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NOFROST
REFRIGERATORS

With external
electric wiring

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1. INTRODUCTION

This manual describes the NOFROST models with the modification of the electric wiring which is now external. The connectors inside the freezer compartment have been removed, therefore, the electrical connections of the evaporator battery have been carried out directly inside the terminal board of the electromechanical timer which is placed in the compressor compartment. The electrical connections of the fan instead have been carried out directly inside the terminal board of the compressor.

There are three basic models which differ from each other only for the volume:
260 litres (ex C9, pnc 925886...), 262 litres (ex C10, pnc 925887...) and 290 litres (ex C11, pnc 925888...).

The versions of the various models are R134a and R600a.

The modification is handled with the ELCs :

pnc	Date	Brand	Model	Refrigerating gas
92588660302	20021220	Tricity Bendix	TB112FF	R134a
92588665101	20021220	Zanussi	ZX57/3W	R600a
92588665301	20021220	Zanussi	ZX57/3SI	R600a
92588665601	20021224	Zanussi	CZX165W	R600a
92588665701	20030428	Zanussi	CZX165SI	R600a
92588666000	20030606	Zanussi-Electrolux	ZEBF249W	R600a
92588670000	20021220	Privileg	672.700 2/40032	R600a
92588670100	20030606	Zanussi-Electrolux	CZC16/9FA	R600a
92588670300	20030321	Zanussi-Electrolux	ZEBF250W	R600a
92588760103	20021220	Electrolux	ER7626B	R134a
92588765101	20021220	Zanussi	ZX55/4W	R600a
92588765301	20021224	Zanussi	ZX55/4SI	R600a
92588765500	20030425	Electrolux	ER7626/1B	R600a
92588770000	20030418	Zanussi-Electrolux	ZEBF262W	R600a
92588860104	20021220	Electrolux	ER7926B	R134a
92588865101	20021220	Zanussi	ZX56/4W	R600a
92588865301	20021220	Zanussi	ZX56/4SI	R600a
92588865500	20030425	Electrolux	ER7926/1B	R600a
92588870000	20021220	Privileg	672.694 7/40033	R600a
92588870100	20030418	Zanussi-Electrolux	ZEBF290W	R600a
92588870200	20030606	Zanussi-Electrolux	ZEBF290SI	R600a

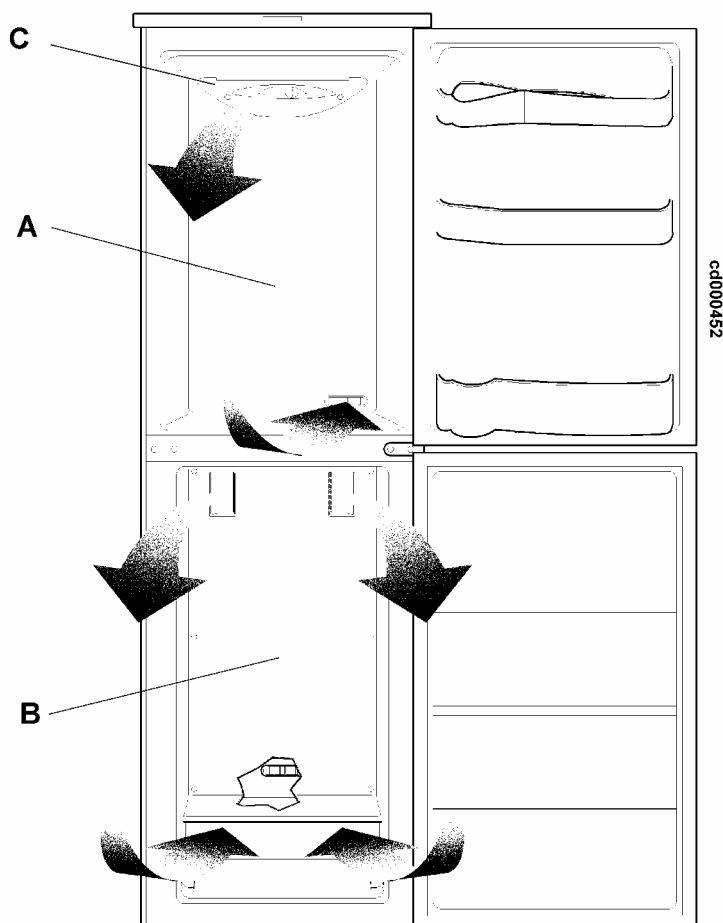
The new evaporator batteries are not interchangeable with the old ones.

The evaporator batteries for the R134a version feature only one defrosting heater, while the evaporator batteries for the R600a version feature two defrosting heaters connected in parallel for safety reasons of the product.

The thermal protections are connected in series to the defrosting heaters and are cabled together, therefore, they are not interchangeable singularly. An assembly spare part no. is available in case of failure of a thermal protector or of a defrosting heater.

The NOFROST refrigerators consist of a refrigerator compartment **A** and a freezer compartment **B**

The cold produced by the battery-driven evaporator in the freezer compartment is then distributed through the refrigerator and freezer compartment by the fan located above the battery.



REFRIGERATOR COMPARTMENT (A)

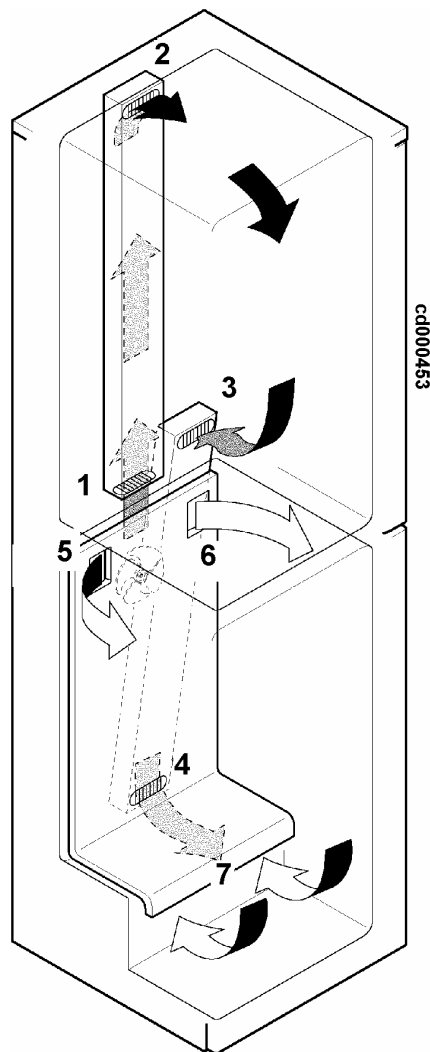
The air is pushed by the fan down the foam duct at the bottom of the compartment: it enters by nozzle **1** and comes out of nozzle **2**. Manual flap **C** enables to regulate the flow of cold air and therefore the temperature inside the compartment.

The thermostat bulb is located inside the flap and reacts both to the air temperature of the air coming out of nozzle **2**, and to the air temperature inside the refrigerator compartment.

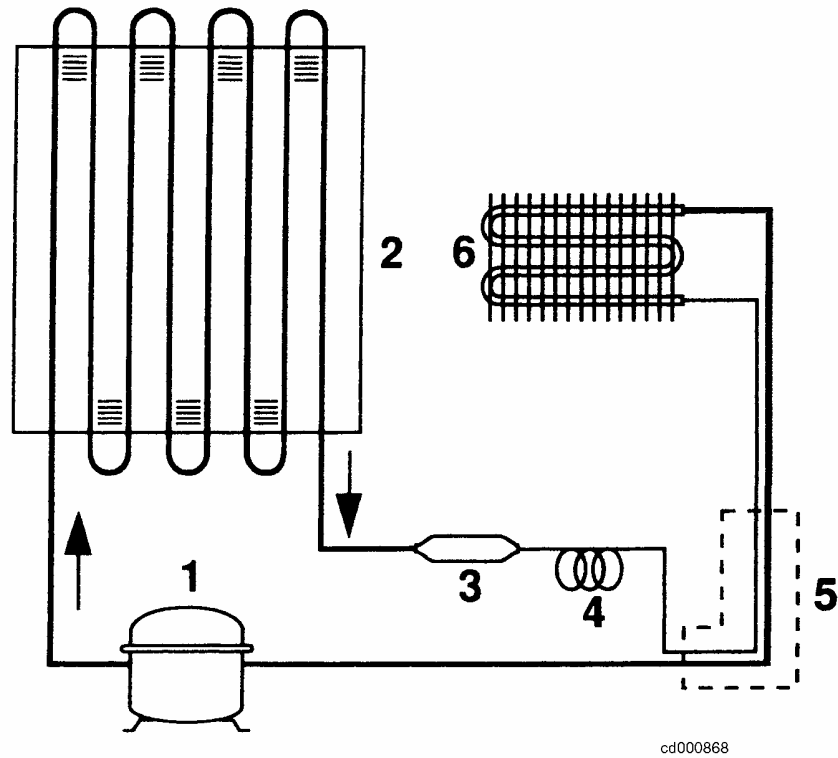
The air returns to the air compartment through the foam duct at the bottom of the compartment, entering from nozzle **3** and leaving from nozzle **4**.

FREEZER COMPARTMENT (B)

The cold air is pushed into the compartment by the fan through the two nozzles **5** and **6**. After circulating, the air is rechannelled to the evaporator battery through opening **7**, under the protection panel.



2. REFRIGERATION CIRCUIT



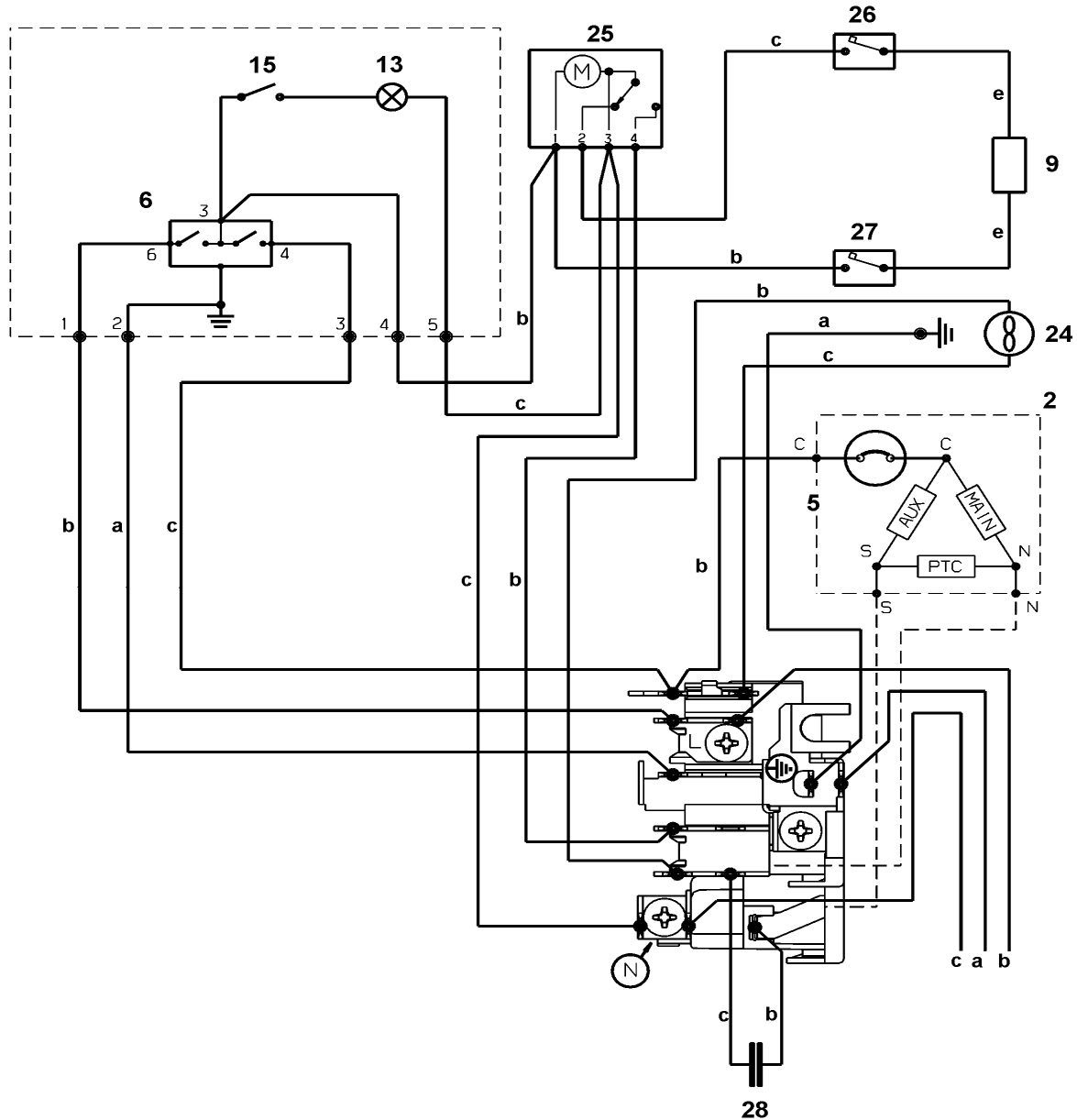
Legend :

1. compressor
2. capacitor
3. filter
4. capillary
5. heat exchanger
6. battery evaporator

3. ELECTRIC WIRING

3.1. R134a version

(check the specific diagram for each model!)



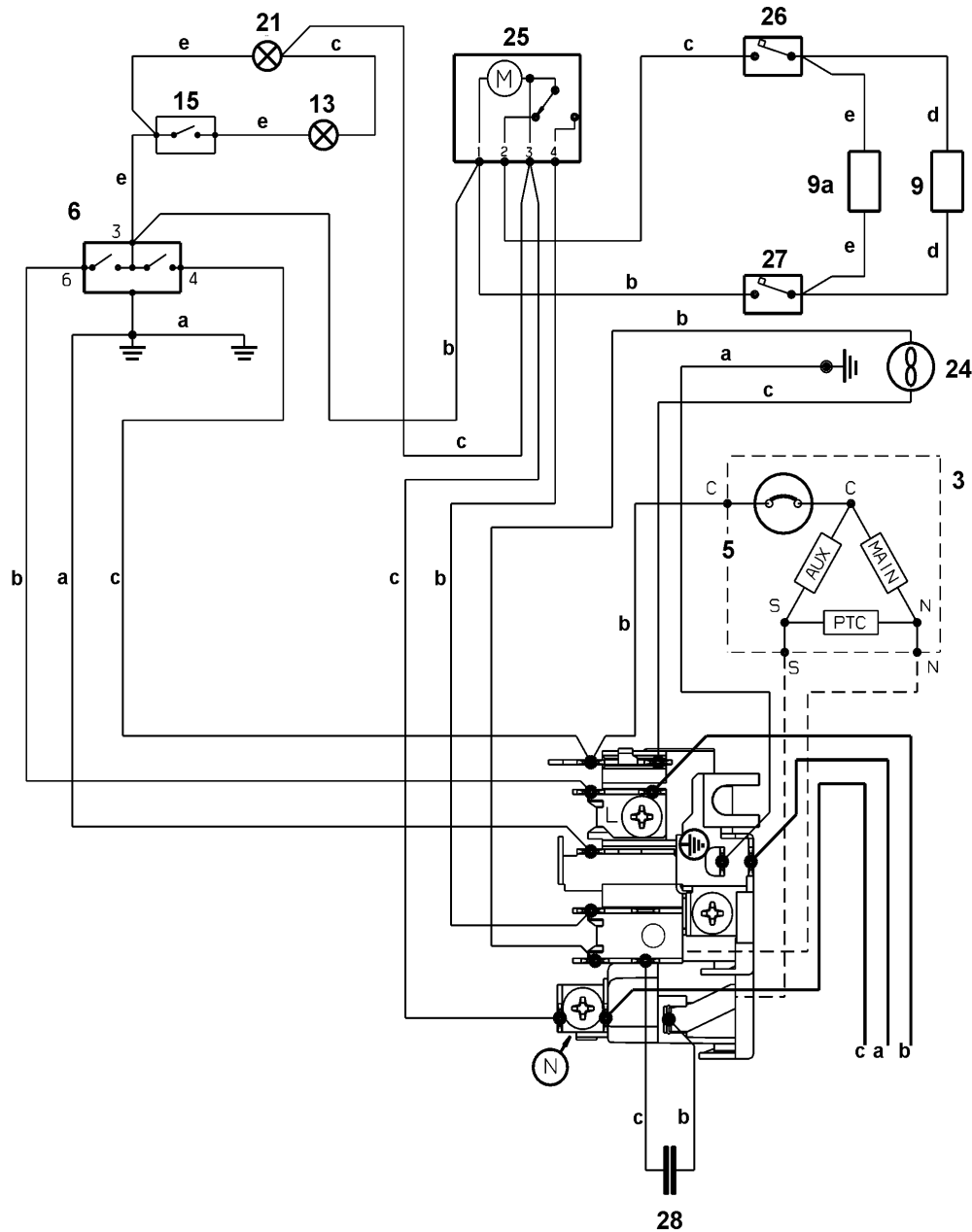
Legend :

- 2. terminal board of freezer compressor
- 5. motor protector
- 6. refrigerator thermostat
- 9. armoured defrosting heater
- 13. refrigerator lamp
- 15. light switch
- 24. battery fan
- 25. timer
- 26. safety thermal switch (+ 40 °C)
- 27. defrosting cut-out switch (+ 10 °C)
- 28. running capacitor (only for the models which feature it)

- a. yellow-green
- b. brown
- c. blue
- d. white
- e. black
- f. grey

3.2. R600a version

(check the specific diagram for each model !)



Legend :

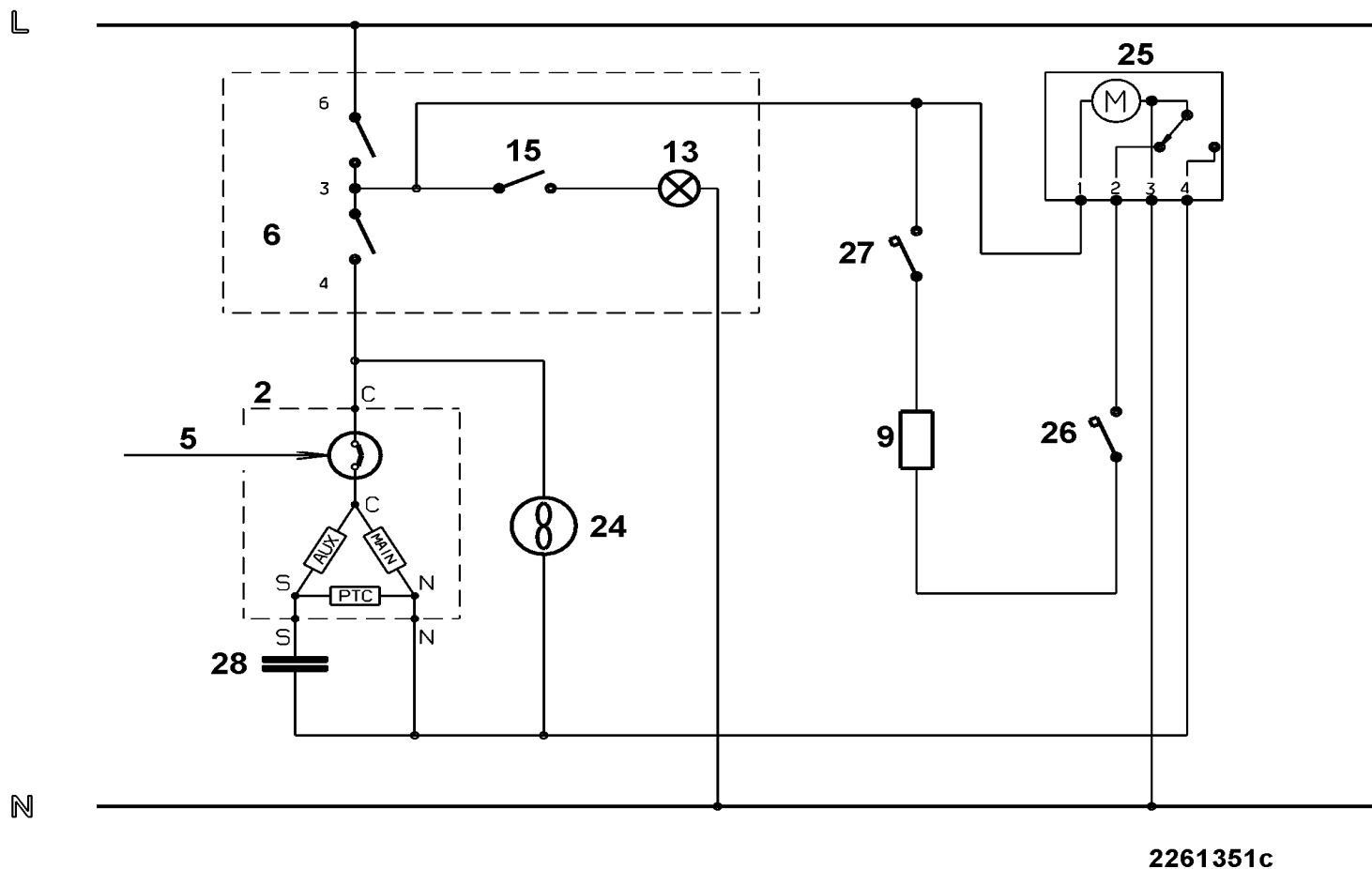
- 3. terminal board of freezer compressor
- 5. motor protector
- 6. thermostat refrigerator
- 9. stylus defrosting heater
- 9a. armoured defrosting heater
- 13. refrigerator lamp
- 15. light switch
- 21. ON/OFF pilot lamp
- 24. battery fan
- 25. timer
- 26. safety thermal switch (+40°C)
- 27. defrosting cut-out switch (+10°C)
- 28. running capacitor (only for the models which feature it)

- a. yellow-green
- b. brown
- c. blue
- d. white
- e. black

4. FUNCTIONAL DIAGRAM

4.1. R134a version

(check the specific diagram for each model!)

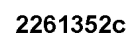


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Legend :

- 2. terminal board of freezer compressor
- 5. motor protector
- 6. refrigerator thermostat
- 9. armoured defrosting heater
- 13. refrigerator lamp
- 15. light switch
- 24. battery fan
- 25. timer
- 26. safety thermal switch (+40°C)
- 27. defrosting cut-out switch (+10°C)
- 28. running capacitor (only for the models which feature it)

(check the specific diagram for each model!)

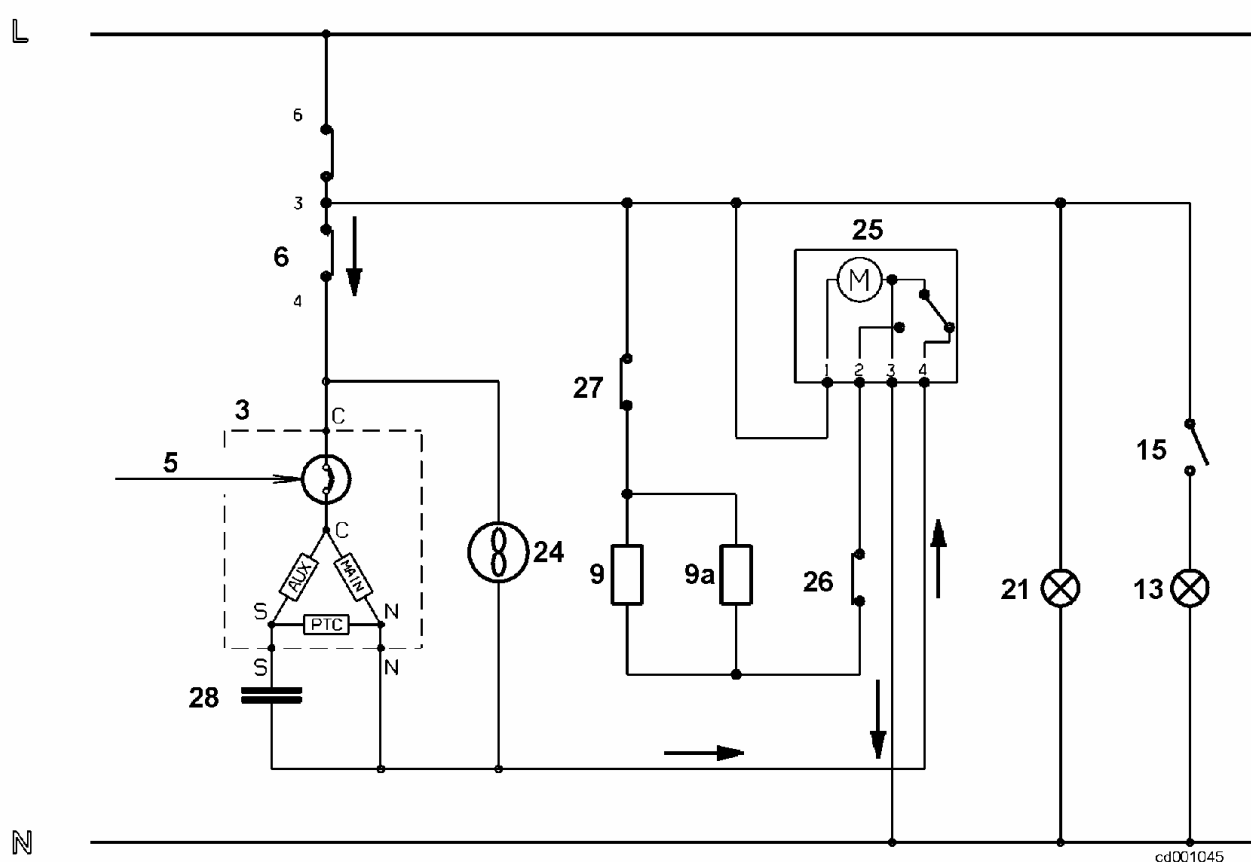


3. terminal board of freezer compressor
5. motor protector
6. refrigerator thermostat
9. stylus defrosting heater
- 9a. armoured defrosting heater
13. refrigerator lamp
15. light switch
21. ON/OFF pilot lamp
24. battery fan
25. timer
26. safety thermal switch (+40°C)
27. defrosting cut-out switch (+10°C)
28. running capacitor (only for models which feature it)

5.1 NORMAL

During normal operation the cam of the timer closes contacts **3-4** thus powering the compressor and fan circuits. The operating time lasts about 14 hours.

The arrows in the picture show the current path.



5.2 DEFROSTING

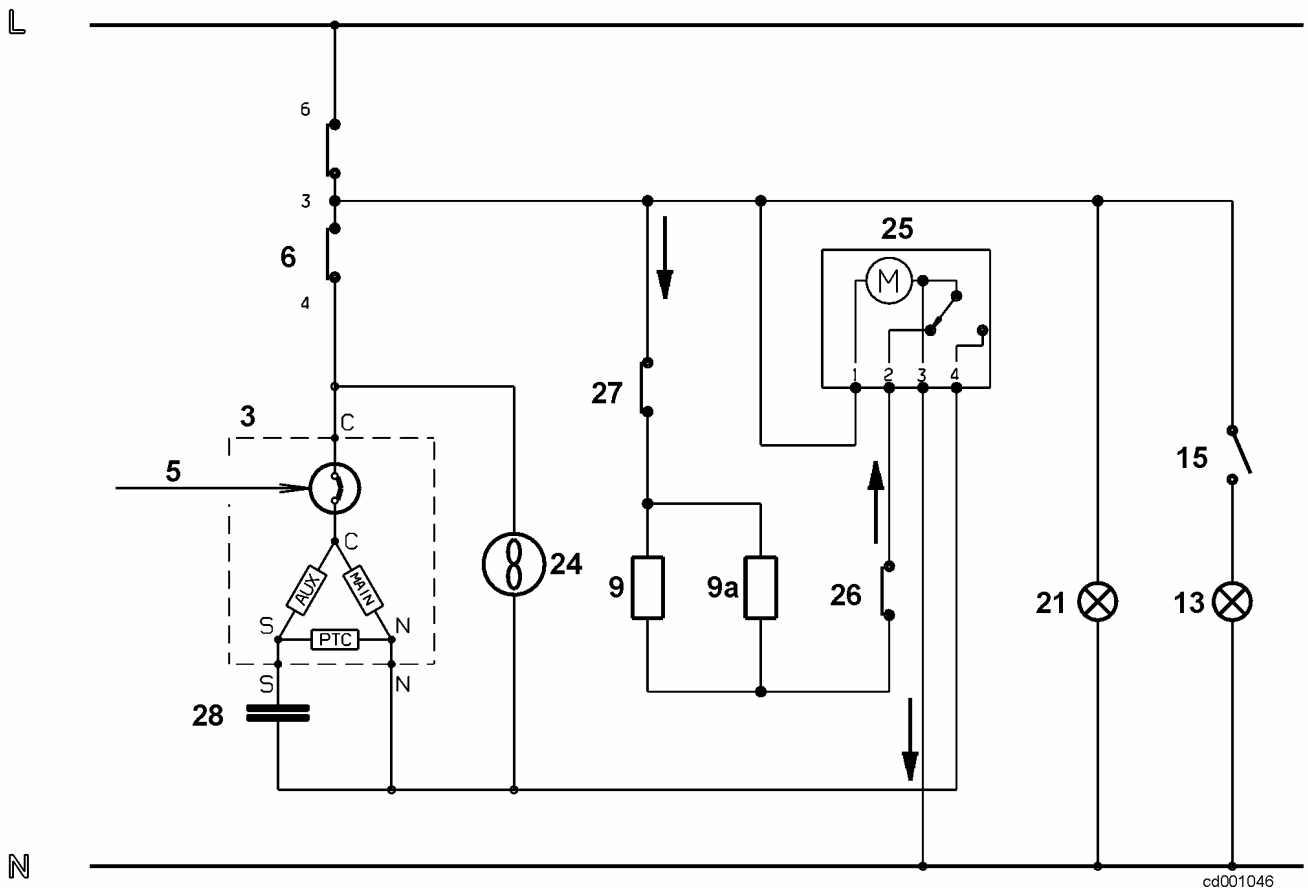
The ice on the battery must be removed regularly, therefore after about 14 hours of operating, the timer (25) switches from contact 3-4 to contact 3-2, disconnecting the compressor and the fan and switching on the stylus defrosting heater (9) and armoured (9a).

For safety reasons and rules in the evaporator battery there are two defrosting heaters that are simultaneously powered, since they are connected in parallel.

After 36 minutes defrosting, the timer switches to contact 3-4 again, switching on the compressor and the fan and disconnecting the heating elements.

If the battery temperature reaches +10°C in less than 36 minutes, the heaters are switched off by the defrosting cut-out switch (26). If, for any reason, it does not switch on and the battery temperature reaches +40°C the heating elements will be switched off by the safety thermal switch (27).

The arrows in the picture show the current path.

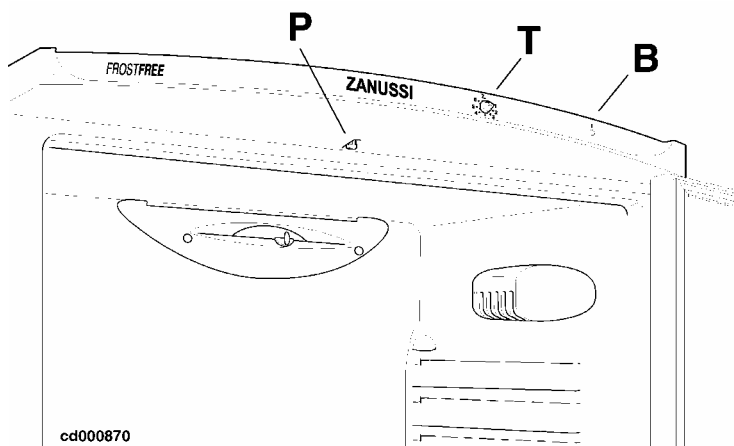


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6. COMPONENTS

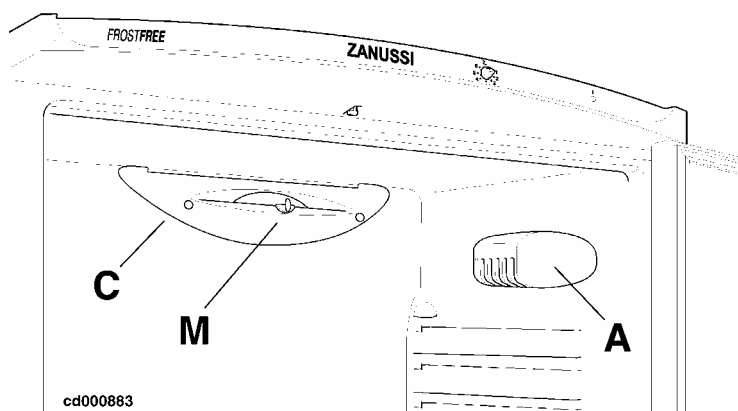
6.1 CONTROL PANEL :

- pilot lamp **B**.
- thermostat knob **T**.
- light button **P**.



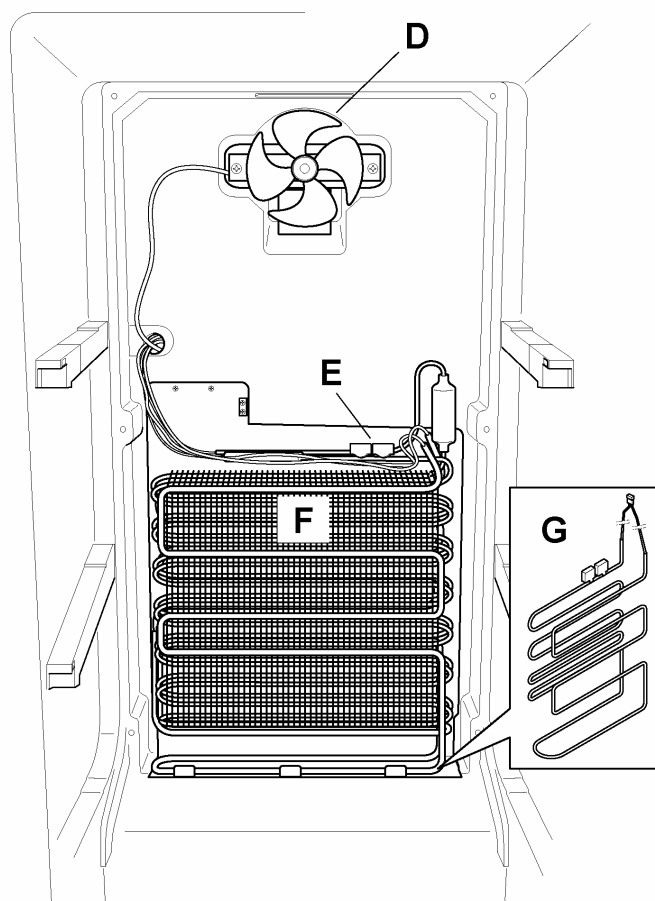
6.2 REFRIGERATOR COMPARTMENT :

- flap **C**: it enables to regulate the flow of air coming from the freezer compartment through the knob **M**.
- lamp holder **A**.



6.3 FREEZER COMPARTMENT :

- fan **D**;
- thermal overload cut-outs **E** (for technical data see **Tab. A**);
- evaporator battery **F**;
- defrosting heater **G** (for technical data see **Tab. B**).



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Tab. A

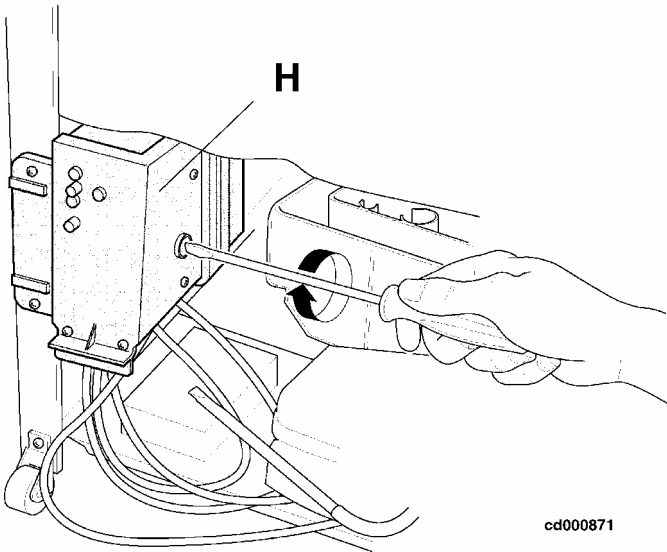
TYPE OF THERMAL OVERLOAD CUT-OUT	OPERATING TEMPERATURE	
	OPENING	CLOSURE
DEFROSTING	+ 8 °C	- 1 °C
SAFETY	+ 40 °C	+ 30 °C

Tab. B

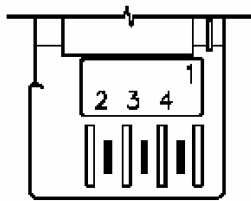
pnc	Refrigerating gas	Voltage	Resistance	Power	Notes
925886xxx	R134a	240 V	242 Ω	238 W	-
925886xxx	R600a	240 V	213 Ω (see notes)	271 W	Total value of the 2 resistances
925887xxx	R134a	240 V	220 Ω	262 W	-
925887xxx	R600a	240 V	207 Ω (see notes)	278 W	Total value of the 2 resistances
925888xxx	R134a	240 V	220 Ω	262 W	-
925888xxx	R600a	240 V	207 Ω (see notes)	278 W	Total value of the 2 resistances

6.4 COMPRESSOR COMPARTMENT:

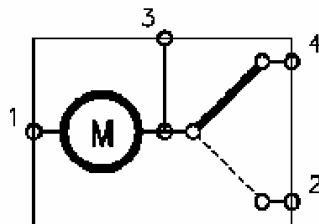
At the back of the appliance there is the timer **H**;
by using a screwdriver it is possible to rotate the shaft
cam manually, only clockwise, to switch the 3-4 and
3-2 contacts switch.



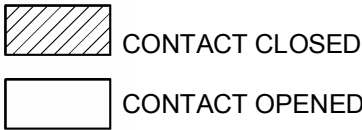
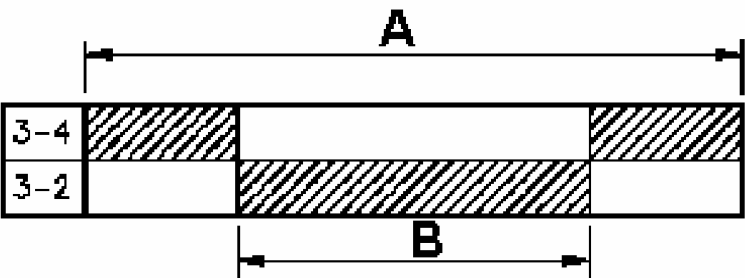
VIEW OF THE TIMER CONTACTS



ELECTRIC CIRCUIT OF THE TIMER



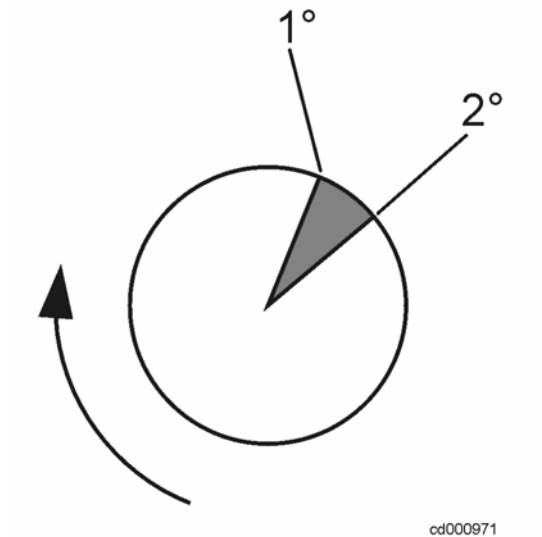
Contact 4 : compressor;
Contact 2 : heaters.



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TIME "A" (total cycle)	TIME "B" (defrosting)
14 h 26 '	36 '

By rotating the timer shaft clockwise with a screwdriver, you can hear two snaps that indicate the contacts closure. As you can see in the picture (the position of the snaps is merely indicative), between the 1st snap and the 2nd snap the run is minimum, between the 2nd and the 1st snap the run is longer:



Warning :

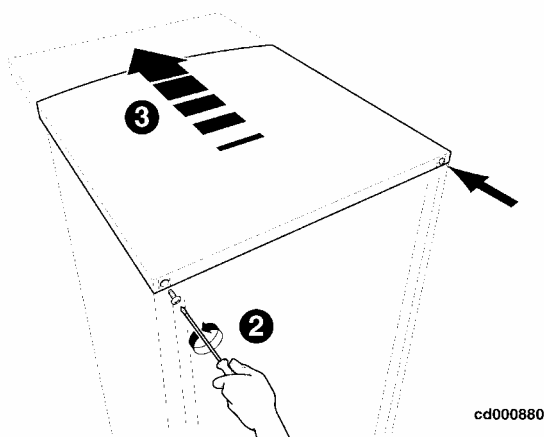
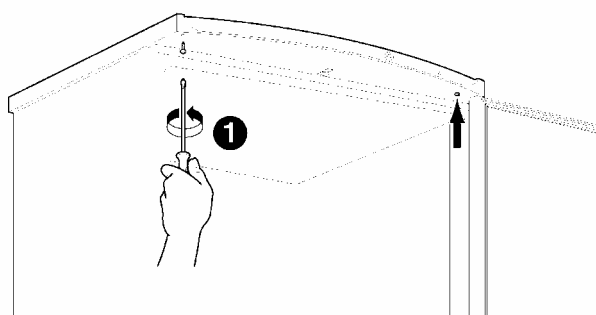
- In order to test the appliance during “normal” operation, you need to rotate the timer cam till the 2nd snap so as to close 3-4 contact;
- In order to test the appliance during “defrosting” operation, you need to rotate the timer cam till 1st snap so as to close 3-2 contact.

7. ACCESSIBILITY

7.1. CONTROL PANEL ACCESSIBILITY

To access the components of the control panel (thermostat, pilot lamp and light button) carry out the following operations:

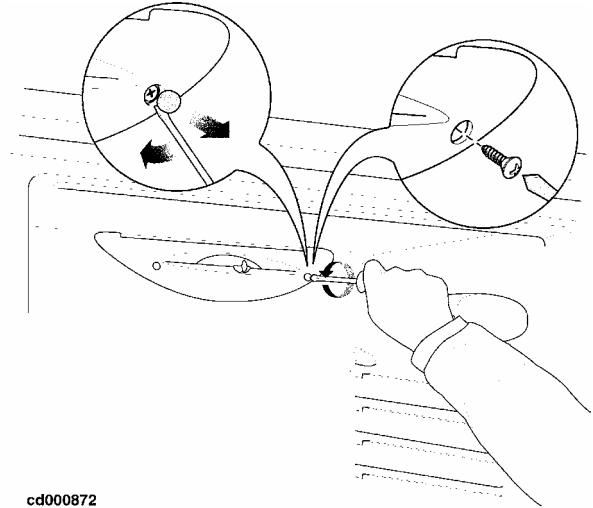
- 1- remove the 2 fixing screws from the hinges;
- 2- remove the 2 fixing screws placed behind the appliance;
- 3- push forward the top.



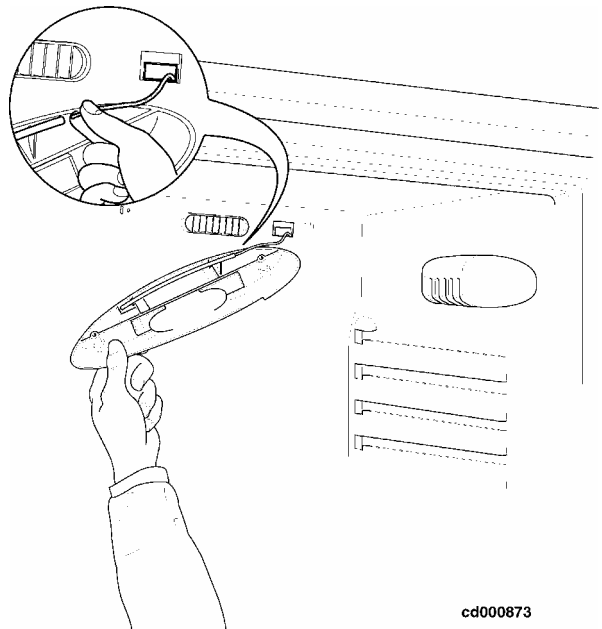
7.2. REFRIGERATOR COMPARTMENT ACCESSIBILITY

To access the flap:

- remove the caps that cover the two screws;
- loosen the two screws;

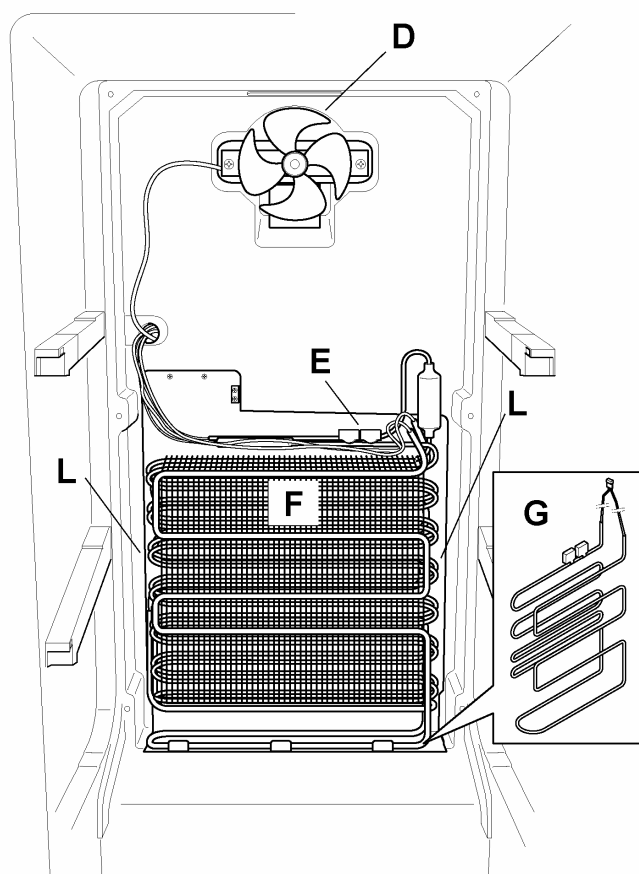
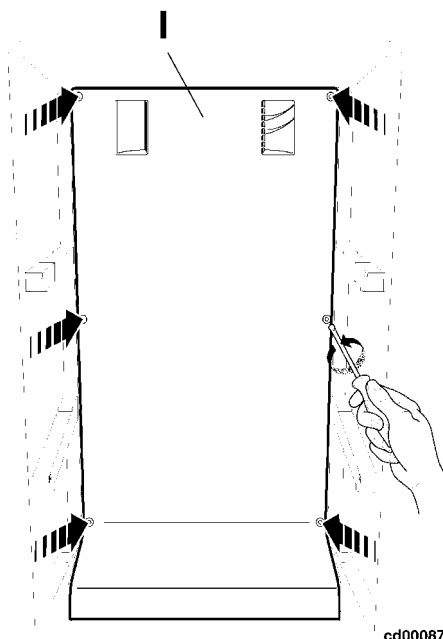


The thermostat bulb is inserted into the rear of the flap (see detail).



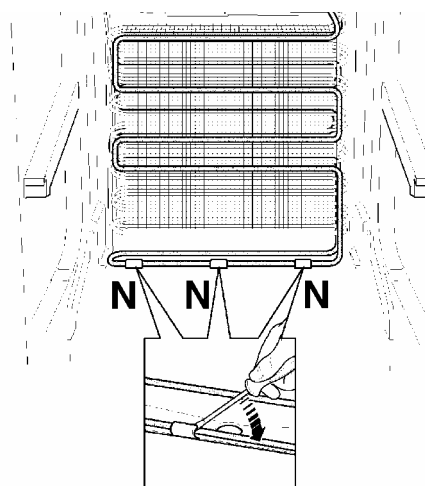
7.3. FREEZER COMPARTMENT ACCESSIBILITY

To access the components of the freezer compartment it is necessary to remove **I** protection.



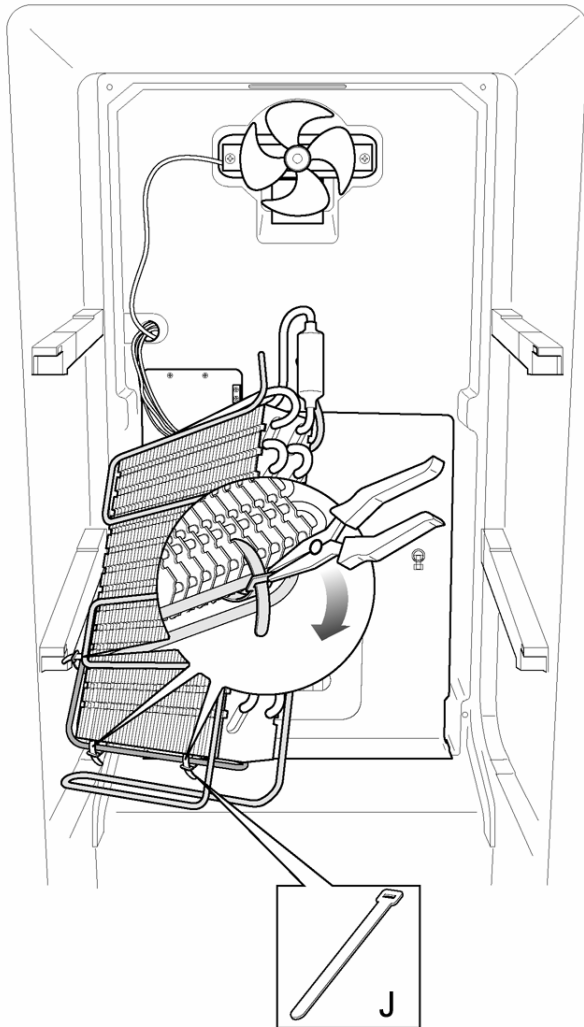
Evaporator battery

F evaporator battery is fixed to container **K** by two lateral clips **L** and by three hooks at the bottom **N**, removable with a screwdriver.



Thermal overload cut-outs

The two $+8^{\circ}\text{C}$ and $+40^{\circ}\text{C}$ **E** thermal overload cut-outs are connected together with the defrosting heaters and are not available as single spare part. They are fitted to the pipes of the evaporator battery.

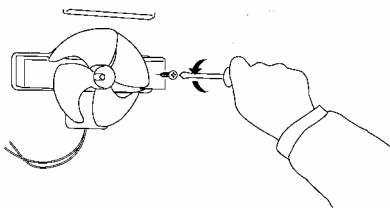


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As the battery has been detached, it can be bent (see picture) to access the heaters paying attention to the pipes.

Heaters and thermal cut-outs assembly

The defrosting heaters are fitted to the wings and hooked to the battery by means of three clamps **J**; to replace them, unhook the clamps with a pliers (do not cut them because they can be used again) and remove the heaters from the wings paying attention not to deform them.



The fan

The fan is fitted with 2 screws.

8. TROUBLESHOOTING

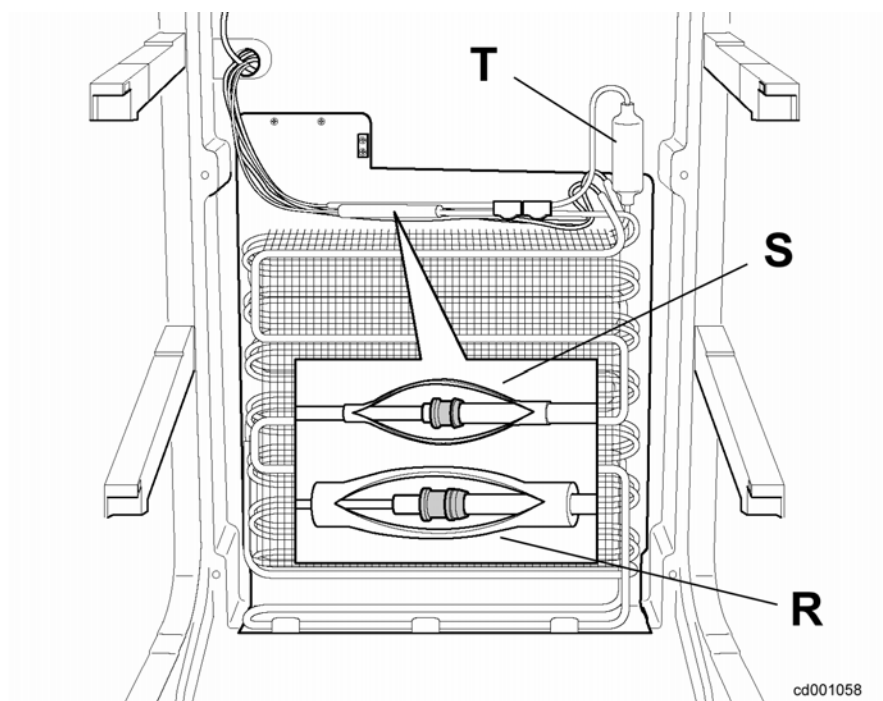


WARNING !

Unplug the appliance before operating.

Discharged circuit:

In case of refrigerating gas leak, the troubleshooting must be carried out not only in the traditional weldings, but also in the junctions with LOKRING ring of the pipes battery-capillary **R** and battery-return pipe **S** and in the weldings of cylinder **T** (for the R600a version).



Excessive ice on the battery:

If the rubber valve remains open, the humid air outside the freezer compartment penetrates inside and forms excessive ice on the battery. The valve remains open if there are foreign bodies or if it loses elasticity, therefore, in the first case it is necessary to remove the foreign bodies, while in the second case it is necessary to replace the rubber valve.

Failed defrosting:

If no defrosting cycle occurs, the possible causes could be:

Sequence n°	CAUSE POSSIBILI	POSSIBLE CAUSES	HOW TO VERIFY
1	One or both defrosting heaters are interrupted	Freeze the battery, then unplug the appliance, disconnect the connectors of the heaters and check with the tester the correct resistance value to the connector clamps.	If the value of the resistances does not correspond to the technical data, replace the heaters and overload cut-outs assembly.
2	One or both thermal overload cut-out switches are open	Freeze the battery, then unplug the appliance, disconnect the connectors of the heaters and check with the tester the correct resistance value to the connector clamps.	If the value of the resistances does not correspond to the technical data, replace the heaters and overload cut-outs assembly.
3	Timer blocked or faulty	Unplug the appliance, place the thermostat knob on ON, then access timer box and measure with the tester the electrical continuity: a) between the clamp 1 of timer and the line clamp of the feeding plug; b) between the clamp 3 of timer and the clamp of the feeding plug neutral wire.	If the resistance values of the two measures [a) and b)] are 0 Ω then replace the timer.

Burn out lamp:

After replacing the burn out lamp, verify the correct operating of the light button **P** with its manual actioning then try again, actioning the light button from the closure of the refrigerating door and verify the switching off of the lamp moving slightly the magnetic seal of the door.



Warning:

the **Q** lamp holder seal is a component that concerns the appliance safety; therefore it is obligatory to insert it again into the lamp holder after an eventual replacement of the lamp!

