	%
Common	**rU16**	Dehumidification differential with RH probe cooking and leavening	5	%
Cooking	**rU17**	Humidification cooking lock temperature (above yes below no) Without RH probe with RH probe	2	°C
Cooking	**rU18**	Injection in cooking duration	5	sec
Cooking	**rU19**	Interval injection in Cooking	120	sec
Pasteurization	**rU20**	Injection in Pasteurization duration	5	sec

Proving	**rU21**	First Leavening injection (between min-mid) If T>rU1 in leavening and leavening stop	5	%
Proving	**rU22**	Second Leavening injection (between med-mid) If T>rU1 in leavening and leavening stop	10	%
Proving	**rU23**	Minimum injection threshold. in leavening and leavening stop	81	%
Proving	**rU24**	Medium injection threshold. in leavening and leavening stop)	90	%
Proving	**rU25**	Maximum injection threshold. in leavening and leavening stop(from reactivation)	100	%
COMPRESSOR		**Compressor**		
	C0	Delay On Compressor	0	min
	C1	Delay On On Compressor	5	min
	C2	Delay Off On Compressor	3	min
	C3	Minimum On Time Compressor	1	min
	C4	Compressor Off Cabinet Alarm	10	min
	C5	Compressor On Cabinet Alarm	10	min
	C6	Temp Condenser overheating	60	°C
	C7	Temp Compressor locked	70	°C
	C8	Delay Compressor locked	1	min
	C9	Time on comp if cabinet probe failure in con seg	30	min
DEFROSTING		**DEFROSTING**		
	d0	Defrosting Interval in conservation	8	h
	d1	defrosting type Electric or Hot Gas	1	
	d2	temp defrosting end	8	°C
	d3	defrosting timeout	20	min
	d4	defrosting at blast chill start	0	
	d5	delay defrosting at cons start	240	min
	d7	dripping	2	min
	d15	Delay hot gas comp	0	min
	d16	Pre-dripping	1	min
ALARMS		**ALARMS**		
	A1	delay alarm LT	10	°C
	A2	Enab alarm LT	1	
	A4	delay alarm HT	10	°C
	A5	Enab alarm HT	1	

	A7	Delay alarms temp	15	min
	A8	Delay Alarms HT	15	min
	A10	blackout durat	5	min
	A11	Alarm hysteresis	2	°C
	A12	Buzzer duration	5	sec
	A13	Buzzer in alarm duration	60	sec
FANS		**VENTILATION**		
	F1	Time off fans	10	°C
	F3	time Off Fans	2	min
	F8	Fans hysteresis	2	°C
	F15	Delay On Fans from Door	5	sec
	F17	Cabinet temp Fans stop	70	°C
	F19	Minimum fan speed	20	%
	F20	Maximum fan speed	80	%
	F21	Breakaway speed	80	%
	F22	Breakaway time	5	sec
	F23	fan speed in blast chilling and in soft blast freezing phase	5	
	F24	fan speed in hard blast chilling phase	5	
	F25	Fan speed in Freezing	5	
	F26	Fan speed in Positive Conservation post blast chilling	2	
	F27	Fan speed in Negative Conservation post freezing	2	
	F28	Fan speed in pre-cooling	5	
	F35	Fan speed in first sanitisation phase	2	
	F36	Fan speed in second sanitisation phase	5	
	F37	Fan speed in sanitisation conservation	5	
NU	**F38**	Fan speed in customised blast chilling	5	
NU	**F39**	Fan speed in customised conservation	5	
NU	**F40**	Free not used	5	
	F41	Delay Off Cooking Fans cold	2	min
	F42	Fan speed in lock	3	
	F43	Fan speed in reactivation	2	
	F44	Fan speed in leavening	2	
	F45	Fan speed in holding	2	
	F46	Time On Cond Fans	15	°C
	F47	Delay off Fans from Comp	30	sec
	F48	Cond Fan Status in defrost	0	sec
	F49	fan operating mode in conservation (see F55-56)	2	

F50	fan operating mode in slow cooking	1	
F51	fan OFF time in heating	180	sec
F52	fan ON time in heating	30	sec
F53	minimumspeed	1	
F54	minimumspeed slow cooking	1	
F55	fan time OFF for compressor OFF	3	min
F56	fan time ON for compressor ON	2	min
F57	fan operating mode in conservation	0	
F60	FanSpeedSlowCooking1	5	
F61	FanSpeedSlowCooking2	5	
F62	FanSpeedHoldingSlowCooking	5	
F63	EvapFanStopTempAfterCooking	65	°C
F65	FanSpeedFirstThawingPhase	5	
F66	FanSpeedSecondThawingPhase	5	
F67	FanThirdThawingPhase	5	
F68	FanSpeedFourthThawingPhase	5	
F69	FanSpeedFifthThawingPhase	5	
F70	FanSpeed6ThawingPhase	5	
F71	FanSpeed7ThawingPhase	5	
F72	FanThirdThawingPhase	5	
F73	FanSpeed8ThawingPhase	2	
F74	Fan ON Time In neutral thawing zone	20	sec
F75	Fan OFF Time In neutral thawing zone	120	sec
	Digital inputs		
i0	Digital door input effect	1	
i1	Digital door input polarity	N.C	
i2	Delay door open	3	min
i5	Digital HP input effect	1	
i6	HP input polarity	N.C	
i7	Delay HP	5	sec
i8	Digital LP input effect	1	
i9	Digital LP input polarity	N.O.	
i10	Delay LP	5	sec
i11	Digital Safety Thermal Switch input polarity	N.O.	
i12	Delay alarm HT	5	sec
i13	Steam Consent	N.O.	
	Outputs		
u1	Output 9 Configuration	UV	

u2	Output 8 Configuration	PUMPDOWN	
u3	Output 7 Configuration	HEAT_NEEDLE	
u4	Output 2 and 5 configuration	K2=DEFROST_K5=DOOR	
u5	Temperature On Door React	-7	°C
u6	UV Lamp ON duration	5	min
u7	Needle Heating Temp	40	°C
u8	Needle heating duration	2	min
u9	Needle heating at door opening	1	
u11	Enable fans during sterilization	0	
u12	Pumpdown duration	10	sec
u13	Drying duration	25	min
PA1	EPoCA user password	426	
PA2	EPoCA Service password	824	
BLE	Enable BLE - WiFi communication	0	
L1	Internal archive sampling time	5	min
L2	Sampling time in internal archive conservation	15	min
LA	address (with BLE=0)	247	
Lb	Baudrate (with BLE=0)	2	
LP	Parity (with BLE=0)	2	
E7	Keypad lock	0	
E8	keypad lock timeout	60	sec
E9	Splash EVCO	1	
E12	Expansion Presence	1	
E13	Water drain valve duration	1	min
E14	HP high pressure test duration	10	min
E15	Freezer presence	1	
C3L	Delay Off On Compressor in leavening	0	min
	IFR		
K01	Time interval	25	sec
K02	Maximum Temperature difference between Tsubskin and Thandle	3	°C
K03	Minimum value of the Final temperature	3	°C
K04	Time interval	30	sec
K05	Temperature Value at start of IFR cycle according to regulation	70	°C
K06	Time interval	30	sec
K07	Temperature Value end of first part of IFR cycle	10	°C
K08	Coefficient for Time interval calculation	10	

K09	Time interval	30	sec
K10	Maximum indicative time according to regulation	5400	sec
K11	Final temperature	3	°C
K12	Lower Temperature limit	3	°C
K13	Time interval	60	sec
K14	Lower Temperature limit	1	°C
K15	Comparison parameter with Delta T2	4	°C
K16	Comparison parameter with Delta T2	5	°C
K17	Comparison parameter with Delta T2	2	°C
K18	Time interval	30	sec
K19	Lower Temperature limit	3	°C
K20	Maximum Temperature difference between Tsubskin and Tcore	2	°C
K22	Enable conservation at end of cycle	1	
K23	Chamber thermostat set-point in conservation	2	°C
K25	Defrosting at start of intelligent blast chilling cycle	0	
K26	Automatic changeover chamber set point in time or temperature mode	0	°C
K27	Chamber thermostat temperature of first phase	-25	°C
K28	Inhibition temperature	80	°C
X01	Time interval	900	sec
X02	Final Temperature value for function G(t)	3	°C
X03	Thermal Impedance value for function G(t)	15	
X04	Time interval	30	sec
X05	Thermal Impedance value for function E(t)	10	
X06	Final Temperature value for function E(t)	4	°C
X07	Corrective coefficient of function E(t)	5	
X08	Final Temperature comparison with function G(t)	10	°C
X09	Final Temperature comparison with function E(t)	10.5	°C
nu	Free not used	0	

	INJECTION MAINTENANCE Calculation of hours for alarm signalling		
w01	water softener threshold <8f	20,000	
w02	water softener threshold <18f	14,400	

w03	water softener threshold <30f	8,640	
w04	threshold <8f	6,500	
w05	threshold <18f	4,800	
w06	threshold <30f	2,880	

	CONDENSATION EVAPORATION Slow cooking with humidity		
Y01	Enable DryDrip	1	
Y02	DryDrip compartment temperature	50	°C
Y03	DryDrip compartment humidity	70	%
Y04	DryDrip interval	300	sec
Y05	DryDrip duration	60	sec

4.2 ALARMS

The equipment always displays an alarm message in the event of an anomaly.

ARI.O

IDE.O

Type on the warning icon to view the status of the outputs/inputs to display the alarm. The warning remains active until the problem is resolved.

Alarm icon

Follow the instructions provided by the equipment and contact Customer Service if required, remembering to:

- Disconnect the equipment from the electrical system;
- Deactivate the protection switch upstream of the equipment;

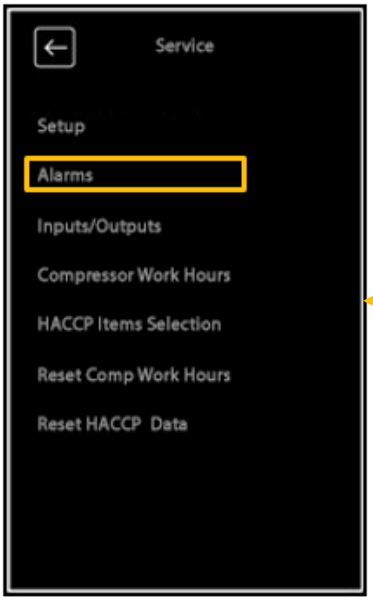
The controller records 40 alarm events. The events are recorded in the list in the Settings menu (Alarm History).

Select SETTINGS.

Select SERVICE.

Set the password “-19” to access the Service menu.

You can select ALARMS in the SERVICE menu.



5. TROUBLESHOOTING

5.1 ALARMS

ALARM	ALARM DESCRIPTION	POSSIBLE CAUSES	NECESSARY ACTIONS
RTC	Low battery level.	Control interface battery is flat. Circuit board fault.	Problem with the internal clock battery. Clock functions will not work correctly (e.g. HACCP event recording will be incorrect). CALL FOR SERVICE.
CABINET PROBE	Cabinet probe fault.	Probe connector disconnected from terminal. Probe and/or probe cable damaged or interrupted.	The blast-chiller will run until the end of the active cycle. No further cycle can be run until the probe is replaced by Technical Service. CALL SERVICE.
EVAPORATOR PROBE	Evaporator probe fault.	Probe connector disconnected from terminal. Probe and/or probe cable damaged or interrupted.	The blast-chiller works: the defrost setting is time-dependent. CALL SERVICE.
CONDENSER PROBE	Condenser probe fault.	Probe connector disconnected from terminal. Probe and/or probe cable damaged or interrupted.	CALL SERVICE. Fault locking an active cycle. Remove load from cabinet to avoid food waste.
NEEDLE SENSOR 1	Needle sensor 1 fault	Improper use of the needle probe (e.g. pinched or frayed wire). Connector fault. Probe fault. PCB fault.	Cycle running: • The cycle continues in probe mode until at least one of the 3 needle probe points is running. • The cycle switches to time mode if none of the 3 sensors are operating. During STANDBY phase: • The cycle can be started as long as at least one of the 3 points

			is active. • The cycle can be started in time mode if all points are faulty. • Call Service to restore full functionality. Replace probe. Replace board. Call Service to restore full functionality.
NEEDLE SENSOR 2	Needle sensor 2 fault	Improper use of the needle probe (e.g. pinched or frayed wire). Connector fault. Probe fault. PCB fault.	Cycle running: • The cycle continues in probe mode until at least one of the 3 needle probe points is running. • The cycle switches to time mode if none of the 3 sensors are operating. During STANDBY phase: • The cycle can be started as long as at least one of the 3 points is active. • The cycle can be started in time mode if all points are faulty. Replace probe. Replace board. Call Service to restore full functionality.
NEEDLE SENSOR 3	Needle sensor 3 fault	Improper use of the needle probe (e.g. pinched or frayed wire). Connector fault. Probe fault. PCB fault.	Cycle running: • The cycle continues in probe mode until at least one of the 3 needle probe points is running. • The cycle switches to time mode if none of the 3 sensors are operating. During STANDBY phase: • The cycle can be started as long as at least one of the 3 points is active. • The cycle can be started in time mode if all points are faulty. Replace probe. Replace board. Call Service to restore full functionality.

THERMAL SWITCH	Compressor thermal switch tripped.	Compressor overload. Inadequate power supply. (connector disconnected). Damaged compressor.	The blast-chiller is locked and only the condenser fan remains in operation. Check for any obstructions in the condensing coil. CALL CUSTOMER SERVICE.
HIGH PRESSURE	Safety pressure switch tripped.	The working ambient temperature is too high. The condenser fan does not work. The food load exceeds the suggested values. Condensing coil clogged with dust.	Reposition the machine to ensure proper ventilation. The blast-chiller is locked and only the condenser fan remains in operation. Check fan connections. Check for any obstructions in the condensing coil. Clean the condensing coil. CALL CUSTOMER SERVICE.
LOW PRESSURE	Safety pressure switch intervention.	Refrigerant leak resulting in insufficient charge. Evaporator fan not working. Solenoid valve locked. Evaporator coil with ice	The blast-chiller is locked and only the condenser fan remains in operation. Check solenoid valve functionality. Defrost. Check fan connections. CALL CUSTOMER SERVICE.
DOOR OPEN	Door open Stop cycle.	The door stays open beyond the permitted limit. Faulty or interrupted closing device (micromagnetic).	Make sure that the machine door is closed and that any physical obstructions are not preventing the door from closing. Check micro connections. If the alarm remains active call Service.
HIGH TEMPERATURE	High cabinet temperature	Door open. Food in the cold cabinet is too hot. Check the cabinet probe. Refrigerant leak. Ice or frost on evaporator. Check parameter A4.	Cabinet temperature has exceeded the set limit in addition to the signal delay. Cycle in continuous operation. Perform defrost cycle. Check the condition of the gasket. Check the cabinet temperature with an external thermometer. If the alarm persists even when the cabinet temperature is low, call Service.

LOW TEMPERATURE	Low cabinet temperature (only for positive or negative holding cycles)	Low set delay time. Set temperature difference too small. Evaporator frozen. Evaporator fan not working. Compressor always ON. Non-compliant temperature probe Check parameter A1.	The cabinet temperature is below the cycle temperature setpoint minus the differential. The cycle will continue until it stops. Open the door to raise the temperature inside the cabinet and check after about 3 minutes. Start a manual defrost cycle. Check compressor relay or contactor. Check internal temperature with reference thermometer If the problem persists, call Service.
CYCLE DURATION	Cycle time over the permitted limit	Food load in cabinet too high. Food too thick. Food temperature too high. Evaporator fan fault. Refrigerant leak.	The core temperature has not reached the setpoint within the set time period. Reduce thermal load. Reduce food thickness.
BOARD COMMUNICATION	Power board communication error	Internal error – circuit board disconnected – Circuit board fault.	Check whether the problem persists when ON/OFF is operated. If problem persists, call Service.
BOARD COMPATIBILITY	Corrupted stored parameters	Software corruption	Check whether the problem persists when ON/OFF is operated. If problem persists, call Service.
NEEDLE	Fault on all sensors.	Improper use of the needle probe (e.g. pinched or frayed wire). Connector fault. Probe fault. PCB fault.	Cycle running: • The cycle continues in probe mode until at least one of the 3 needle probe points is running. • The cycle switches to time mode if none of the 3 sensors are operating. During STANDBY phase: • The cycle can be started as long as at least one of the 3 points is active. • The cycle can be started in time mode if all points are faulty. Call Service to restore full functionality.
POWER FAILURE	Supply power absent.	No power. Power system failure. Other electrical problems (e.g. power	The machine restarts, signalling intervention of the alarm. The cycle restarts automatically as soon as power is restored. The machine has not been used for a period of time: check the

		loss). Damaged power cable. Fuse tripped.	start and end time of the cycle. Check the plug or the general electrical control panel. Check for shorts or overload. If the alarm persists, call Service.
SANITATION PROBE INSERTION	NA	NA	NA
SANITATION DURATION	NA	NA	NA
CONDENSER OVERHEAT	High cabinet temperature	Incorrect condenser probe position. Fan condenser not working. The condenser is dirty or the ventilation grille has clogged holes. The machine cannot dissipate heat from the motor unit. Refrigerant leakage (compressor always ON).	This fault locks the active cycle: Remove load from cabinet to avoid food waste. Use a hoover and remove any dirt/dust residue from the ventilation grille. If the alarm persists, call Service.
COMPRESSOR LOCKED	High cabinet temperature	Incorrect condenser probe position. Fan condenser not working. The condenser is dirty or the ventilation grille has clogged holes. The machine cannot dissipate heat from the motor unit. Refrigerant leakage (compressor always ON). Thermal relay tripped. Check parameters C7 and C8.	This fault locks the active cycle: Remove load from cabinet to avoid food waste. Use a hoover and remove any dirt/dust residue from the ventilation grille. If the alarm persists, call Service.
NEEDLE PROBE INSERTION	Needle probe not inserted.	No needle probe insertion.	Verify alarm. Reactivate the cycle and, if the problem persists, call Service.
HUMIDITY	Humidity probe fault.	Probe connector disconnected from terminal. Probe and/or probe cable damaged or interrupted.	CALL SERVICE. Fault locking an active cycle.

H20 INJECTION MAINTENANCE	Atomiser nozzle cleaning	The number of humidification cycles has exceeded the set limits depending on water hardness and temperature.	Call Service.
EXP COMMUNICATIONS	Expansion board communication error	Internal error – circuit board disconnected – Circuit board fault.	Check whether the problem persists when ON/OFF is operated. If problem persists, call Service.
EXP COMPATIBILITY	Corrupted stored parameters	Software corruption	Check whether the problem persists when ON/OFF is operated. If problem persists, call Service.

5.2 OTHER FUNCTIONS

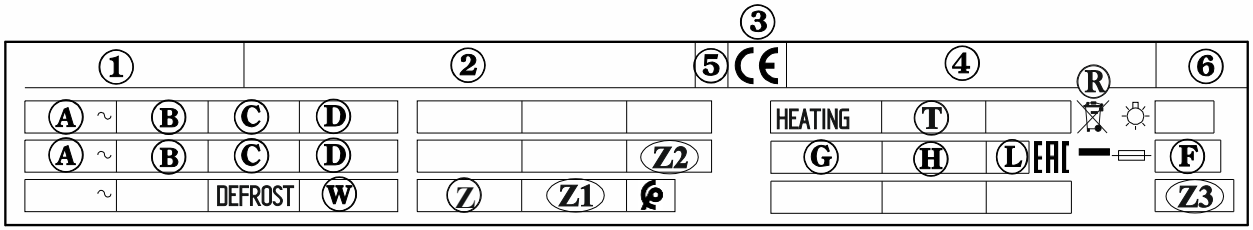
FAULT	POSSIBLE CAUSES	NOTES FOR SERVICE
The display is switched off (OFF) while the main switch is on.	Display connector disconnected.	Switch the unit On/Off. If the problem persists, call Service.
The display is locked and does not react.	No power supply. Shorted fuses. Faulty electrical contacts. Problems with the software.	Switch the unit On/Off. If the problem persists, call Service.
The display has condensation on the inside.	Water infiltration during cleaning.	No action required if the unit can continue to operate. If a malfunction occurs, call Service.
External noise/vibration with cycle ON.	Unit not level. Water collection tray located underneath the motor vibrating. Condenser panel not secured.	Level the machine by operating the adjustable feet. Remove the water in the tray and adjust the support guides. Secure the condenser panel. If the problem persists, call Service.
Internal noise/vibration with cycle ON.	Tray holders are not aligned. Internal fan obstruction. Evaporator fan/casing deflector not properly secured.	Check that the right/left holders are properly levelled. Check that the cabinet fan is working properly without obstructions. Check that the casing is properly secured with the knobs. If the problem persists, call Service.

The machine takes too long to reach the desired temperature.	High food load. Refrigerant leakage. Condensing coil clogged with dust. Solenoid valve fault. Cabinet fan is not connected correctly. Thermostatic valve needs adjustment. Heating element relay is locked. Thermal insulation of piping Damaged Evaporator loaded with frost.	Reduce the food load in the cell. Clean the condensing coil. Defrost. If the problem persists, call Service.
Compressor fault	The compressor does not start. Compressor oscillates intermittently or discontinuously. Compressor thermal relay tripped. Compressor noisy. Clicson tripped. Contactor failure. Thermal relay tripped.	CALL SERVICE.
Failed defrost.	Check defrost parameters. Check heating element operation.	CALL SERVICE.
Evaporator fans not working.	Safety micro fault. Failure to connect the fan correctly to the serial port Faulty or short-circuited fan.	Check magnetic micro operation. Check the status of the fan condenser in the electrical panel. Check fan operation and replace if necessary.
Condenser fans not working.	Motor blocked Loss of electrical continuity Pressure switch tripped Fan short-circuited	Check compressor operation. Check the status of the fan condenser in the electrical panel. Check whether the pressure switch has tripped. Check fan operation and replace if necessary.
Failed defrost.	Defrost program set with inappropriate	Check the defrost cycle setting (see operation and maintenance manual).

	parameters. Faulty bimetallic thermostat. Evaporator heating element not working	Check bimetallic thermostat operation. Check evaporator heating element operation.
Door does not close properly.	Worn gasket. Door misalignment.	Replace gasket. Check the correct absorption/surface temperature of the door heating element. Adjust door brackets.

Once the above checks have been carried out, if the defect persists, contact Customer Service, remembering to indicate:

- The nature of the defect
- The machine code (1)
- The serial number (5)



5.3 REFERENCE VALUES

Below are the reference values of the machine's basic operating parameters under standard conditions and with an empty refrigerated compartment.

These values can be taken as a reference for understanding and troubleshooting problems on the machine

KPS21SG…				
Room temperature 32 °C (declared climate class)	**in chilling at -25 °C**	**in conservation at -22 °C**	**In blast chilling at -5 °C**	**In conservation at +2 °C**
Time from 30°C at setpoint (min)	17		7.5	
Suction temperature (°C)	18 ± 2	26.5 ± 2 °C	20 ± 2 °C (*)	28 ± 2 °C
Drain temperature (°C)	80 ± 2	76.5 ± 2 °C	70 ± 2 °C	78 ± 2 °C

KPS42SG…				
Room temperature 32 °C (declared climate class)	**in chilling at -25 °C**	**in conservation at -22 °C**	**In blast chilling at -5 °C**	**In conservation at +2 °C**
Time from 30°C at setpoint (min)	14		6	
Suction temperature (°C)	6 ± 2 °C	9 ± 2 °C	15 ± 2 °C (*)	17 ± 2 °C (*)
Drain temperature (°C)	71 ± 2 °C	64 ± 2 °C	68 ± 2 °C	58 ± 2 °C

KPS120SG – KPS72SG				
Room temperature 32 °C (declared climate class)	**in chilling at -25 °C**	**in conservation at -22 °C**	**In blast chilling at -5 °C**	**In conservation at +2 °C**
Time from 30°C at setpoint (min)	7.5		16	
Suction temperature (°C)	-2 ± 2 °C	3 ± 2 °C	10 ± 2 °C (*)	14 ± 2 °C (*)
Drain temperature (°C)	69 ± 2 °C	65 ± 2 °C	69 ± 2 °C	62 ± 2 °C

(*) The measurement refers to the evaporator inlet temperature 1 min after the compressor has started up