Epta		COQ Project:

GLEE 55 LITE KW Service Manual (short version)

GLEE 55 LITE KW

Service Manual

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1. AMOUNT OF REFRIGERANT IN THE EQUIPMENT

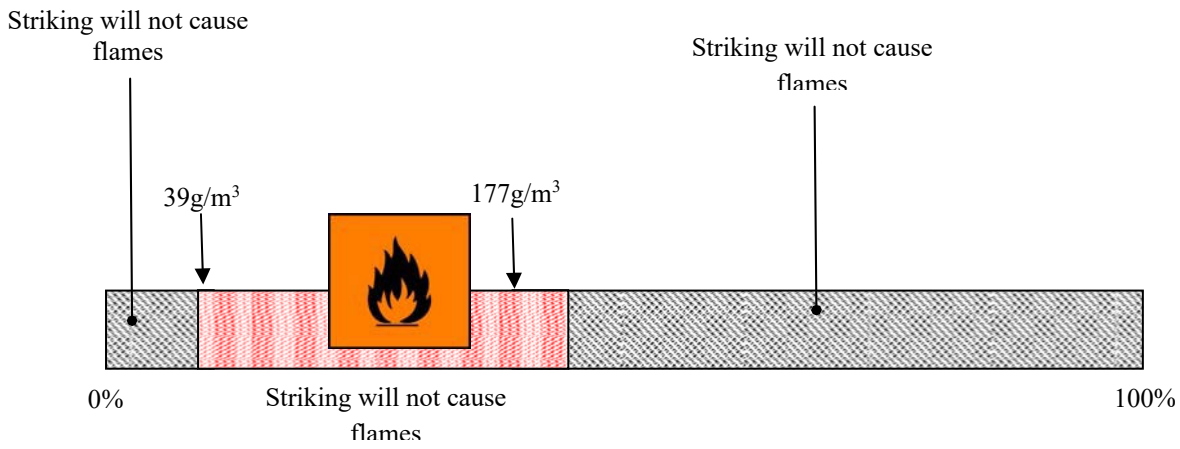
The most prominent feature of the GLEE 55 LITE V2 KW versions is that they use a natural gas: propane (R290).

MODEL	AMOUNT OF PROPANE* [grams] / [Ounce]	
GLEE 55 LITE V2 KW	138 / 4,87	

(*) The propane refrigerant R290 to be used must be technical-gas rated, with purity grade above 99,5%.

PROPANE IS HEAVIER THAN AIR, WHICH MEANS THAT IT WILL TEND TO CONCENTRATE NEAR THE FLOOR OF THE ROOM.

The flammability limit percentage (in a volume of air) is between 2,2% and 9,2% (at 25°C and 1bar). In mass terms:

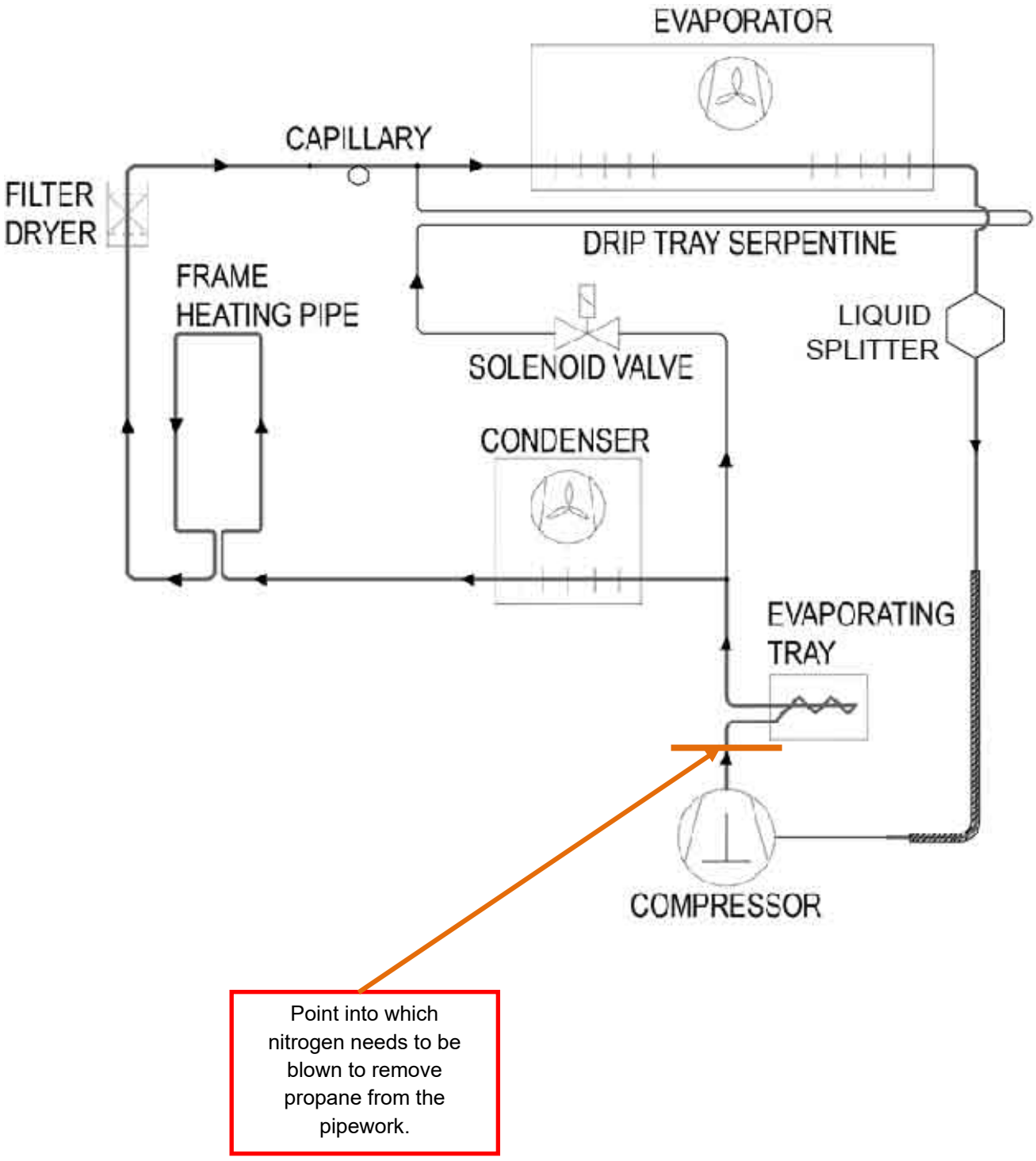


If the entire amount of refrigerant is released in the food compartment of VALZER KW, this would become a flammable zone.

2. REFRIGERATION SCHEMATICS FOR THE EQUIPMENT

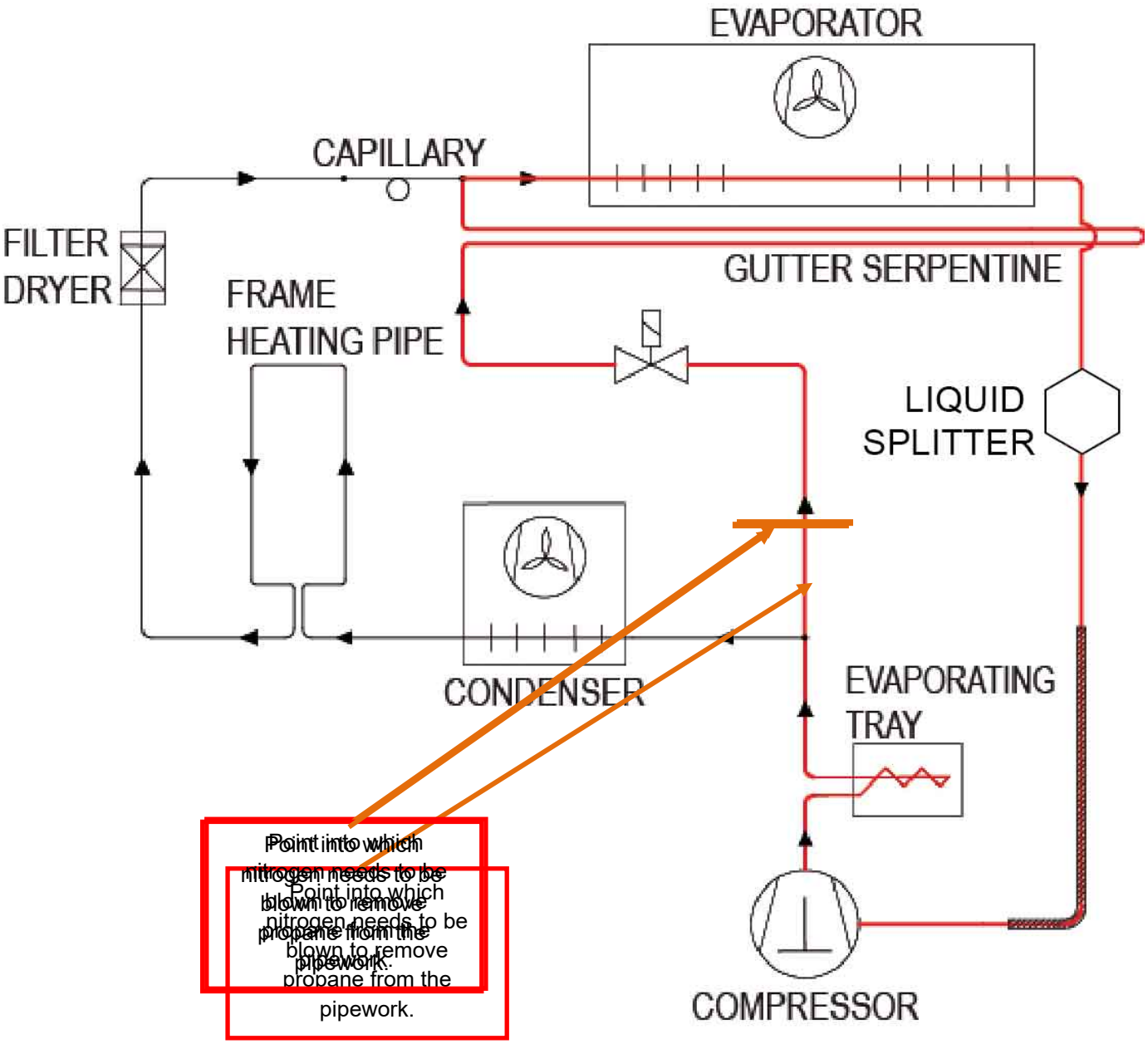
2.1 REFRIGERATION DIAGRAM FOR THE COOLING CYCLE

The compressor runs warm gas through evaporating tray, condenser and frame pipe.



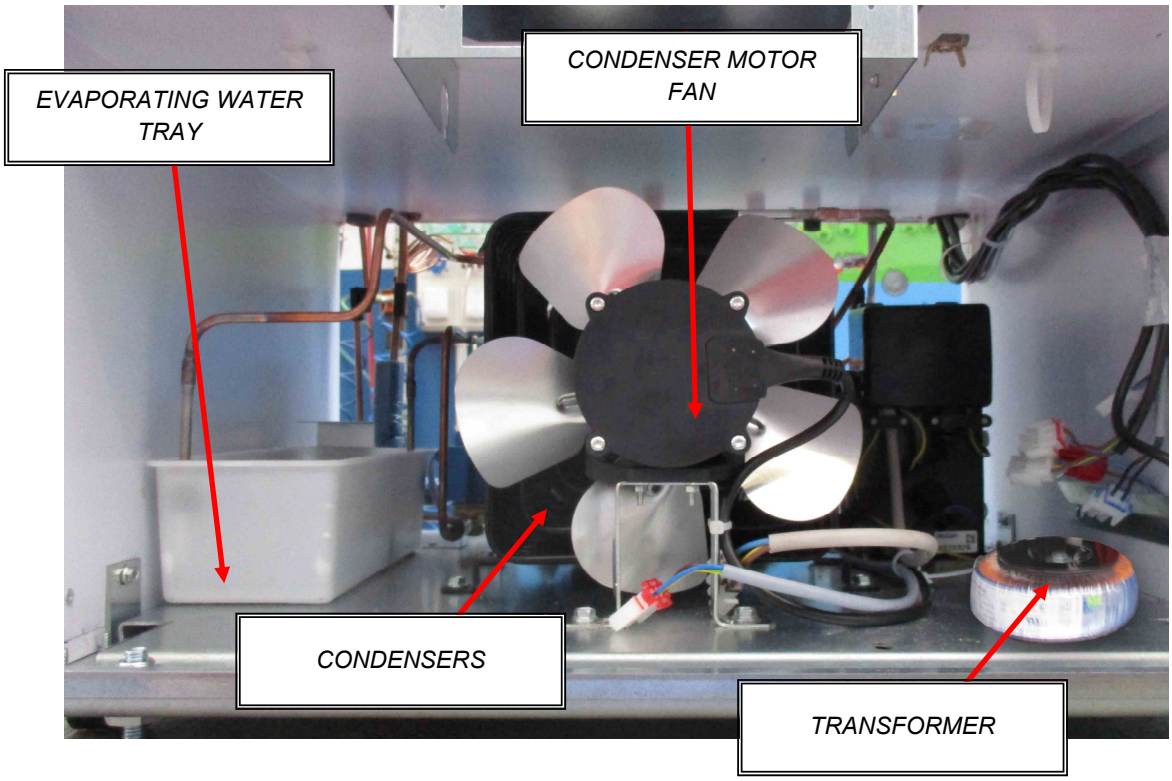
2.2 REFRIGERATION DIAGRAM FOR THE DEFROST CYCLE

The NC solenoid valve opens and allow gas to run through the drip tray serpentine and then into the evaporator.

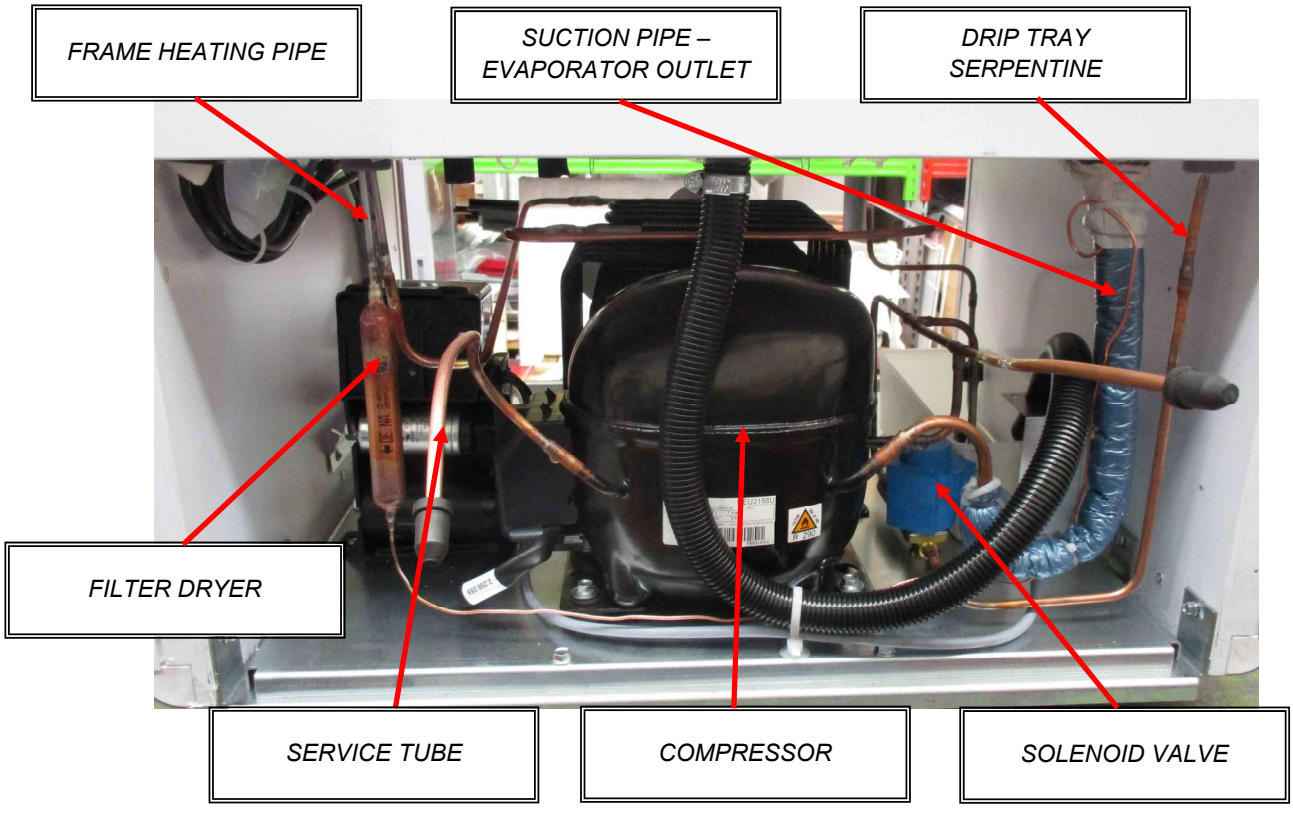


2.3 VIEW OF THE MOTOR COMPARTMENT AND RELEVANT PIPEWORK

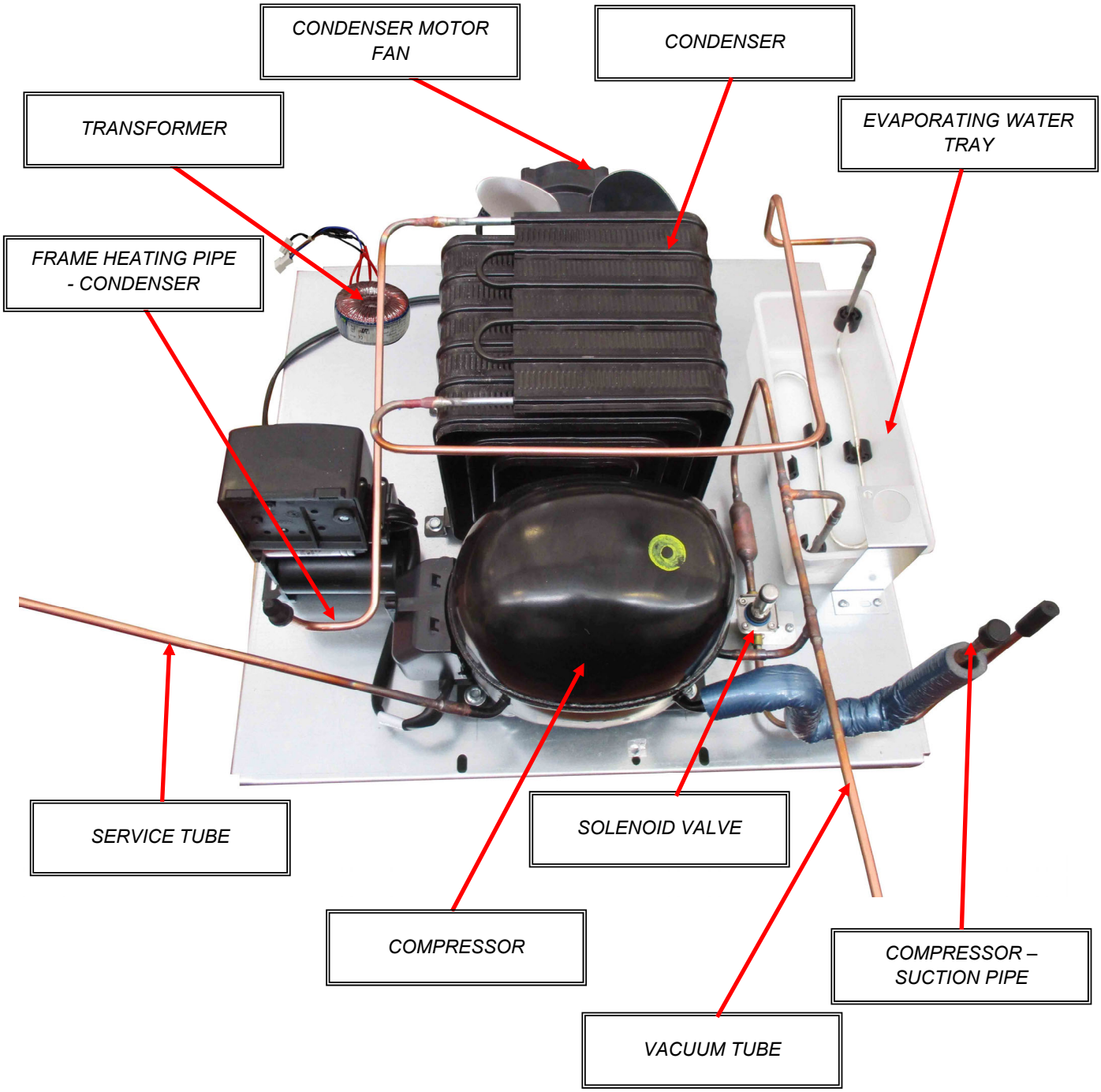
VIEW OF MOTOR COMPARTMENT – FRONT SIDE



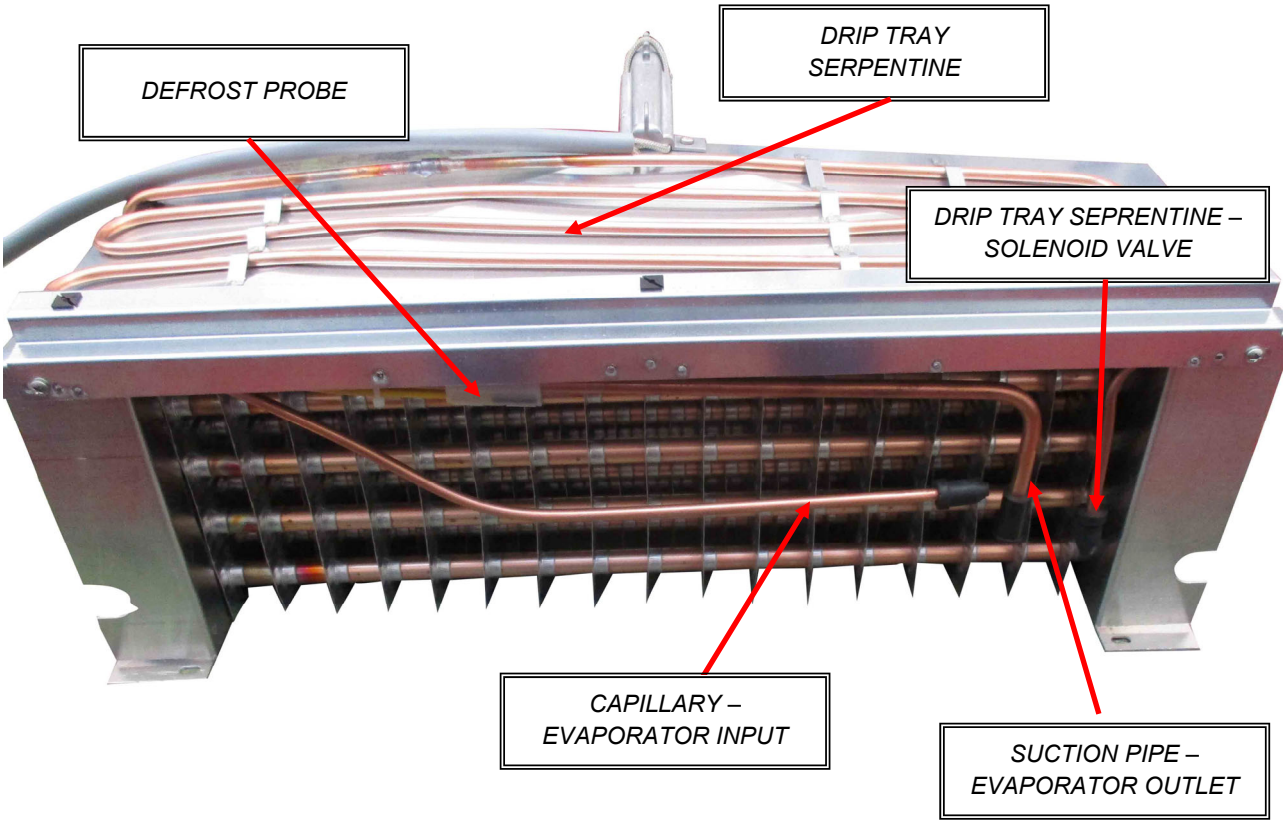
VIEW OF MOTOR COMPARTMENT – REAR SIDE



VIEW OF MOTOR COMPARTMENT – MOTOR HOUSING



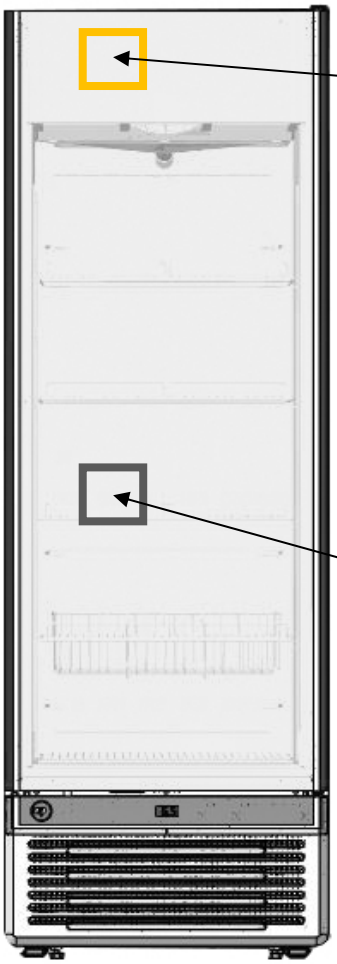
2.4 VIEW OF THE EVAPORATOR COMPARTMENT AND RELEVANT PIPEWORK



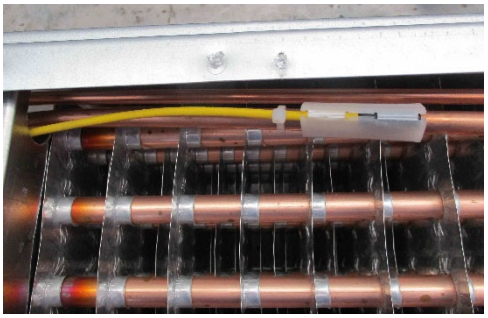
3. POSITION OF PROBES IN THE CABINET

There are two probes in GLEE 55 LITE V2

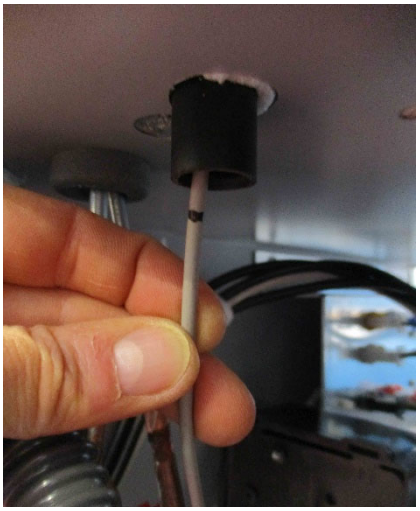
Front view:



Defrost probe on evaporator outlet tube (yellow)



Temperature probe on fans carter (grey)



Model	***Position of probe***	**Probe Colour**	**Function**	**Probe Epta code**
GLEE 55 LITE V2 KW	Evaporator Tank	Yellow Gray	Defrost end Display - Thermostat	55883032 55883031

4. ALARMS (DANFOSS Controller)

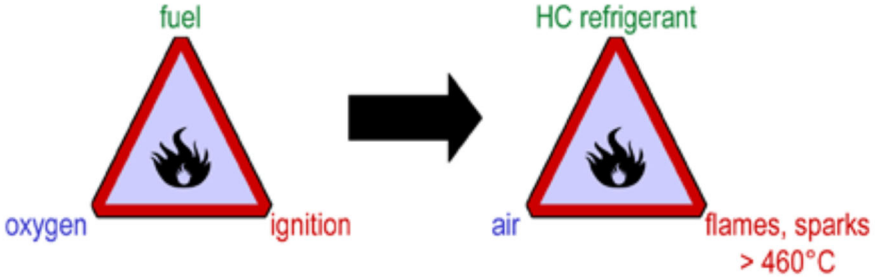
ALARM	CAUSE	OUTPUTS
“Hi”	High temperature alarm	Blink “Hi” with the Highes temperature; if configured: cut In alarm relay,beep the buzzer.
“Lo”	Low Temperature alarm	Blink "Lo" with the lowest temperature. If configured: cut in alarm relay, beep the buzzer.
“Con”	Condenser alarm	Blink "Con". If configured: cut in alarm relay, beep the buuer.
“dor”	Door open alarm	Blink "dor". If configured: cut in alarm relay, beep the buuer.

5. REPLACEMENT OF COMPONENTS AND REPAIR OF A LEAK

The instructions below, which involve opening the refrigerating circuit, must be performed in a place with sufficient air circulation and not in the sales area.

5.1 SAFE OPERATING PROCEDURES FOR REFRIGERATION UNITS USING R290

Before carrying out any kind of maintenance operation on the refrigerator, make sure that the machine is disconnected from power (unplugged).
R290 (Propane CH3CH2CH3) is a flammable natural refrigerant (Hydrocarbon HC) having lower explosive limit (LEL %V/V) = 1.7.
The very low quantity of refrigerant used and the safe design (possible ignition sources far from the potential explosive areas) make this unit totally safe in use. Caution must be used during servicing and with this respect it is essential to understand the basic concept of flammability.
Three ingredients are needed for a fire: a fuel at the right concentration, a supply of oxygen (normally from air) and a source of ignition. The common way of illustrating this is by means of the fire triangle.



Eliminating at least one but preferably two of these ingredients fire can be prevented.
In order to achieve this, three general guidelines should be followed during servicing:
F1. Containment of the substance;
F2. Avoidance of ignition sources;
F3. Use of ventilation.

F1. Containment

The flammable substances must be kept within a suitably designed and constructed "container", be it a suitable cylinder or a refrigeration system. If the substance leaks, it should be prevented from spreading to other areas.

F2. Ignition sources

Ensure that all the obvious and unobvious ignition sources have been removed from the equipment and handling areas. Ignition sources can vary greatly and may include sparks from electrical equipment or welding and cutting tools, hot surfaces, open flames from heating equipment, smoking materials, etc.

F3. Ventilation

There should be adequate airflow where flammable substances are stored and used.
Good ventilation will mean that any vapor arising from a leak or a release will be rapidly dispersed. In case one of the components of the refrigerating hermetic circuit (compressor, dryer, condenser, evaporator, capillary) needs to be serviced, the basic safe guideline must be always followed:

NEVER USE FLAMES OR HEAT SOURCES IF FLAMMABLE REFRIGERANT IS PRESENT INSIDE THE REFRIGERATING CIRCUIT

Flames can be used only when there is evidence that no flammable substance is still inside the circuit or the circuits; IN CASE OF MULTIPLE CIRCUITS NONE OF THEM MUST CONTAIN FLAMMABLE SUBSTANCES in case heat sources are to be used: all circuits need to be emptied and absence of flammable substances must be proved.

IMPORTANT

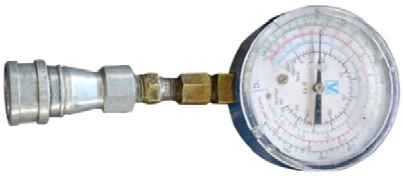
Provisions for all jobs involving the opening of the refrigerating circuit:

- SHUT DOWN THE POWER SUPPLY
- MANDATORILY WEAR GLOVES AND GLASSES
- DO NOT WORK WITH OPEN FLAMES BEFORE THE PIPEWORK HAS BEEN CUT!
- REMOVE ALL SPARK SOURCES FROM THE WORKING AREA (LIGHTERS, LAMPS, CIGARETTES).

5.2 PROTECTION TOOLS AND DEVICES FOR SERVICEMENT

Protection tools:

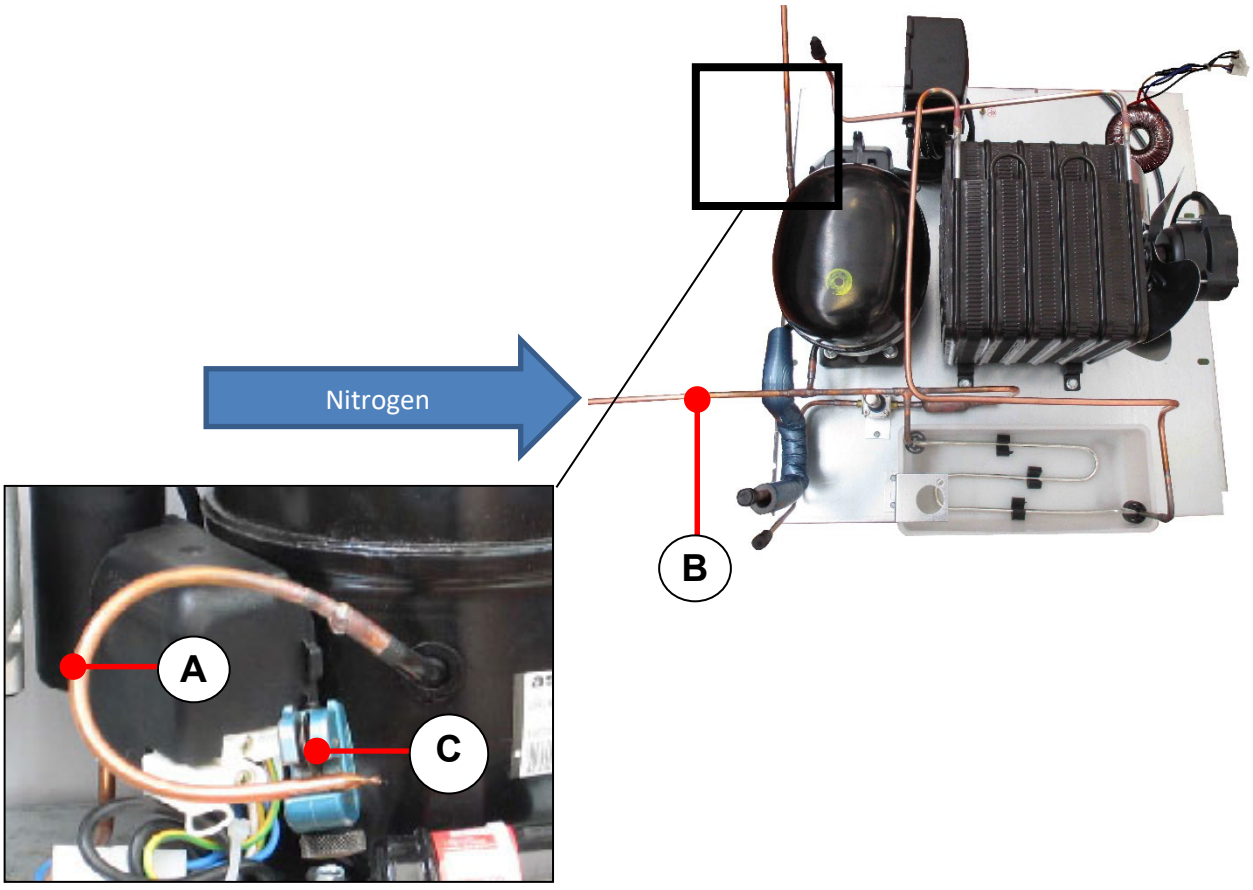
Devices for service personnel:

	**LOW PRESSURE SUCTION GAUGE**
	**REFRIGERANT PLIER**
	**ELECTRONIC LEAK DETECTOR**
	**REFRIGERANT JUNCTIONS**
	**LOKRING JOINT PLIER**
	**LOKRING CAP**
	**REFRIGERANT GAS CONTAINER**
	**NITROGEN GAS BOTTLE**

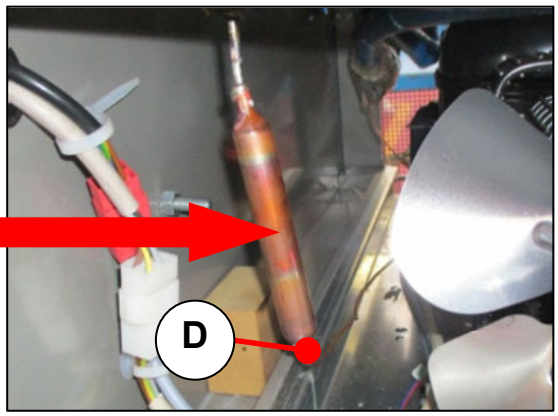
	**REFRIGERANT SCALE**
	**VACUUM PUMP**
	**LOKPREP SEALANT**
	**ORBITAL CUTTER**
	**SCREWDRIVER**
	**WRENCH n°10**

5.3 HOW TO EMPTY THE COOLING CIRCUIT AND TEST IT BEFORE SERVICING

The refrigerating unit has a double servicing pipe, on the low (**A**) and on the high (**B**) pressure sides: in order to totally remove the flammable refrigerant from the refrigerating circuit both pipes are to be opened by using an orbital cutter (**C**).
Cut the capillary tube (**D**) exiting the filter dryer.
When the inside pressure is equalized with the ambient pressure, blow nitrogen at 10 bars in the circuit through the service pipe on high pressure side (**B**) and check that it flows out through the other service pipe on the low pressure side; continue to blow nitrogen for at least 5 minutes.
At the end of this procedure **NO FLAMMABLE REFRIGERANT CAN REMAIN INSIDE THE CIRCUIT IN SUCH A QUANTITY TO BE DANGEROUS WHEN FLAMES OR HEAT SOURCES ARE USED**.



Also cut the pipe entering the filter and replace the filter dryer with a new one.



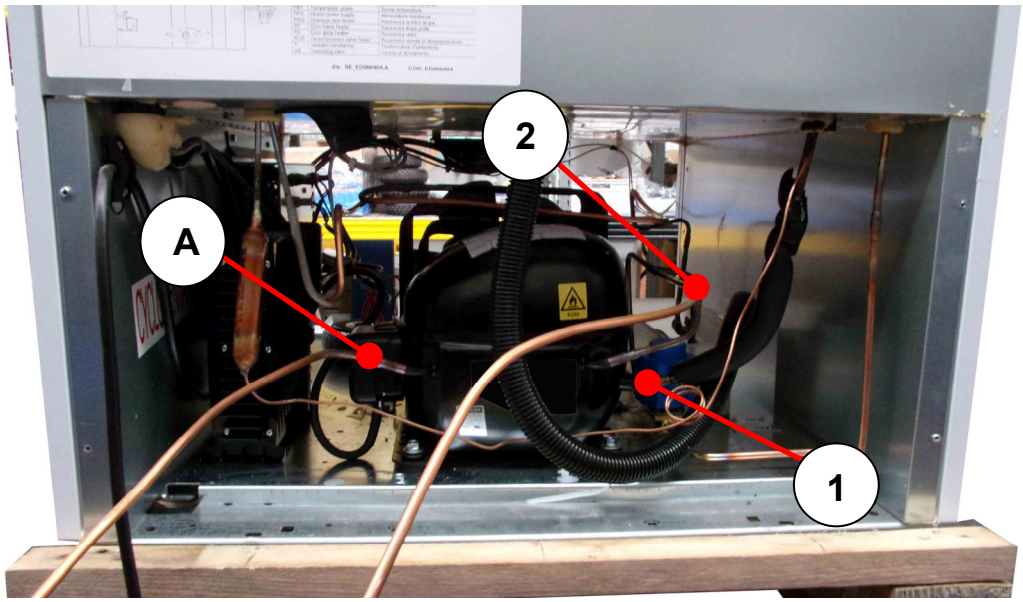
5.4 COMPRESSOR REPLACEMENT

GLEE 55 LITE KW
Epta code: 21848072
Model: EMBRACO NEU2168U
115V 60HZ R2

Epta code for filter: 80103000
Model: Filter gr 15 – Holes 5-3,2
Note: when the compressor is replaced the filter drier must be replaced too

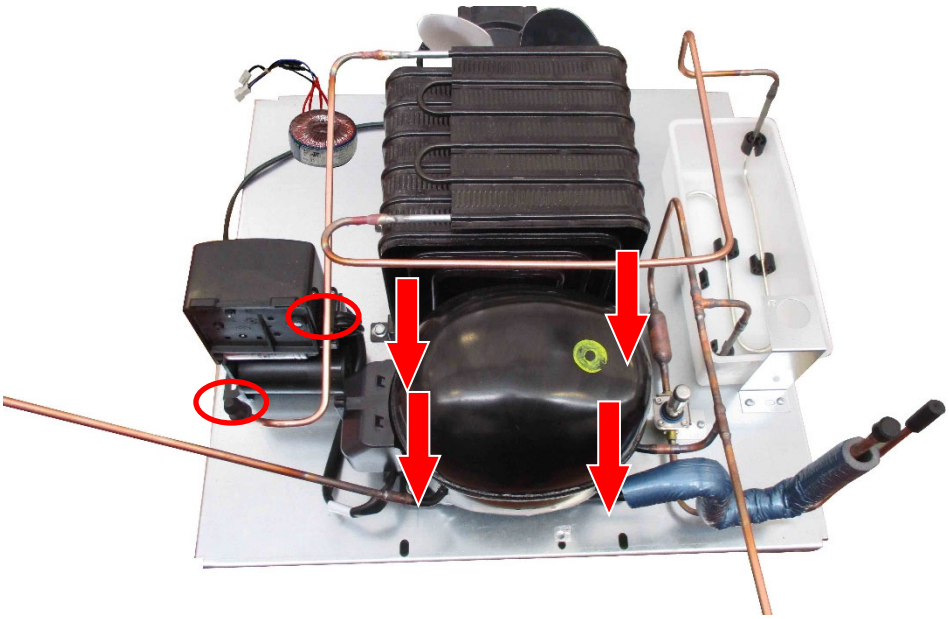
5.5 UNSOLDER COPPER PIPE TUBE

When no more refrigerant gas is inside the thermodynamic circuit, unsolder from compressor the charge pipe (**A**), the suction pipe (**1**) and the discharge pipe (**2**).



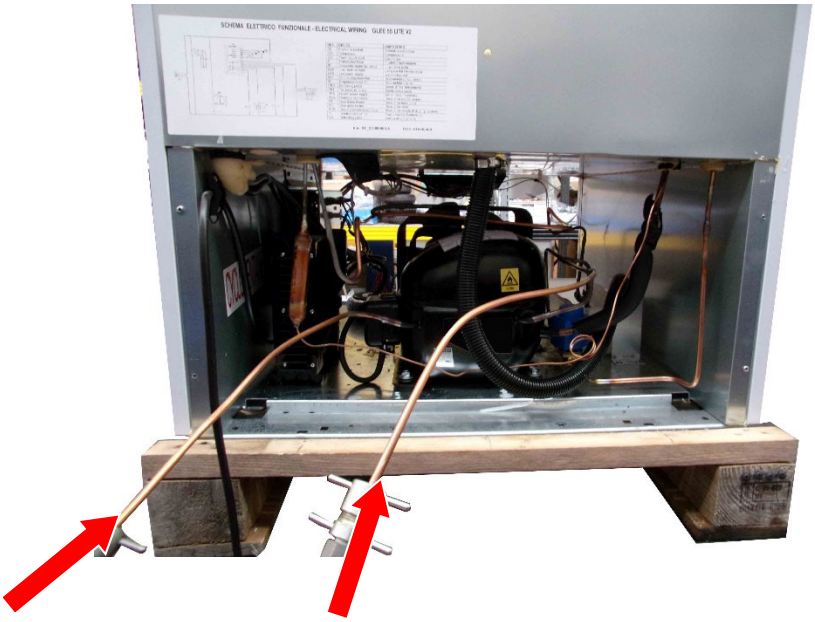
5.6 COMPRESSOR REMOVING

Unscrew the 4 compressor screws by using a wrench n°10.
Use a screwdriver to remove the inverter.



5.7 NEW COMPRESSOR INSERTION

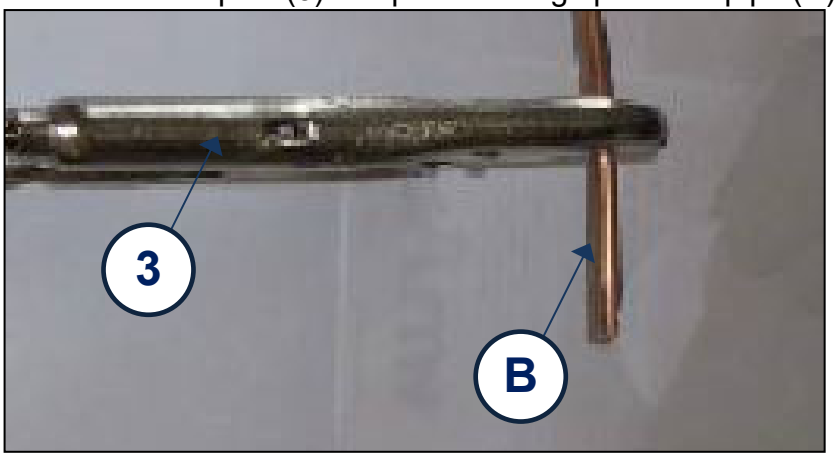
Fix the new compressor to the motor plate with 4 screws (wrench n°10) and then fix the inverter (screwdriver).
After securing the compressor to the plate, braze the discharge and suction pipes, then cut the capillary terminal by a 45° diagonal cut, insert it into the filter outlet (max 3cm) and braze it. Braze the pipe exiting the condenser to the filter inlet.
When the circuit is closed, charge the circuit with helium/nitrogen up to a pressure of 8 bar; check for possible leakages on brazing points.
Connect the vacuum pump to the compressor service tube and to the high pressure pipe and hold the vacuum for a period of 30-40minutes (check vacuum pump characteristics and manual for the correct procedure). The vacuum degree to be achieved is below 15 Pa (0,15 mbar).
WARNING! Wrong vacuum execution may cause problems on the refrigerator performances.



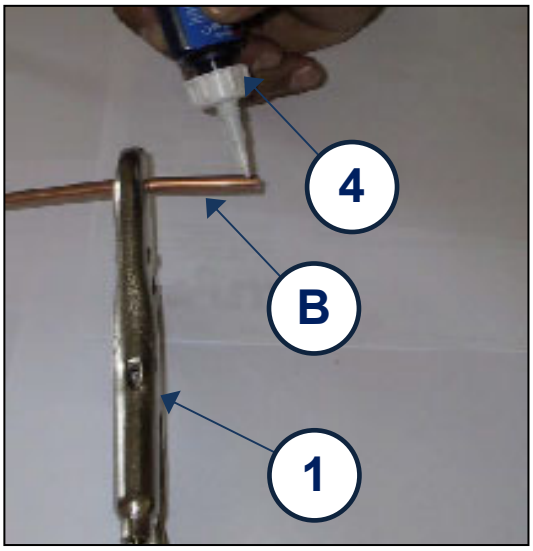
5.8 HIGH PRESSURE PIPE CLOSING

After 30-40 minutes of vacuum, disconnect the vacuum pump only on the high pressure pipe (**B**).

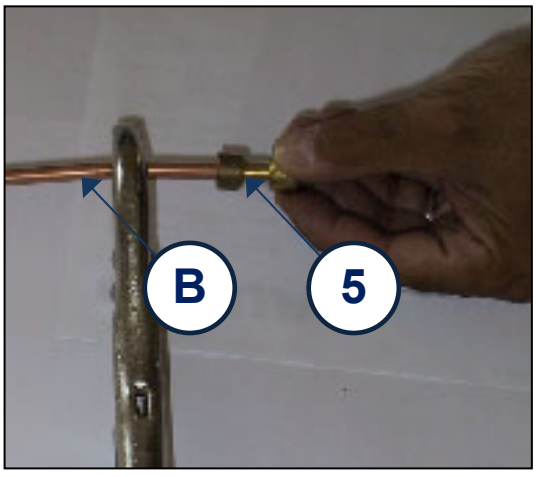
- Take the plier (**3**) and pinch the high pressure pipe (**B**), then remove refrigerant junction.



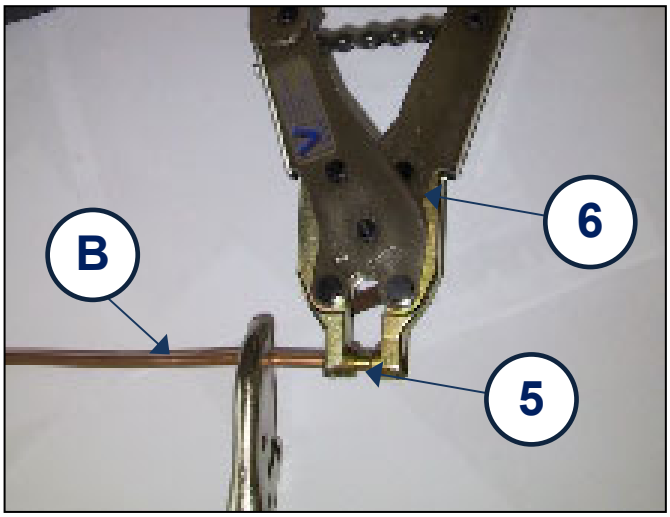
- Put a drop of Lokprep sealant (**4**) on the high pressure pipe terminal (**B**).



- Insert a Lokring cap (**5**) on the high pressure pipe (**B**). Rotate the cap (**5**) for correctly distribute the sealant (**4**).



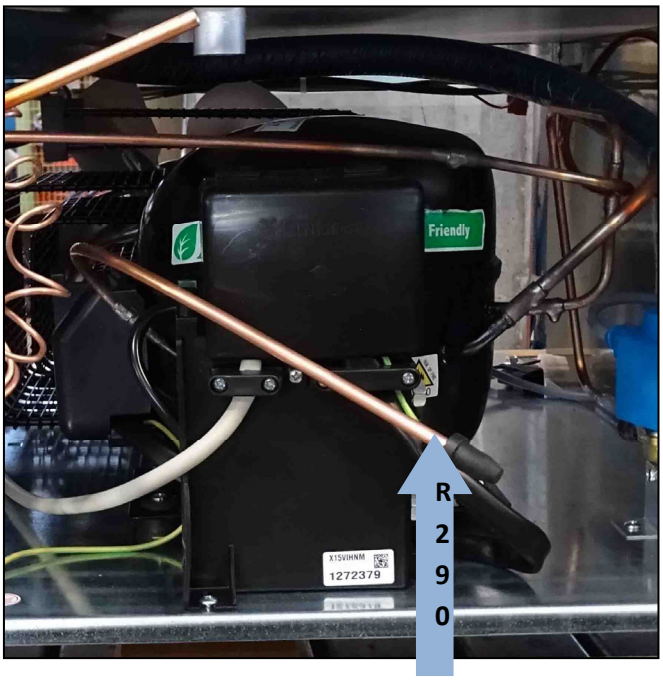
- By using the Lokring plier (**6**) fix the cap (**5**) on the copper pipe (**B**).



5.9 REFRIGERANT GAS CHARGING AND THERMODYNAMIC CIRCUIT CLOSING.

Check the nominal refrigerant gas charge on the data label of the cabinet (in g / oz).
Using a scale (**7**) with an adequate precision (±1g / ±0.01oz), verify the quantity of refrigerant gas in the gas container (**8**).

Disconnect the vacuum pump from the compressor service tube (**A**); connect the gas container (**8**) to the circuit, and measure the amount of refrigerant gas introduced in the circuit.



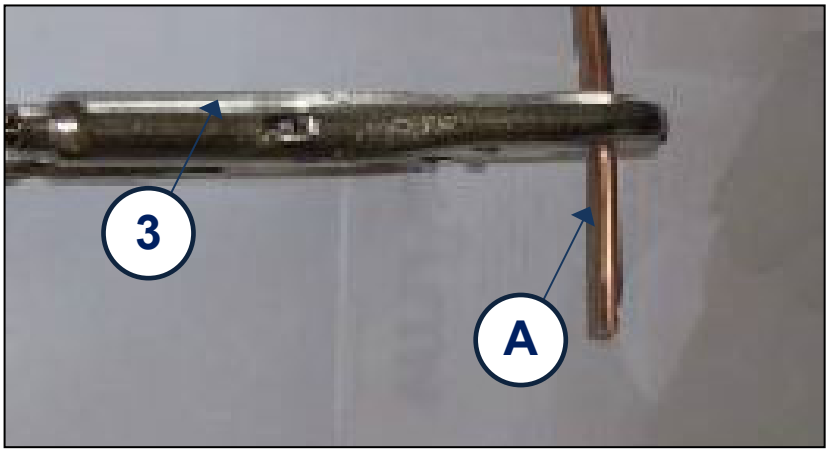
Picture example of compressor

If necessary, switch on the refrigerator, in order to introduce further refrigerant gas; the final charge should be the nominal value with a tolerance of ±3% in mass.

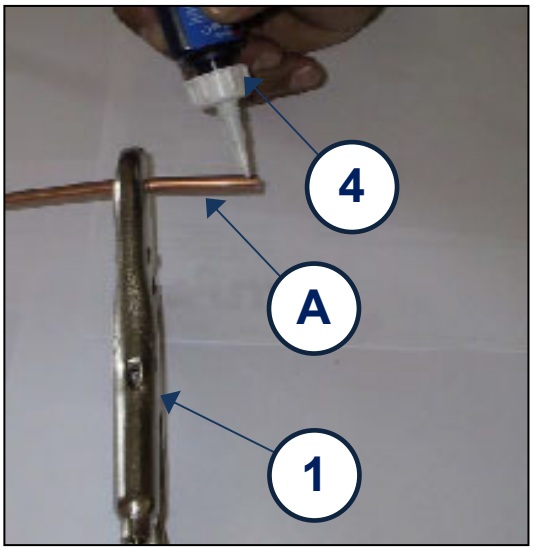
WARING! In order to avoid damages to the thermodynamic system components, do not switch on the refrigerator without any refrigerant gas inside the circuit.

Disconnect the refrigerant container from the circuit at the end of the charging process, then keep the refrigerator on for 5-6 minutes. Switch off and disconnect from the power supply.

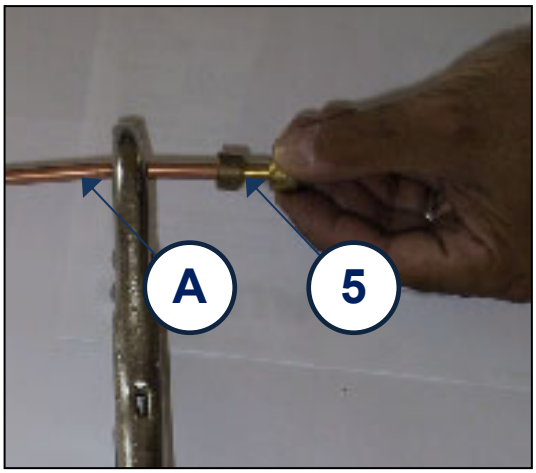
- Take the plier (**3**) and pinch the compressor service tube (**A**), then remove refrigerant junction.



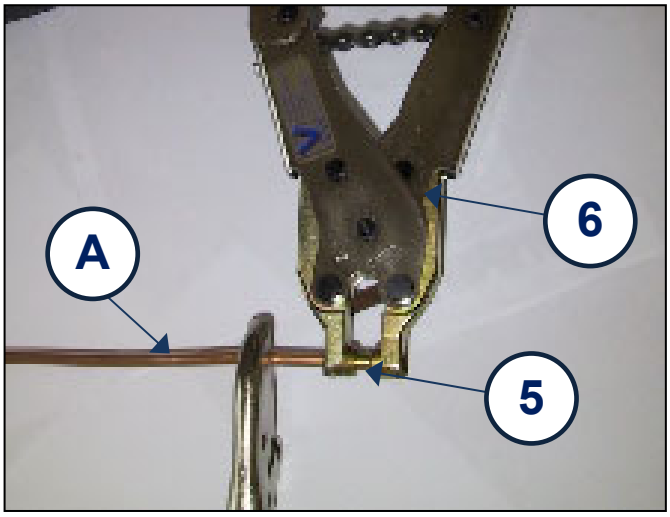
- Put a drop of Lokprep sealant (**4**) on the compressor service tube terminal (**A**).



- Insert Lokring cap (**5**) on the compressor service tube (**A**). Rotate the cap (**5**) for correctly distribute the sealant (**4**).



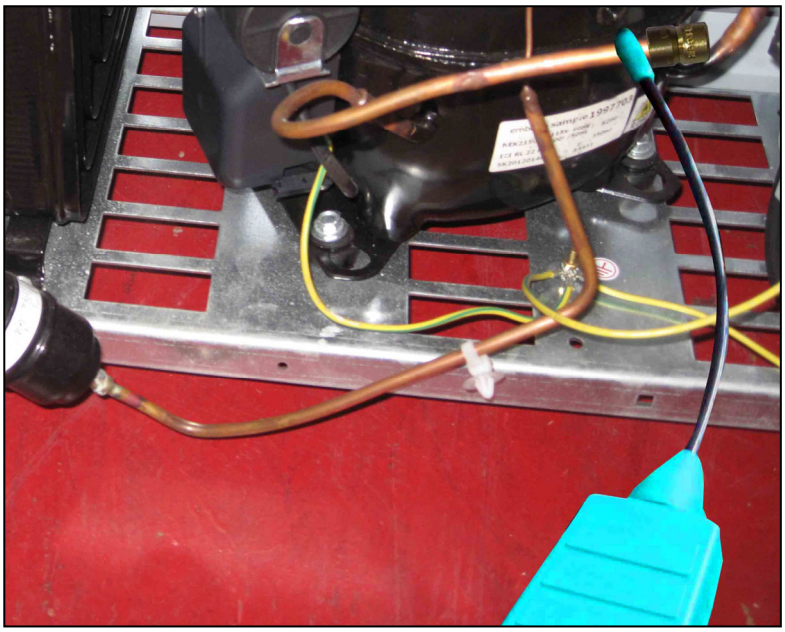
- By using the Lokring plier (**6**) fix cap (**5**) on the tube (**A**).

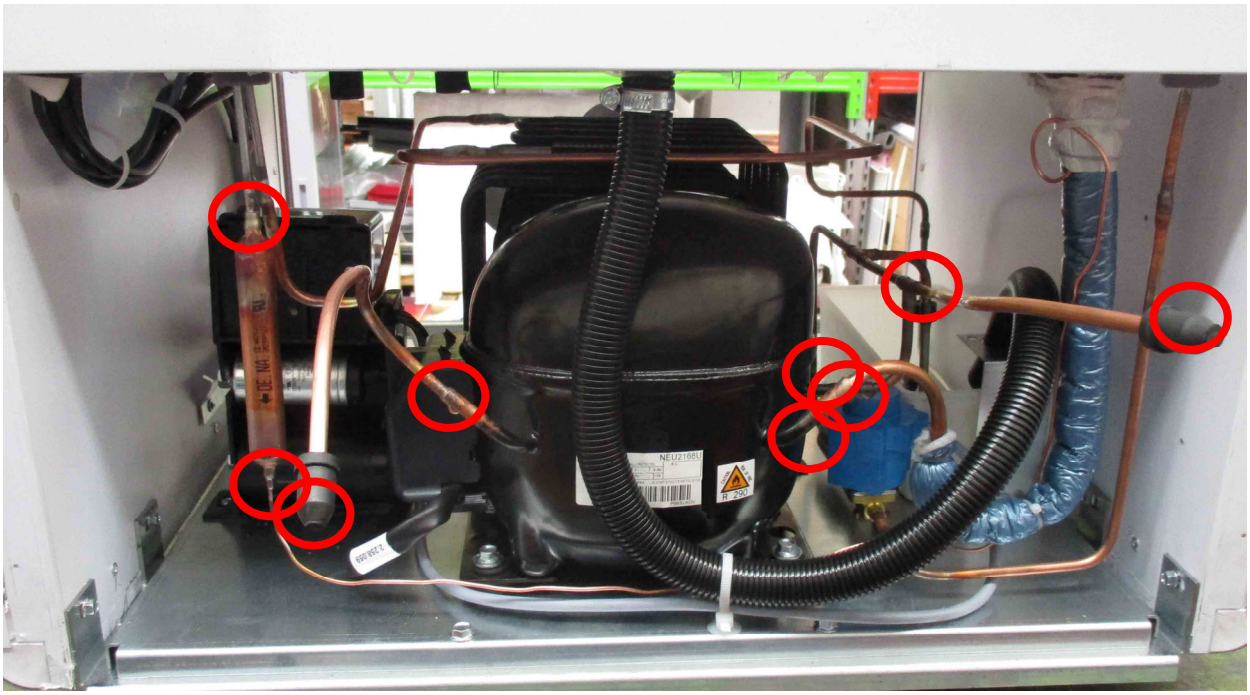


5.10 LEAKAGES CHECK

Use the electronic leak detector (**9**) in order to check for refrigerant gas leakages; adjust the sensitivity of the detector (when available) and test each brazing point and the two Lokring caps.

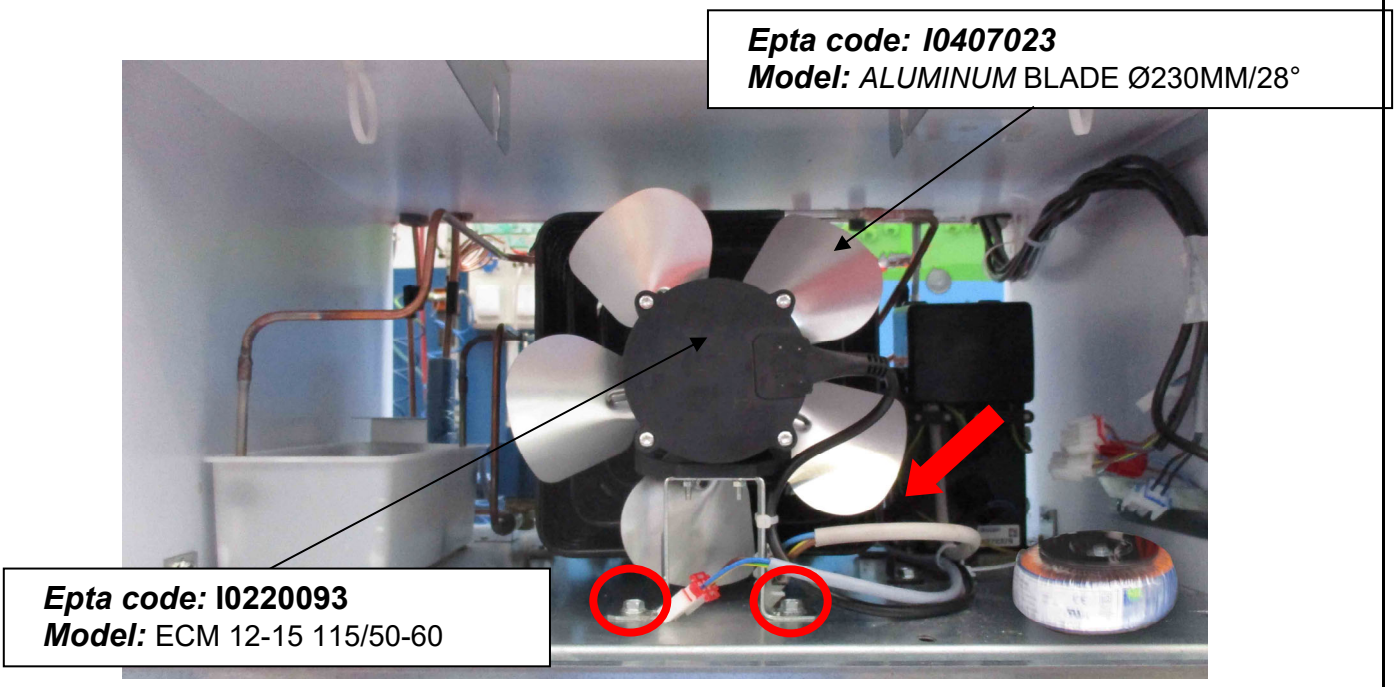
- Compressor service tube (Lokring cap).
- High pressure tube (Lokring cap).
- Suction pipe welding.
- Charge pipe welding.
- Discharge pipe welding.





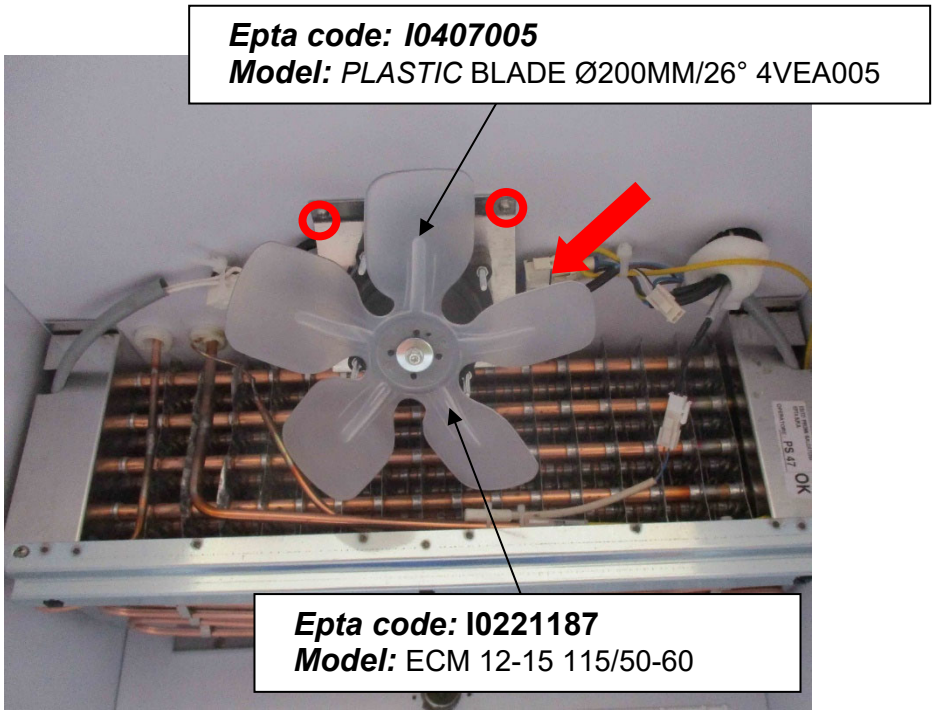
5.11 REPLACEMENT OF CONDENSER MOTOR FAN

1 – Disconnect the motor fan terminal connector and release the cable from the plastic tie.
2 – Unscrew the hexagonal-head screws and remove the motor fan from the motor plate.
3 – Unscrew the hexagonal-head screw fixing the fan blade and remove the screws fastening the motor to its bracket.

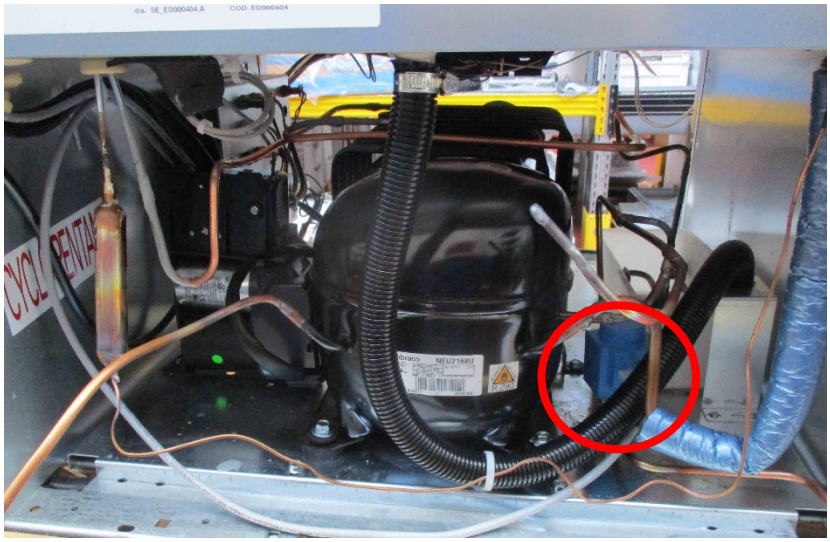


5.12 REPLACEMENT OF EVAPORATOR MOTOR FAN

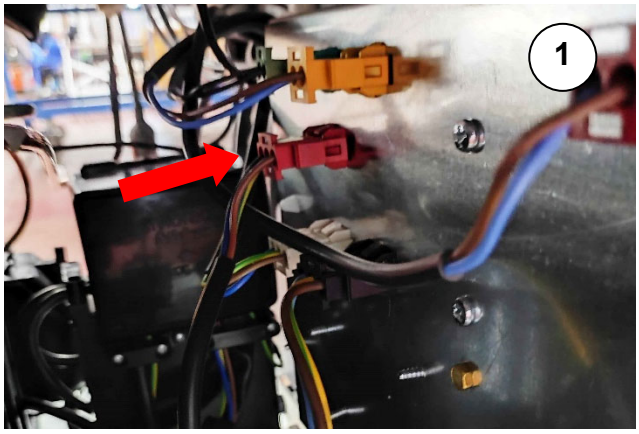
1 – Unscrew and remove evaporator plastic cover.
2 – Disconnect the motor fan connectors.
3 – Unscrew and remove the motor fan.

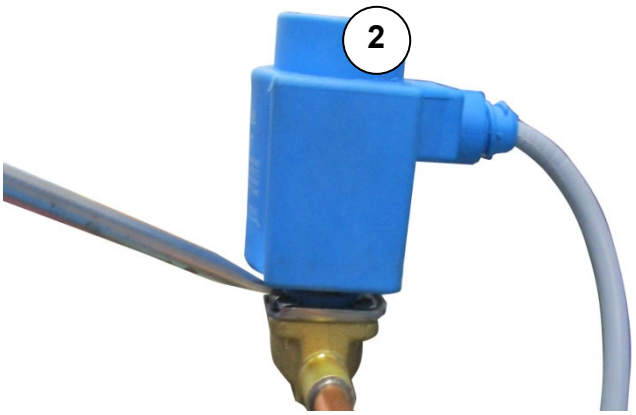


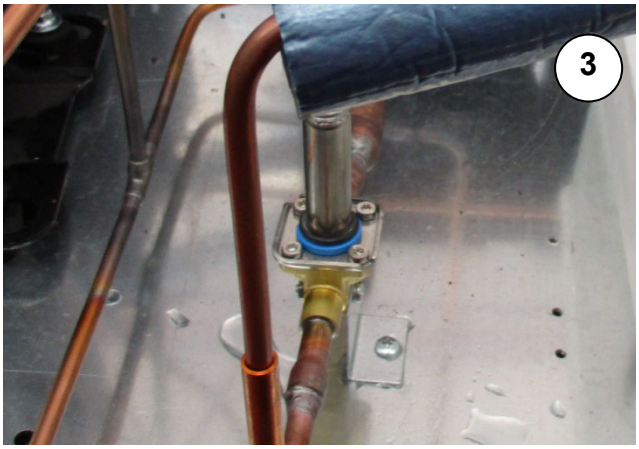
5.13 REPLACEMENT OF SOLENOID VALVE

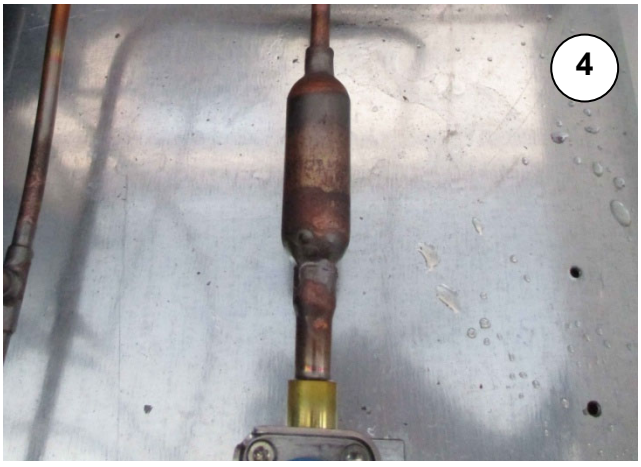


1) Disconnect the valve connector.
2) By using the screwdriver, remove the valve coil.
3) Open the circuit according to previous paragraph, then remove the solenoid valve.
4) Unsolder and replace the mechanic filter.





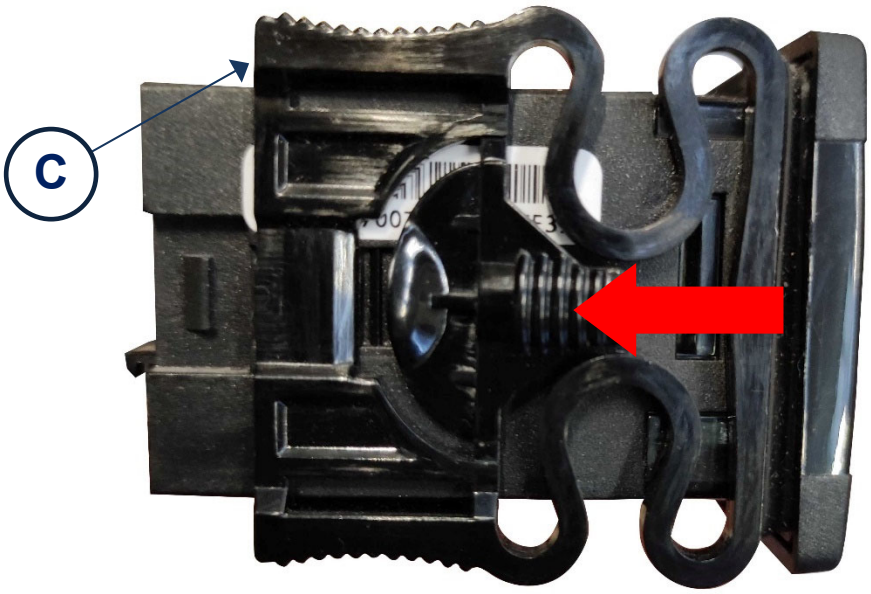


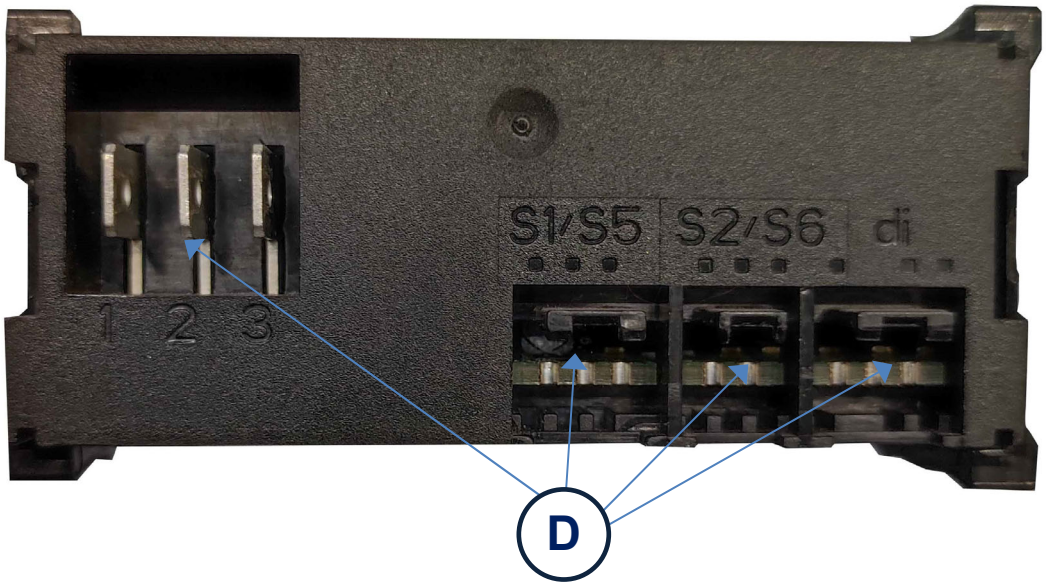


Epta code Solenoid Valve: I0189033 ***Model:*** SOLENOID VALVE EVR3 115/60 U.L.
Epta code Coil: I3304601 ***Model:*** COIL EVR3 115/60 U.L.
Epta code Mechanic filter: I0145001 ***Model:*** MECHANIC FILTER D.MM17X74

5.14 REPLACEMENT OF ELECTRONIC CONTROLLER

1 – Remove the frontal grid to access to electrical components.
2 – Remove the controller lateral clips (**C**).
3 – Disconnect the rear connector (**D**).
4 – Remove the electronic controller.





Epta code Electronic controller: 55849031
Model: ELECTRONIC CONTROL DANFOSS ERC112D “U” 080G3497

5.15 REPLACEMENT OF LED BARS

LED POWER SUPPLY

- ***Epta code***: I3305248
- ***Model*** : LPV 20-24

- ***Epta code*** : I3305738
- ***Model*** : APV 12-24

LED BARS

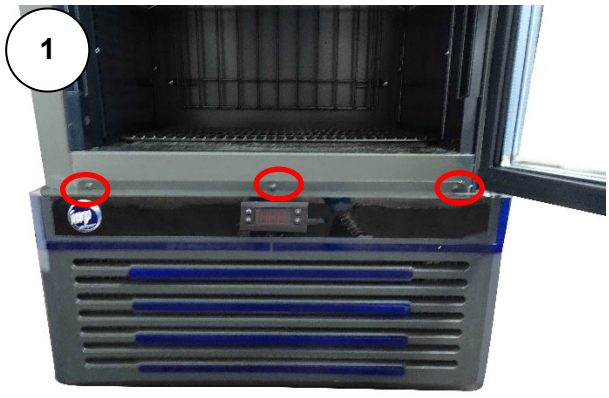
- ***Epta code for LED lamp***: 48967000– LED LAMP 7,2W 1440 24V 6500K WHITE
- ***Epta code for LED lamp***: 48965000 – LED LAMP 7,2W 1440 24V 6500K WHITE

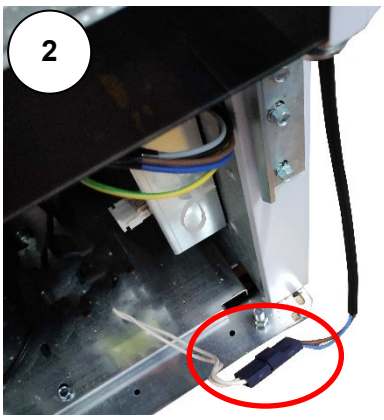
5.16 DOOR REPLACEMENT

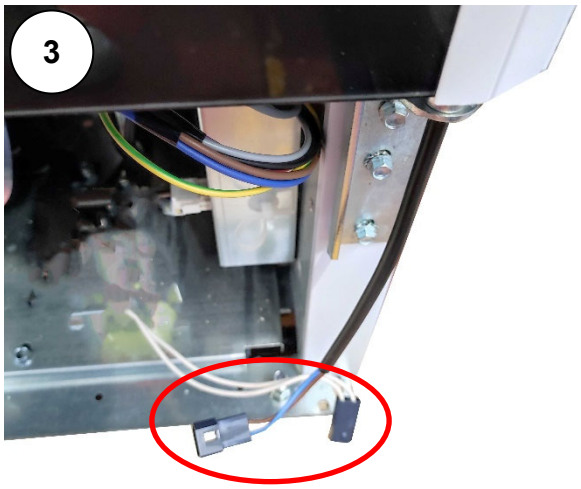
1 – Unscrew and remove front grid.
2 – Disconnect the connector.
3 – Disconnect the wires from connector.
4 – Holding the pivot tube (B), unscrew the pivot screw (A).

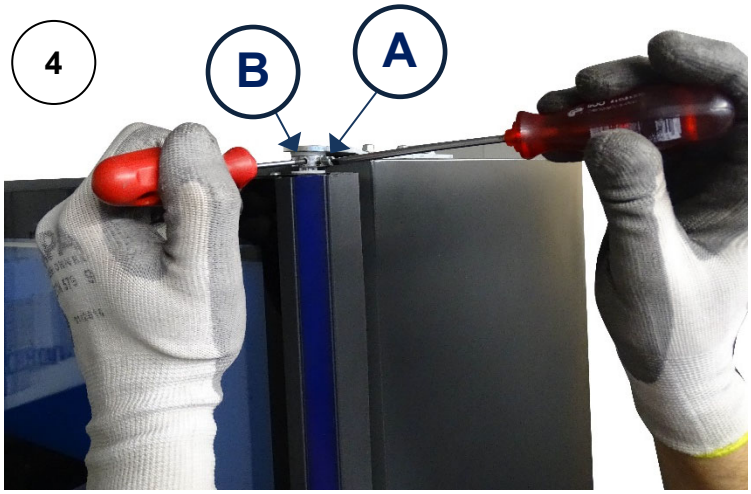
WARNING! Keep attention for the next operations, the door must be stopped. Attention that the door don't fall down.

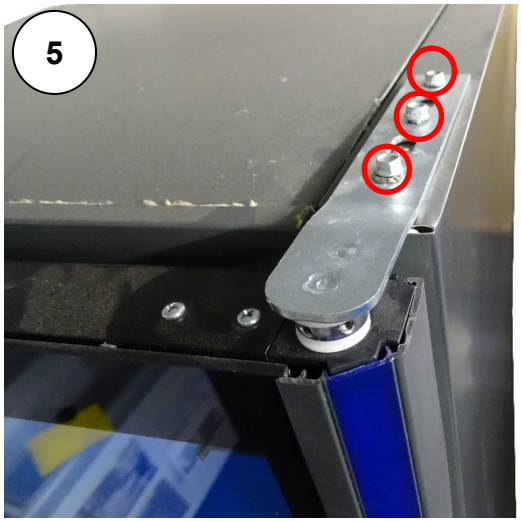
5 – **Taking care that must be steady (be careful the door could fall down!)** unscrew the screws of upper hinge (C).
6 **– Taking care that must be steady (be careful the door could fall down!)** unscrew the screws of lower hinge (D).
7 – Remove the door.
8 – Screw the lower hinge (D).
9 – Insert the door wire (F) to the lower hinge (E) and fix the left door.
10 – Screw the upper hinge (E) with the left door.
11 – Insert the wire to the connector.
12 – Connect the connector.
13 – Insert and screw front grid.
14 – With the door closed, insert a slot head screwdriver in one of the pivot holes and rotate the block anticlockwise. By means of another screwdriver, screw the pivot screw.
15 – Check that the door closes automatically. If it closes too fast, repeat manual point 12 and rotate the door pivot less.

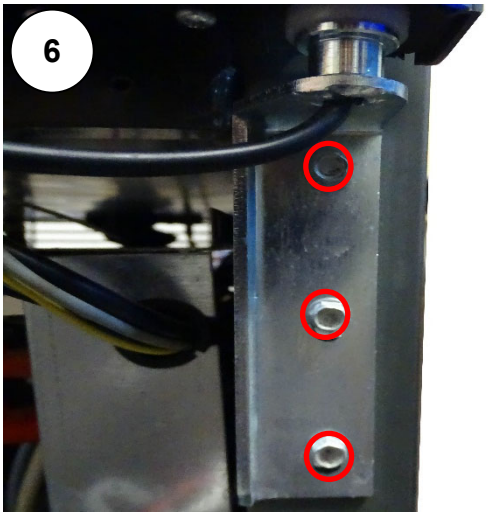


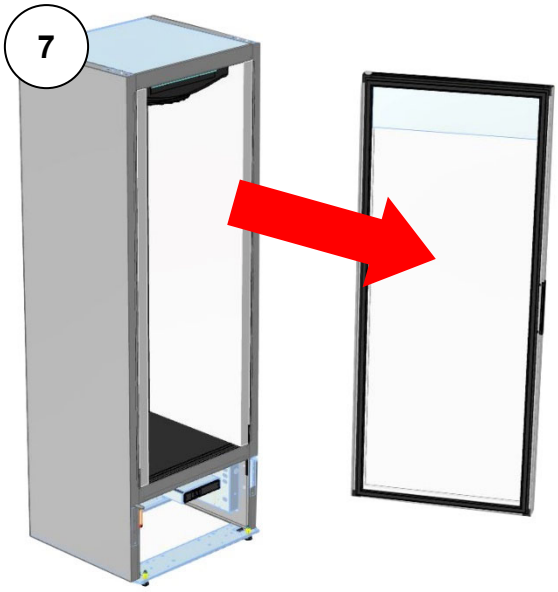


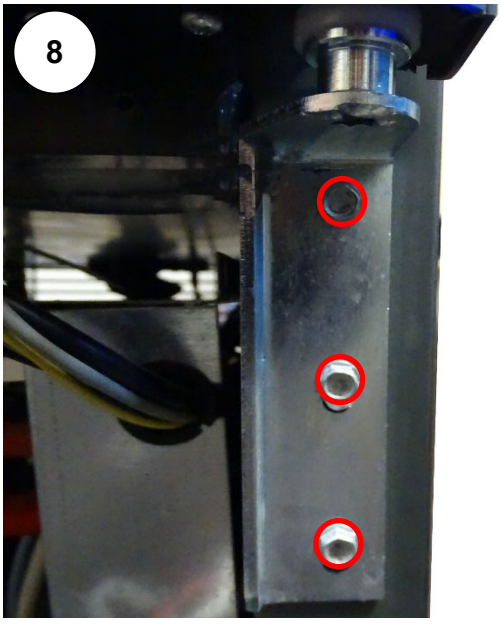


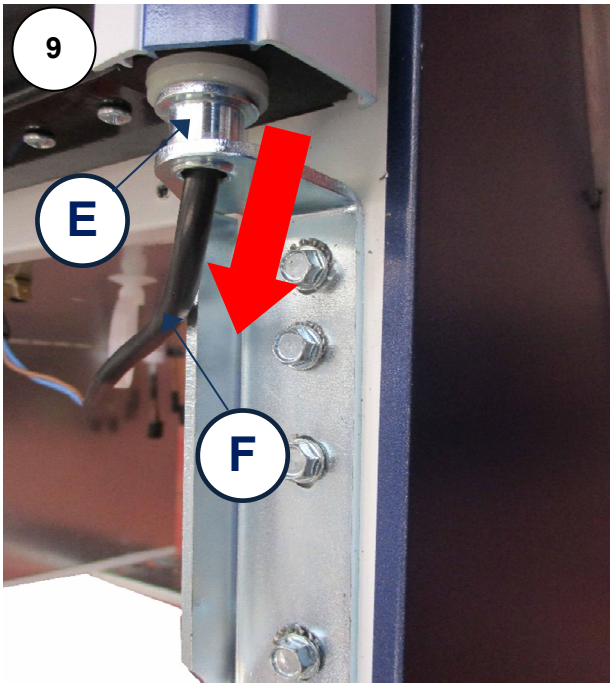


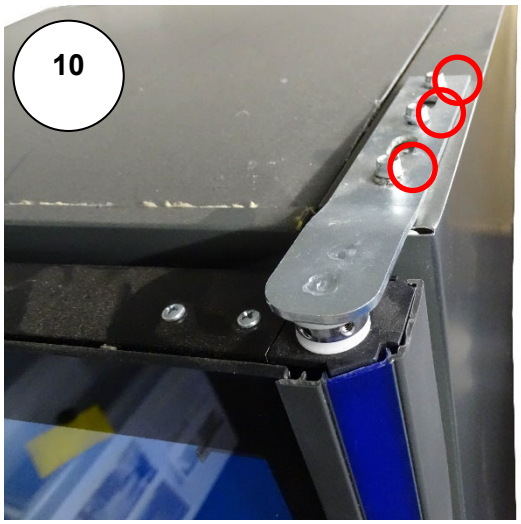


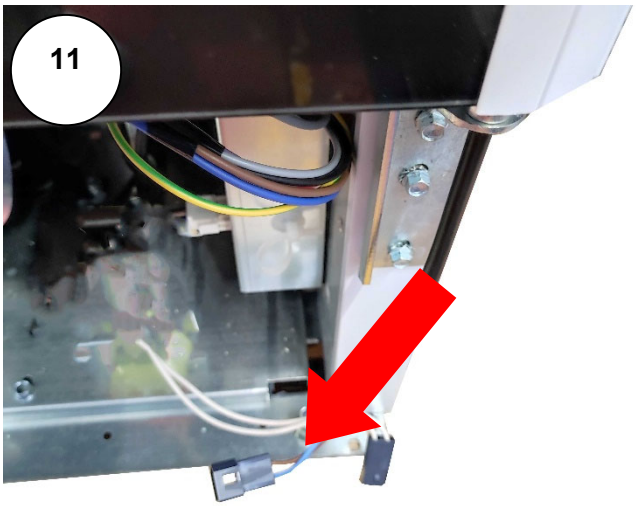


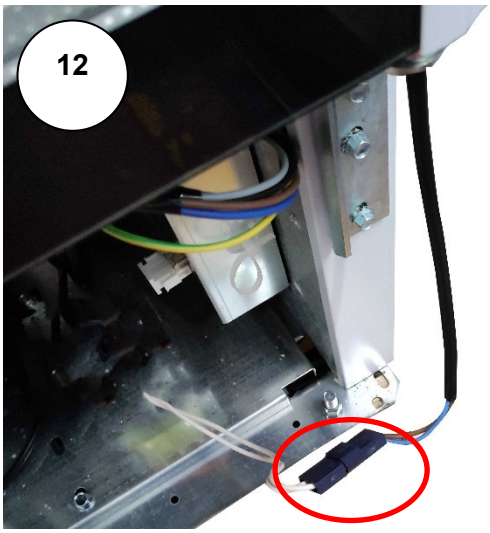


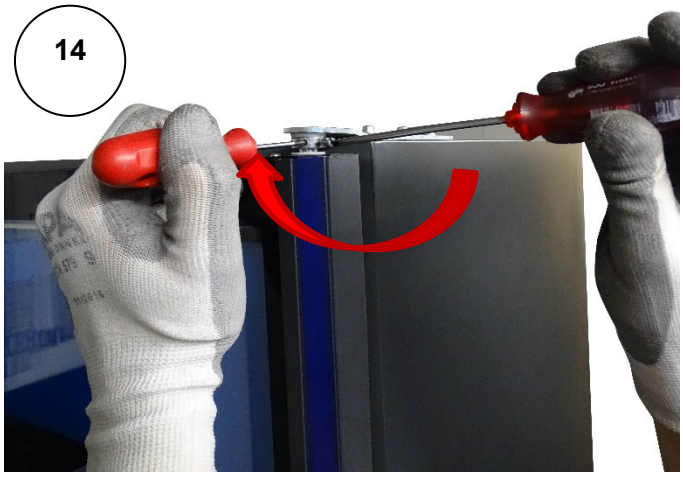










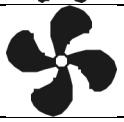


6. MAIN CABINET FUNCTIONS

6.1 DISPLAY UNIT AND MAIN PARAMETERS

1. *Manual defrost*
2. *Light switch*
3. *Up*
4. *Down*

6.2 USE OF LEDS

LED	MODE	MEANING
	ON	Compressor enabled
	ON	Defrost enabled
	ON	Fans enabled
	ON	An alarm is occurring
ECO	ON	Energy saving enebled
°C/°F	ON	Measurement unit

6.3 TEMPERATURE SETTING

Each refrigerating appliance is provided with an electronic control factory programmed to maintain the temperature inside the tank in its operating range. **Parameters should not be modified by end users; only skilled personnel is authorized to enter in programming mode.** If the average internal temperature is too cold or too warm, set-point can be modified in an allowed range with the following steps:

- **Press the (*Set*) key for a few seconds** in order to see on display the temperature set point.
- **Press the (^) key or the (v) key** in order to increment or decrement the temperature set point.
- **Press the (*Set*) key in order to store the new temperature set point.**

6.4 REFRIGERATOR SHUTDOWN

1. Push at the same time the buttons 3 and 4 ("^" and "v") for 5 sec. in order to enter into the menù.
2. The first parameter shown is "tHE"; find the ASi parameter by using the arrows (3 and 4).
3. Select the parameters by pushing the button 2 ("SC").
4. By using the arrows (3 or 4), find the parameter b4L and select it by the button 2 ("SC").
5. Find the PoF parameter by using the arrows (3 or 4), then push button 2 ("SC")
6. Push the button 1 for come back.
7. The electronic controller will be shutdown and turn on, in order to update the new parameter.
8. Shutdown the cabinet for 30 second by remove the plug, then turn on the cabinet.

6.5 CHANGE FAHRENHEIT SETTING TO CELSIUS

1. Enter controller programming mode by pressing together UP (3) and DOWN (4) buttons for a few seconds.
2. Search for "dIs" parameter with UP or DOWN, press SC (2) to confirm.
3. Search for "CFu" parameter with UP or DOWN, select °F or °C with UP and DOWN buttons and press SC (2) to confirm.

6.6 CHANGE LOW AND HIGH TEMPERATURE PARAMETER ALARM

1. Enter controller programming mode by pressing together UP (3) and DOWN (4) buttons for a few seconds.
2. Search for "ALA" parameter with UP or DOWN, press SC (2) to confirm.
3. Search for "HAt" (High Temp Alarm) parameter with UP or DOWN and confirm with SC, insert the value with UP and DOWN buttons and press SC (2) to confirm.
4. Search for "HAt" (High Temp Alarm) parameter with UP or DOWN and confirm with SC, insert the value with UP and DOWN buttons and press SC (2) to confirm.
5. Search for "LAt" (Low Temp Alarm) parameter with UP or DOWN and confirm with SC, insert the value with UP and DOWN buttons and press SC (2) to confirm.

6.7 PARAMETERS

Danfoss Model :Electronic Controller ERC 112D - 100 240V - COD. IARP 55849031								
USB KEY COD.xxxxxx -Parameter list per GLEE 55 LITE V2 115V Release 00_2022								
Date :								
cod.								
Group	**Parameter**	**Descrizione**	**Value**	**Default**	**Min.**	**Max.**	**Unity**	**Comments**
Thermostat (tHE)	**Set**	SetPoint This parameter defines the desired temperature (set point)	-4	2	-100	200	°C / °F	
Thermostat (tHE)	**SPr**	"Spr" definisce la posizione del set point in relazione cut-in e cut-out		0.5	0	1		
Thermostat (tHE)	**diF**	Thermostat differential This defines the difference between the cut-out and the cut-in The desired temperature determined by "SPr" and "diF"	1,8	2	0	20	k	
Thermostat (tHE)	**HSE**	Upper limit of thermostat set point	- 0,4	50	-100	200	°C / °F	
Thermostat (tHE)	**LSE**	Lower limit of thermostat set point	-13	-35	-100	200	°C / °F	
Thermostat (tHE)	**iCi**	Initial cut in Comp relay action when Tair is between cut-in and cut-out at power-up: "yES": cut in the compressor "no": cut out the compressor	no	no				
Fun Setting (Fan)	**FCt**	Fan control method Fao = fan always on SEt = fan allow compressor by manuakky setting Aut = Automatical fan control	Fao	FAo				
Fun Setting (Fan)	**Fod**	Fod defines the fan delay after a compressor cut-in	0	0	0	240	s	
Fun Setting (Fan)	**FSd**	FSd defines the fan delay after a compressor cut-out	0	0	0	240	s	
Fun Setting (Fan)	**FoC**	when the compressor is OFF, and FoC and FSC, the fun runs in cycles according to FoC and FSC	0	0	0	960	s	
Fun Setting (Fan)	**FSC**	when the compressor is OFF, and FoC and FSC, the fun runs in cycles according to FoC and FSC	0	0	0	960	s	
Fun Setting (Fan)	**FSt**	Minimun stop time fan protection	0	10	0	960	s	
Fun Setting (Fan)	**FdC**	delta T for fan to cut in which the temperature offset comparing with thermostat cut in temperature	0	0	-10	10	k	
Fun Setting (Fan)	**Fdt**	the delay with wich the fan will be stopped after the door has been opened 0 = fan stop immediately when door open 1-998 = delay for fan stop after door open 999 = fan keep running all the time during door open	0	0	0	999	s	
Light setting (Lig)	**CLC**	This parameter control the light on = always ON off = always OFF dor = door sensor only	on	on				
Light setting (Lig)	**Lod**	Numbers of seconds the light will stay ON after door has been closed	0	0	0	300	s	
Pull Down (Pud)	**Pit**	Pull Down initiate Temperature	122	50	-40	50	°C	
Pull Down (Pud)	**PCy**	Pull Down Cycling	0	30	0	360	min	
Pull Down (Pud)	**Pdi**	Pull Down Defrost Interval	0	15	0	48	hour	
Pull Down (Pud)	**Pdd**	Pull Down Duration	0	24	0	48	hour	
Pull Down (Pud)	**PLt**	Pull Down Limit Temperature This parameter sets the minimum allowed temperature during pull-down.	32	0	-55	55	°C / °F	
Pull Down (Pud)	**Prt**	Pull Down reduction temperature deltaT	0	0,1	0	10	k	
Defrost (dEF)	**dFt**	Defrost Type "no": defrost function is disabled. "nat": OFF-cycle defrost (natural defrost).	Hgd	no				
Defrost (dEF)	**Add**	Adaptive Defrost "no": defrost controlled by time. "yES": automatic defrost control activated.	no	no				
Defrost (dEF)	**dtt**	Terminate Temperature	60,8	6	0	25	°C / °F	
Defrost (dEF)	**drt**	Defrost reset temperature	60,8	5	0	200	°C / °F	
Defrost (dEF)	**dii**	Defrost minimum Interval/dii	6	6	1	96	hour	
Defrost (dEF)	**dAi**	Maximum Interval	6	7	1	96	hour	
Defrost (dEF)	**dit**	Minimum Time	0	5	0	240	min	
Defrost (dEF)	**dAt**	Maximum Time	20	30	0	480	min	
Defrost (dEF)	**dot**	Drip OFF time : define how long the delay is between the heater being switched OFF and the compressore starting again	5	0	0	60	min	
Defrost (dEF)	**Fdd**	Fan delay after defrost	300	0	0	600	s	
Defrost (dEF)	**Ftd**	Fan start temperature	0	25	-25	25	°C	
Defrost (dEF)	**dFA**	Defrost Fan On no - yes	no	no				
Defrost (dEF)	**dCt**	Defrost On Compressor Time If this parameter is set to "yES", then defrost cycles are based on the total time the compressor has been running. If this parameter is set to no, then defrost cycles are related to elapsed time, regardless of how long and how often the compressor has been on.	no	no				
Defrost (dEF)	**doC**	Defrost by Comp. running time Continuous compressor running can cause defrost. "0" = deactived	0	0	0	24	hour	
Defrost (dEF)	**dEt**	Defrost start evaporator temp	-58	-50	-50	0	°C / °F	
Defrost (dEF)	**ddt**	Defrost Delta Δt Defrost Δt compare with evaporator temperature of first cut out after defrost to trigger defrost start.	54	5	0	30	k	
Defrost (dEF)	**idi**	Initial Defrost Interval	0	3	0	96	hour	
Defrost (dEF)	**idd**	Initial Defrost Duration The initial defrost duration is the number of compressor cycles before the initial defrost is deactivated. "0": "idi" No initial defrost.	0	100	0	999	cycle	
Compressor (CoP)	**upt**	Voltage protection no/yes	no	no				
Compressor (CoP)	**uLi**	Minimum Cutin voltage	0	0	0	270	Vac	
Compressor (CoP)	**uLo**	Minimum cut-out voltage	0	0	0	270	Vac	
Compressor (CoP)	**uHi**	Maximum voltage	270	270	0	270	Vac	
Compressor (CoP)	**EHd**	Sensor Error Type "no": no sensor error handling. "SEt": in case of control sensor error, follow error run/stop time. "Aut": automatical sensor error handling	no	no				
Compressor (CoP)	**Ert**	Error run time The parameter only become active in the unlikely event of a broken temperature sensor.	11	0	0	60	min	
Compressor (CoP)	**ESt**	Error stop time The parameter only become active in the unlikely event of a broken temperature sensor.	5	1	0	60	min	
Compressor (CoP)	**CSt**	Min Stop time	3	2	0	30	min	
Compressor (CoP)	**Crt**	Min run time	0	0	0	30	min	
Compressor (CoP)	**Cot**	Max Off time	0	0	0	480	min	
Compressor (CoP)	**Cdd**	Compressor Door open delay/Cdd	0	0	0	15	min	
Compressor (CoP)	**Srt**	Systeme resume after door open	0	0	0	60	min	
Compressor (CoP)	**Pod**	Power-On Delay	30	300	0	300	Sec	
Compressor (CoP)	**Pot**	Power-on temperature	-148	-100	-100	200	°C / °F	
Condenser Protection (CoN)	**CAL**	Condenser Alarm Limit	176	80	0	200	°C / °F	
Condenser Protection (CoN)	**CbL**	Condenser Block Limit	185	85	0	200	°C / °F	
Condenser Protection (CoN)	**CoL**	Condenser OK limit	140	60	0	200	°C / °F	
Condenser Protection (CoN)	**CLL**	Condenser Low Limit	23	-5	-100	20	°C / °F	
Display (DIS)	**diC**	Display intensity auto control no - yes	no	no				
Display (DIS)	**din**	Display intensity	10	10	2	10		
Display (DIS)	**CFu**	Display Unit °C / °F	°F	°C				
Display (DIS)	**trS**	Temp sensor to display "SCo": temperature control. "EuA": evaporator temperture. "Con": condenser temperature (condenser cleaning). "AuS": only for showing on display.	Sco	Sco				
Display (DIS)	**rES**	Display Resolution	1	0,1	0,1	1		
Display (DIS)	**rLt**	Display Range Limit	no	no				
Display (DIS)	**ddL**	Displat Delay	4	0	0	10	min	
Display (DIS)	**doF**	Displat Offset	0	0	-10	10	k	
Display (DIS)	**dLt**	Lock-time After defrost "0": no lock.	0	15	0	60	min	

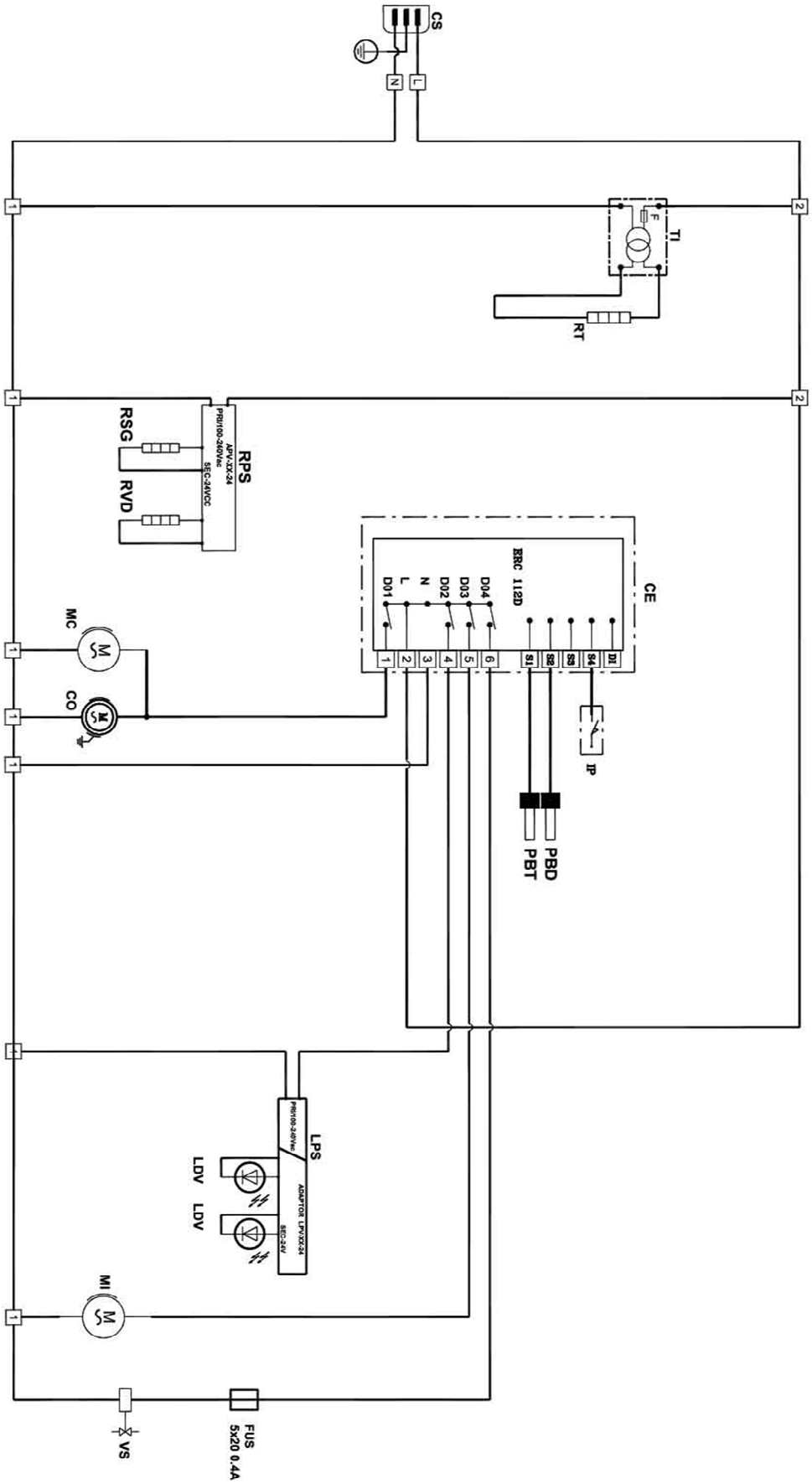
Display (DIS)	SEC	Show economy state	no	no				
Display (DIS)	SSC	Show Pull down state If set to "yES", this parameter causes the display to show SC when the system is in pull down mode. If set to "nO", the temperature continues to be displayed	no	no				
Display (DIS)	SHo	Show Holiday "no"display will show temperature or ECO mode during holiday mode. "yES": display will show "Hol." during holiday mode.	yes	no				
Display (DIS)	SdF	Show defrost	yes	yes				
Display (DIS)	SCS	Show Compressor Symbol no/yes	yes	yes				
Display (DIS)	SFS	Show fan symbol	yes	yes				
Display (DIS)	SdS	Show Defrost Symbol no/yes	no	yes				
Display (DIS)	idp	info menu display item	15	15	0	15		
Display (DIS)	SES	Show ECO symbol	no	yes				
Alarm (ALA)	HAt	High Temp Alarm	10	15	-100	200	°C / °F	
Alarm (ALA)	LAt	Low Temp Alarm	-50	-50	-100	200	°C / °F	
Alarm (ALA)	Htd	Alarm delay on high temperature alarm	30	30	0	240	min	
Alarm (ALA)	Ltd	Alarm delay on low temperature alarm	0	0	0	240	min	
Alarm (ALA)	Pdd	Pull down delay	240	240	0	960	min	
Alarm (ALA)	dod	Door open delay	5	2	0	60	min	
Alarm (ALA)	uAL	Voltage alarm "no": no voltage alarm. "yES": voltage alarm activated.	no	no				
Alarm (ALA)	LEA	Leakage alarm Leakage detection for compressor protection. "0": disable	0	0	0	96	hour	
Alarm (ALA)	Abd	Alarm Buzzer Duration If set to 999, the alarm will continue to sound until the reason for the alarm is cleared If set to 0, the alarm will never sound.	1	0	0	999	min	
Alarm (ALA)	ACA	Auto Clear of Alarm/Error/ACA If this parameter is set to "nO": The alarm status will not disappear automatically even if the condition which caused the alarm is no longer valid or present. If set to "yES": As soon as the condition which caused the alarm is no longer valid or present, the alarm status will automatically change back to inactive.	yes	yes				
Automatic Heater Settings (AHC)	AuH	Automatic heater mode enable	no	no				
Automatic Heater Settings (AHC)	End	Energy mode delay	60	60	0	360	min	
Automatic Heater Settings (AHC)	AHS	Auto Heat set point	2	2	-100	200	°C	
Automatic Heater Settings (AHC)	Ahd	Auto heat differential	2	2	0	20	k	
ECO strategy (ECS)	ECo	ECO on/off	no	yes				
ECO strategy (ECS)	EdA	time of door action to trigger exiting ECO	1	1	1	10		
ECO strategy (ECS)	EPA	Times of "PIR" action to trigger exiting ECO	1	1	1	10		
ECO strategy (ECS)	ECt	Door action or "PIR" action within action acounter time can trigger	30	30	0	180	min	
ECO strategy (ECS)	Edd	Door delay	180	180	0	180	min	
ECO strategy (ECS)	EPd	Pir delay	120	120	0	180	min	
ECO strategy (ECS)	SLd	is the amount of ambient light which will cause the decvice to move to normal/serving mode from ECO mode	5	5	0	80	min	
ECO strategy (ECS)	SLn	is the amount of ambient light which will cause the decvice to move to ECO mode from normal/serving	3	3	0	80	min	
ECO strategy (ECS)	tto	Time to pull down	0	0	0	168	hour	
ECO strategy (ECS)	LSd	Light source delay on ECO	0	0	0	180	min	
ECO strategy (ECS)	Euu	EWU active on/off	yes	yes				
ECO strategy (ECS)	CLH	Shop is assumed to be closed when staying in ECO mode longer than shop close hour	6	6	0	24	hour	
ECO strategy (ECS)	ErL	Early wake up time offset	120	0	120	240	min	
ECO strategy (ECS)	HoL	holiday length	72	72	0	999	hour	
ECO management (ECA)	Eto	Eco temperature offset	4	4	-25	25	k	
ECO management (ECA)	Hto	Holiday Temperature Offset	6	6	-25	25	k	
ECO management (ECA)	diE	ECO differential	2	2	0	10	k	
ECO management (ECA)	FoE	ECO fan on cycle	0	0	0	960	s	
ECO management (ECA)	FSE	ECO fan stop cycle	0	0	0	960	s	
ECO management (ECA)	ELC	ECO cabinet light control on =always on off = always off dor = door sensor only	on	on				
ECO management (ECA)	ELd	Eco light delay	5	5	0	15	min	
Assignments (ASI)	uSA	Defrost by Comp. running time Continuous compressor running can cause defrost. "0" = deactived	no	no				
Assignments (ASI)	t1A	Air Temperature Adjustment (S1) (applies to non-Danfoss temperature sensors only)	1	0	-20	20	k	
Assignments (ASI)	t2A	Air Temperature Adjustment (S2) (applies to non-Danfoss temperature sensors only)	0	0	-20	20	k	
Assignments (ASI)	t3A	Air Temperature Adjustment (S3) (applies to non-Danfoss temperature sensors only)	0	0	-20	20	k	
Assignments (ASI)	t4A	Air Temperature Adjustment (S4) (applies to non-Danfoss temperature sensors only)	0	0	-20	20	k	
Assignments (ASI)	S1C	S1 Config Stn = NTC 5K - Htn = NTC 100K	stn	Stn				
Assignments (ASI)	S2C	S2 Config (see S1C)	stn	Stn				
Assignments (ASI)	S3C	S3 Config (see S1C)	stn	Stn				
Assignments (ASI)	S4C	S4 Config (see S1C)	dig	Stn				
Assignments (ASI)	S1A	S1 Application "nC": not connected. "SCo": temperature control. "EuA": evaporator temperature. "Con": condenser temperature (Condenser cleaning). "AuS": only for showing temperature on display "Ldr":light sensor "Eco":external imput to control ECO mode "doC":door contact,contact close when door closed "doo":door contact,contact open when door closed "Pir":motion sensor (only S3) "bt5":button 5 (only S4)	Sco	Sco				
Assignments (ASI)	S2A	S2 Application (see S1A)	Eua	nC				
Assignments (ASI)	S3A	S3 Application (see S1A)	nC	nC				
Assignments (ASI)	S4A	S4 Application (see S1A)	doC	nC				
Assignments (ASI)	diC	DI configuration non = not used doC =door contact,contact close when door closed doo = door contact, contact opern when door closed Eco = external imput to control ECO mode Pir = motion sensor,Passive infrared,	non	non				
Assignments (ASI)	o1C	DO1 Config "CoP": direct compressor control. "PiC": pilot Relay (no zero cross) – if using pilot relay to control a compressor, this option must be used instead of "CoP". "HEt": heating application, inverse output. "PiH": pilot heat relay (no zero cross).	Cop	Cop				
Assignments (ASI)	o2C	DO2 config "no"= not used "dEF"= electric defrost heater/valve for hot gas. "ALA"= alarm output "Fan"= fan control "Lig"=light control	Lig	def				
Assignments (ASI)	o3C	DO3 Config (see o2C)	fan	Fan				
Assignments (ASI)	o4C	DO4 Config (see o2C)	dEF	Lig				
		The buttons 1-2-3-4 can be programmed as follows:						
		Short press functior	**Long press function**					
		noP: not operating	"noP": not operating					
		tP: increase set point	"tP": increase set point					
		tn: decrease set point	"tn": decrease set point					
		"Eco" : toggle eco mode	"Eco" : toggle eco mode					
		"Lig": toggle light	"Lig": toggle light					
		"dEF": toggle defrost	"dEF": toggle defrost					
		"SuP": toggle super-cool/pull down	"SuP": toggle super-cool/pull down					
		"diP" : increase display intensity	"diP" : increase display intensity					
		"din" : decrease display intensity	"din" : decrease display intensity					
		"CFA": toggle °C and °F	"CFA": toggle °C and °F					
			"PoF": ERC power ON/OFF					
			"HoL": enter holiday mode					
			"inF": enter info menu					
Assignments (ASI)	b1C	Button 1 Short Config (short press)	nop	noP				
Assignments (ASI)	b1L	Button 1 Long Config (long press)	Lig	PoF				
Assignments (ASI)	b2C	Button 2 Short Config (short press)	nop	dEF				
Assignments (ASI)	b2L	Button 2 Long Config (long press)	dEF	inF				
Assignments (ASI)	b3C	Button 3 Short Config (short press)	tp	tP				
Assignments (ASI)	b3L	Button 3 Long Config (long press)	inF	ECo				

Assignments (ASI)	b4C	Button 4 Short Config (short press)	tn	tn				
Assignments (ASI)	b4L	Button 4 Long Config (long press)	noP	noP				
		The button 5 can be programmed as follows:						
		Short press functior	**Long press function**					
		noP: not operating	"noP": not operating					
		"Eco" : toggle eco mode	"Eco" : toggle eco mode					
		"SuP": toggle super-cool/pull down	"SuP": toggle super-cool/pull down					
		"Lig": toggle light	"Lig": toggle light					
		"dEF": toggle defrost	"dEF": toggle defrost					
			"PoF": ERC power ON/OFF					
			"HoL": enter holiday mode					
Assignments (ASI)	b5c	Button 5 Short Config (short press)	noP	noP				
Assignments (ASI)	b5L	Button 5 Short Config (long press)	noP	noP				
Assignments (ASI)	PS1	Pass-word level1	0	0	0	999		
Assignments (ASI)	PS2	Pass-word level2	0	0	0	999		
Assignments (ASI)	PS3	Pass-word level3	0	0	0	999		
The parameters in the following section are READ ONLY and cannot be changed by the user.								
Access Service (SER)	AFt	Accomulated comp. run time						
Access Service (SER)	oUs	Dos Status " Current relay open closed status"						
Access Service (SER)	ACt	Accumulated Compressor run time						
Access Service (SER)	ALt	Accomulated light run time						
Access Service (SER)	AEt	Accumulated ERC run time						
Access Service (SER)	Sdi	physical DI pin state (on/off)						
Access Service (SER)	uAC	Voltage value "Current main power supply voltage."						
Access Service (SER)	rL1	Relay 1 counter						
Access Service (SER)	rL2	Relay 2 counter						
Access Service (SER)	rL3	Relay 3 counter						
Access Service (SER)	rL4	Relay 4 counter						
Access Service (SER)	int	Interval Counter "Compressor run time since last defrost."						
Access Service (SER)	dnt	Defrost Time Counter "Duration of last defrost cycle [min]."						
Access Service (SER)	ont	Door open counter						
Access Service (SER)	Snu	Serial Number						
Access Service (SER)	Fir	SW version						
Access Service (SER)	HAr	Hardware Version						
Access Service (SER)	onL	Order No Low						
Access Service (SER)	onH	Order No High						
Access Service (SER)	oEL	OEM Code Low						
Access Service (SER)	oEn	OEM Code middle						
Access Service (SER)	oEH	OEM Code High						
Access Service (SER)	PAr	Parameter Version						
Access Service (SER)	CHd	Manufacturing Date (Programme date WWY:)						
Access Service (SER)	SFC	Set as default						
Access Service (SER)	Ctt	Condenser temp						
Access Service (SER)	Et1	Evaporator1 temp						
Access Service (SER)	Et2	Evaporator2 temp						
Access Service (SER)	Aus	AUX temp						
Access Service (SER)	LLu	Light level value						
Access Service (SER)	Pir	Motion sensor state						
Access Service (SER)	Att	Air temp						
Access Service (SER)	ESS	External ECO switch state						
Display message	unP	Device is unprogrammed						
Display message	Prg	Device has not finished programming						
Display message	Eco	Device is in Eco mode						
Display message	SC	Device is in pull-down mode						
Display message	DEF	Device is defrosting						
Display message	HoL	Device is in holiday mode						

Defrost by Comp. running time — Continuous compressor running can cause defrost.
"0" = deactived

7. WIRING DIAGRAM

7.1 WIRING DIAGRAM



7.2 WIRING DIAGRAM LEGEND

REF	DEVICE
CE	ELECTRONIC CONTROL
CO	COMPRESSOR
CS	PLUG CABLE
F	TRANSFORMER FUSE
IP	EVAPORATOR MOTOR FAN SWITCH
LDV	INNER TANK LED LIGHT
LPS	LED POWER SUPPLY
MC	CONDENSING MOTOR FAN
MI	EVAPORATOR MOTOR FAA
PBD	DEFROSTING PROBE
PBT	TEMPERATURE PROBE
RPS	HEATER POWER SUPPLY
RSG	DRAINAGE PIPE HEATER
RT	DOOR FRAME HEATER
RVD	DECRMPRESSION VALVE HEATER
TI	ISOLATION TRANSFORMERT
VS	DEFROSTING VALVE