

SERVICE MANUAL

New Electronic Cold Platform 2005.




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CONTENTS OF THE MANUAL: NOTE FOR THE ENGINEER

This manual is a supporting document for technical personnel. It contains a description of the various product types, the general operating principle, and indications concerning assistance.

Technical personnel should anyway consult the specific model on  **servicenet** (www.servicenet.indesitcompany.com) to access data and updates of electrical diagrams, technical bulletins, and spare parts.

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1. PRODUCT TYPE:

1.1. KEY TO INDESIT PRODUCTS:

DOBLE DOOR:	
T	Top freezer
B - A - AA - AAA	Efficiency class
1st number only for NF number (2 - 25 - 3 - 4)	Type NF (1= mechanical , 3= electronic)
N	Height (2 =150, 25 =167, 3 =175, 4 =187)
T	New Platform
S	Colour Teak
X	Colour Silver
I	Colour Stainless Steel
NF	Isobutane Gas (for classes A , B , C)
W	Full no frost
P	Grilles
L	Playzone
V	Lock
G	Ventilated
Final letters (EU,F, etc..)	Graffiti
	Intended markets



FRIDGE-FREEZER:	
B	Bottom freezer
B - A - AA - AAA	Efficiency class
N	New Platform
1st number	1= 1 compressor 2= 2 compressors 3= 1 compressor + Solenoid Valve or 1 compressor + Electronics
2nd number	Height (0 =150, 2 =175, 3 =187, 4 =200)
3rd number only for 4-drawer freezer	4 levels in freezer
V	Ventilated (also DGT for electronic models)
T	Colour Teak
S	Colour Silver
X	Colour Stainless Steel
I	Isobutane Gas (for classes A , B , C)
NF	Full no frost
W	Grilles
P	Playzone
L	Lock
G	Ventilated
Final letters (EU,F, etc..)	Graffiti
	Intended markets



1.2. INTERFACE:

No Frost Fridge-freezer and Electronic Thermostat Double Door.



Evolution Electronic Static Fridge-Freezer.



Basic Electronic Static Fridge-Freezer.



Basic Electronic No Frost Fridge-Freezer.

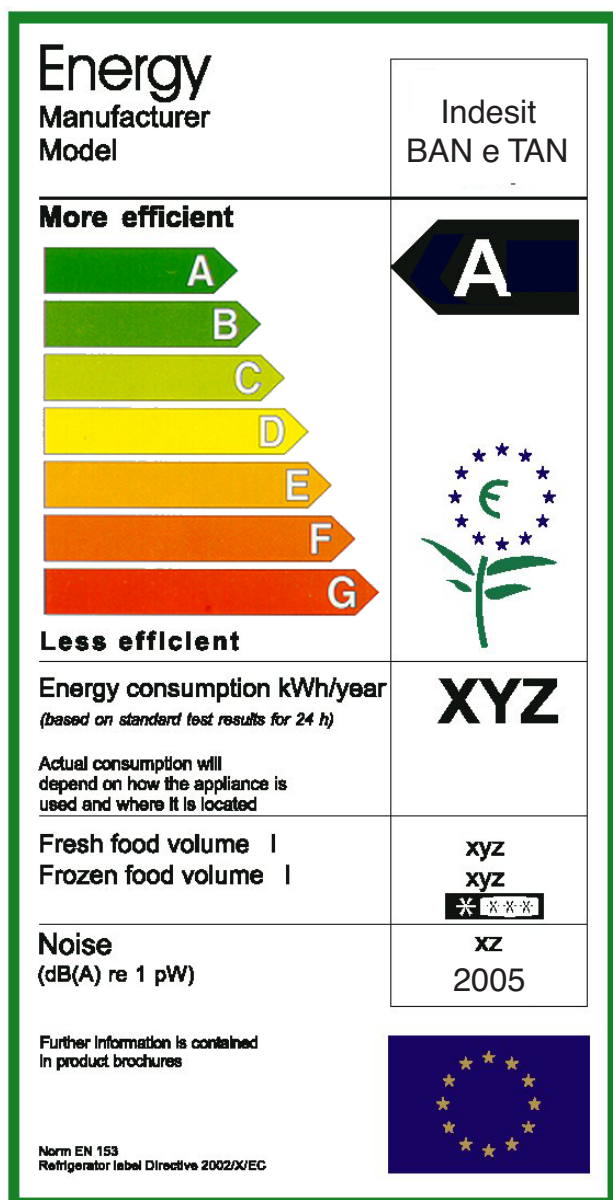


1.3. ENERGY LABEL:

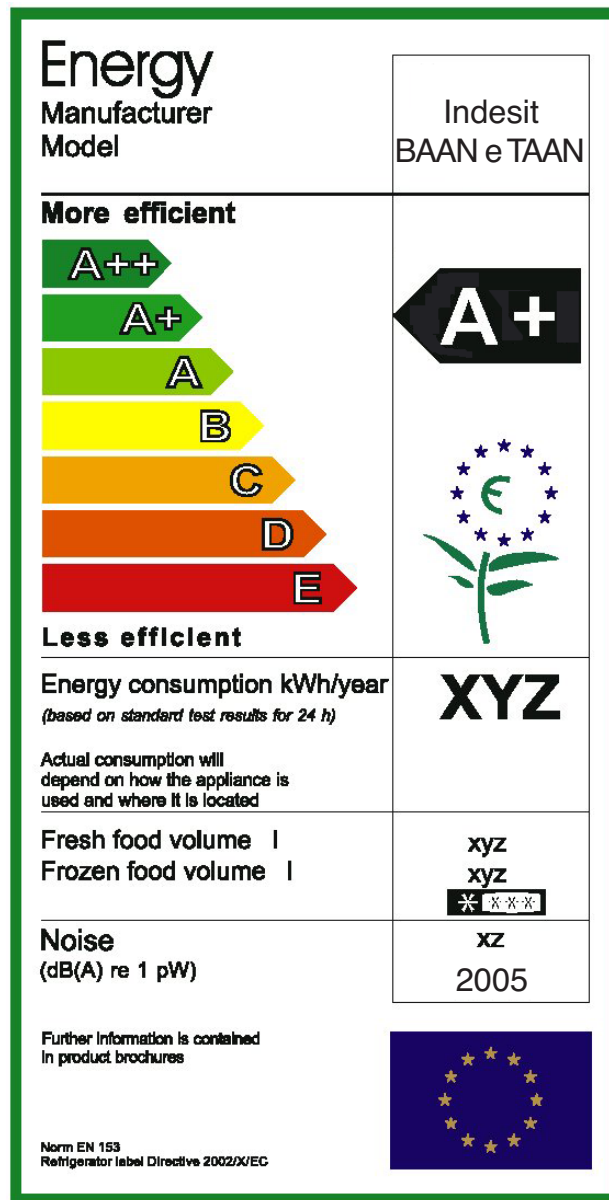
Energy Label for products BAN or TAN:

Energy Label for products BAAN or TAAN:

TYPE



Class "A" energy label



Class "A+" energy label

2. PRODUCT TYPE:

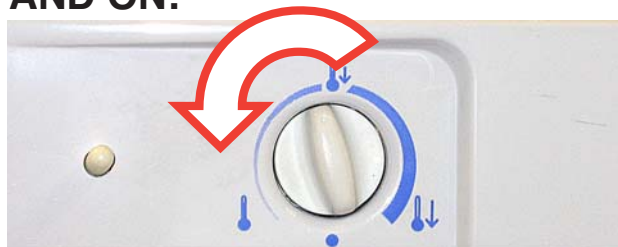
NO FROST FRIDGE-FREEZER AND ELECTRONIC THERMOSTAT DOUBLE DOOR.

The user interface is located on the fridge cabinet in Fridge-Freezer models and on the freezer cabinet in Double Door models.

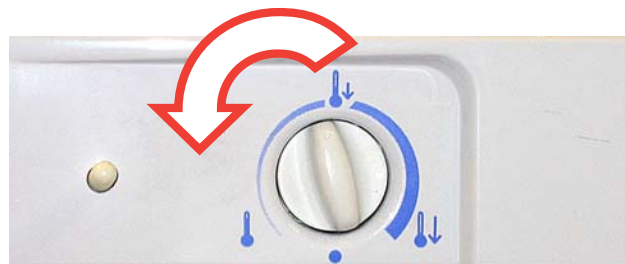


SWITCHING THE APPLIANCE OFF AND ON:

The appliance is switched Off when the knob is set to Minimum. To switch on the appliance turn the knob clockwise away from the Minimum position (appliance OFF). Turn the knob counterclockwise to the Minimum position to switch off the appliance.



TEMPERATURE ADJUSTMENT:



The freezer compartment temperature is adjusted by the electronic PCB. To set a lower temperature turn the knob clockwise, turning the knob counterclockwise gives a higher temperature. The refrigerator compartment temperature depends on the adjustment of the freezer compartment temperature.

The refrigerator compartment temperature is controlled by a mechanical damper located on the multiflow unit. The damper enables cold air from the evaporator coil to cool the refrigerator compartment.

Temperature adjustment is performed in accordance with specific rules if the following conditions occur:

- Temperature detected by PCB sensor (on the board) is between two values parameterised in the EEPROM memory;
- The time that has elapsed from the last time the door was opened is greater than the relative parameter stored in the EEPROM memory;
- The compressor power-on time is lower than the parameter stored in the EEPROM;

COMPRESSOR OPERATION:

The compressor serves to compress the gas in the thermodynamic circuit in order to generate the necessary cooling capacity to chill the appliance compartments.

The compressor is managed by the Main PCB with the aid of a relay and a triac that trips, in parallel with the relay, only at the time of compressor power-on and power-off to protect the relay from electrical arcing when the contact is opened and closed. The compressor



switches on whenever a demand for cooling is received. There are situations of cooling demand in which the compressor remains off. These are as follows:

1. Compressor protection: the compressor switches on once a minimum safety time lag has elapsed since the last power-off, thereby allowing gas pressure to reach a point of equilibrium in the refrigerant circuit. The same minimum safety time is observed in the event of a mains power interruption (voluntary or involuntary). This compressor protection strategy is observed only after the product has been operating continuously for the

number of hours defined in the EEPROM memory. This facilitates the execution of factory tests.

2. Long periods of activity: if the compressor remains on for more than a value set in EEPROM memory it is switched off, even in the presence of a cooling demand.
3. Pause after defrost: at the end of the defrost cycle the compressor observes a protection time parameterised in the EEPROM so that the water formed during the defrost can be completely drained.

DEFROST AND DRIP TRAY HEATING ELEMENTS:

There are two defrost heating elements connected in parallel and controlled by the Main PCB:

The defrost heating element, which serves to melt any ice that has formed on the evaporator coil that could have a negative effect on the thermal exchange between the evaporator and surrounding air.

The drip tray heating element, which is designed to melt any ice that detaches from the evaporator.

In addition, the drip tray heating element prevents blockage of the pipe that transfers the water from the drip tray to the drain tube.

During the defrost cycle the compressor is switched

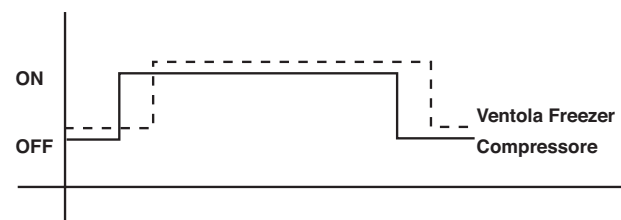
off, even in the presence of a cooling demand from the freezer compartment. The heating elements are switched off by means of a thermal protection (closed when the appliance is cold and open when it is hot). The parameters utilised to start the defrost cycle are as follows:

1. Compressor ON time since last defrost cycle.
2. Duration of last defrost cycle; if the duration of the last defrost cycle was short, the next defrost cycle will be longer, and vice versa.
3. Duration of doors open condition.

FREEZER FAN OPERATION:

The freezer fan is located in front of the evaporator coil and is designed to distribute the cold air produced by the evaporator coil uniformly inside the freezer compartment.

The freezer fan is managed by the PCB and is switched on/off after a preset time interval that is parameterised in the EEPROM after a compressor start/stop.



The defrost procedure is preceded by activation of the fan for a time interval that is parameterised in the EEPROM memory.



After the defrost cycle the fan starts after a time interval following a compressor start, also this interval is parameterised in the EEPROM memory; this interval is different from the interval programmed for normal operating conditions.

FRIDGE LAMP OPERATION:

The refrigerator lamp is located inside the multiflow unit. The Fridge-Freezer appliance has one lamp while the Double Door appliance has two lamps. The lamps are controlled by a triac on the PCB, and switch on when the fridge door is open (assuming the appliance is switched on). If the door remains open for a time period that is greater than the time interval stored in the EEPROM memory, the lamp will start flashing and continue until the door is closed.



FAULT MANAGEMENT:

The appliance is designed to recognise faults, specifically those relative to the temperature sensors and the EEPROM memory.

For faults of this type there are various alternative operating modes that can be activated to allow the appliance to continue to function normally.

Normal operation of the appliance will resume after mains power has been disconnected and reconnected (if the problem persists the appliance will resume alternative mode operation).

FRIDGE DOOR OPEN:

If the door remains open for a prolonged time period the fridge lamp flashes at regular intervals. Close the door to reset the alarm.

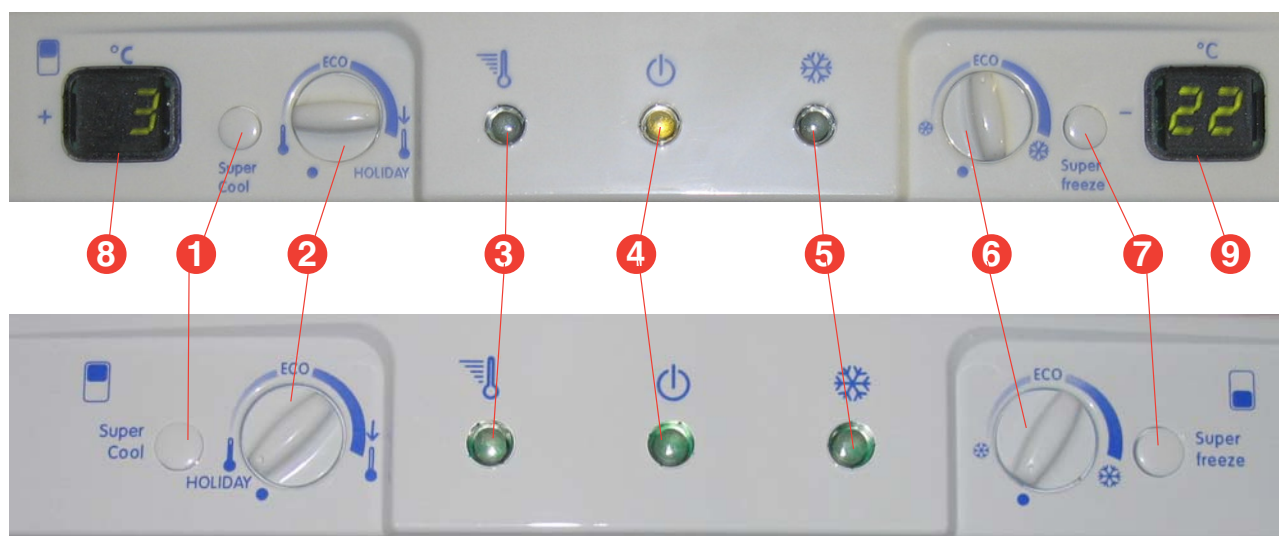
FREEZER AIR SENSOR FAULT:

In the event of a fault of the freezer air sensor, the appliance will no longer be able to execute thermostatic control with the parameters set in the EEPROM memory.

The appliance will continue to function controlled by the main PCB, which assumes timer control of operation in accordance with the temperature set by the user and parameters stored in the EEPROM memory.



BASIC ELECTRONIC STATIC FRIDGE-FREEZER AND EVOLUTION MODEL.



Key:

- | | |
|-------------------------|---|
| 1. SUPER FRIDGE button. | 5. SUPER FREEZER LED. |
| 2. FRIDGE knob. | 6. FREEZER knob. |
| 3. SUPER FRIDGE LED. | 7. SUPER FREEZER button. |
| 4. Power indicator LED. | 8. FRIDGE temperature display. (7-segment) |
| | 9. FREEZER temperature display. (7-segment) |

SWITCHING THE APPLIANCE OFF AND ON:



The appliance is Off when the freezer compartment knob (6) is set to Minimum.

To switch the appliance on turn the freezer knob clockwise, away from the Minimum position.

To switch it off turn the knob counterclockwise to the Minimum position. All active functions are deactivated when the appliance is switched off. If the appliance is On and the refrigerator compartment knob

(2) is set to minimum, the refrigerator compartment is Off.

To switch on the refrigerator compartment, turn the knob clockwise away from the Minimum position; to switch it off turn the knob counterclockwise to the Minimum position. If the SUPER COOL function is active it will be automatically deactivated by switching the refrigerator compartment off.

TEMPERATURE DISPLAYS (7-SEGMENT):



The displays serve to show the user temperature setting for the refrigerator compartment and the freezer compartment in accordance with the position of the knob. Freezer compartment temperature

is from -18°C to -26°C, while refrigerator compartment temperature is from +3°C to +8°C. If either the refrigerator or freezer is switched off, the display (7-segment) will remain blank.

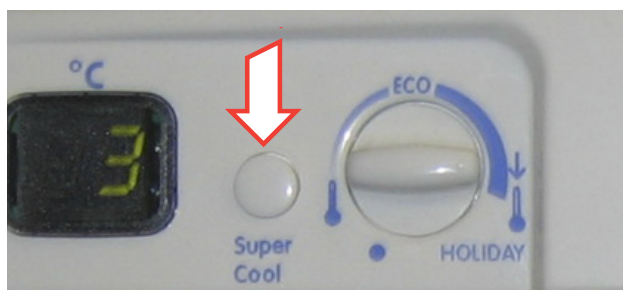
TEMPERATURE SETTING:



Turn the refrigerator knob (2) or freezer knob (6) clockwise to decrease the temperature or counterclockwise to increase the temperature until reaching the minimum position; when the refrigera-

tor knob is set to minimum the refrigerator compartment will be switched off, while setting the freezer knob to minimum switches off the entire appliance.

“SUPER COOL” FUNCTION:



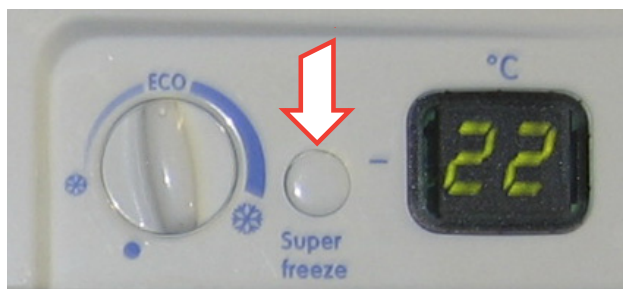
This function allows optimal chilling of large quantities of food in the refrigerator compartment by altering the refrigerator On and Off set-points in accordance with parameters stored in the EEPROM memory.

Activating this function forces the fridge fan, which starts after a time parameterised in the EEPROM memory, to run continuously to obtain the maximum cooling capacity in the refrigerator compartment. The SUPER COOL function cannot be activated if either of the two freezer temperature alarm conditions is active. Activation of an alarm mode or switching off

the appliance or only the refrigerator compartment automatically causes this function to be deactivated. Press button (1) to activate the function. In the case of the basic interface LED (3) will illuminate confirming activation of the function. Deactivation of the SUPER COOL function can be performed by the user pressing the relative button again, or will occur automatically at the end of the procedure (number of cycles) as defined in the EEPROM memory.

If the appliance is equipped with the Digit interface, the relative 7-segment display will show temperature 1 until deactivation of the function, at which point the display will return to the temperature value set on the freezer knob. The user can also activate the ECO or HOLIDAY functions, which will become operational as soon as the SUPER COOL function has been deactivated. The SUPER COOL function cannot be selected if the HOLIDAY function is active. In case of electrical power failures the function is resumed automatically when power is restored, completing the remaining cycles except in the presence of a temperature alarm.

SUPER FREEZER FUNCTION:



This function provides optimal freezing of food in the freezer compartment, conserving properties of texture and flavour.

Activating this function forces the compressor run continuously thereby obtaining maximum freezing power in the freezer compartment.

There are two modes: SUPER FREEZE 24h, which is used for freezing small quantities of food (this function should ideally be activated immediately before placing the food in the compartment).

The SUPER FREEZE function is activated by pressing button (7); this will cause LED (5) to illuminate to confirm that the function is active. The second mode is SUPER FREEZE 48h, which is activated by holding down button (7); this function is used for freez-

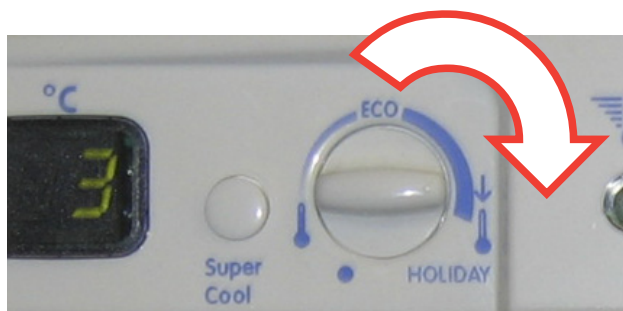
ing large quantities of food (should be activated 24h before placing the food in the compartment). In this case LED (5) will flash for the first 24 h and then remain steadily illuminated for the second 24 h period. If the appliance is equipped with the Digit interface, the temperature of -35 °C will be displayed on the 7-segment display until the function is deactivated, at which point the LED will extinguish and the value set on the freezer knob will be shown on the display.

The function cannot be activated in the presence of alarm signals. Activation of an alarm mode or switching off the appliance automatically causes this function to be deactivated. This mode can be deactivated by pressing the relative button again. The function is deactivated automatically when the maximum time has elapsed (24 or 48 hours) or, in the case of 24 h mode, once a given temperature has been reached and maintained for a time interval parameterised in the EEPROM memory.

The ECO or HOLIDAY functions can be selected, although they will only become operational when the SUPER FREEZER function has terminated.

In case of electrical power failures the function will be reactivated automatically when power is restored, completing the remaining hours, unless a temperature alarm occurs in this interval.

HOLIDAY FUNCTION:



In case of minimum use of the refrigerator compartment this function makes it possible to store food while reducing power consumption to the minimum (E.g. during holiday periods the freezer can remain full and the refrigerator empty). The function is activated by turning the refrigerator knob (2) to the HOLIDAY setting (a double beep will sound to indi-

cate that the function is active). To deactivate the function move the knob away from the HOLIDAY position (the appliance will emit a single beep) or switch off the refrigerator compartment or the entire appliance. The HOLIDAY function cannot be activated when alarms are present. Since the two functions are not compatible it is not possible to select the SUPER COOL or SUPER FREEZER functions if the knob is set to HOLIDAY. If these two functions are already active when the HOLIDAY function is selected, SUPER COOL and SUPER FREEZER will be terminated normally, after which the HOLIDAY function will start. If one or more of the sensors is faulty, the function will be controlled by the main PCB utilising alternative parameters. In case of electrical power failures the function will be reactivated automatically when power is restored.

ECO FUNCTION:



This function allows storage of food with the lowest possible power consumption while ensuring excellent results. The ECO function can be activated by turning the refrigerator (2) and freezer (6) knobs to the ECO setting. To deactivate the function simply turn one of the two knobs away from the ECO setting. The compressor starts in the presence of a cooling demand from either of the two compartments. To optimise operation of the appliance there is a fixed time setting for operation of the freezer at the end of a refrigerator cooling demand by means of a switch over of the relative solenoid valve without having to disconnect the compressor.

Normally, the ECO function adjustment corresponds

to the adjustment utilised to calculate power consumption in compliance with European regulations. The function cannot be activated in the presence of alarm signals.

The SUPER FREEZER and SUPER FRIDGE functions can be activated when the ECO function is set. These functions will assume priority over the ECO function. The appliance returns to ECO function mode once the conditions are met to deactivate the priority procedure. If one or more of the sensors is faulty, the appliance will be controlled by the main PCB utilising alternative parameters. In case of electrical power failures the function will be reactivated automatically when power is restored.

ALARMS MANAGEMENT:

Alarms serve to notify the user of specific conditions such as: prolonged opening of fridge door; excessively high temperature in freezer compartment.

Door Open Alarm:

If the fridge door is kept open for a time longer than that defined by a parameter set in EEPROM memory, an audible signal is emitted and the fridge lamp flashes at regular intervals. Close the door to reset the alarm.

Freezer Compartment Temperature Alarm:

There are two types of alarms that can be generated if the freezer compartment temperature rises excessively:

Alarm A1:

In this case it is still possible to recover the food in the freezer by cooking it immediately and either consuming it or re-freezing it once cooked.

LEDs 3 and 5 flash on the appliance control panel to indicate the presence of the alarm (if the refrigerator is equipped with the Digit interface the message A1 is displayed on the freezer temperature display).

Alarm A2:

In this case the food in the freezer compartment must be discarded. LEDs 3, 4 and 5 flash on the appliance control panel to indicate the presence of the alarm (if the refrigerator is equipped with the Digit interface the message A2 is displayed on the freezer temperature display).

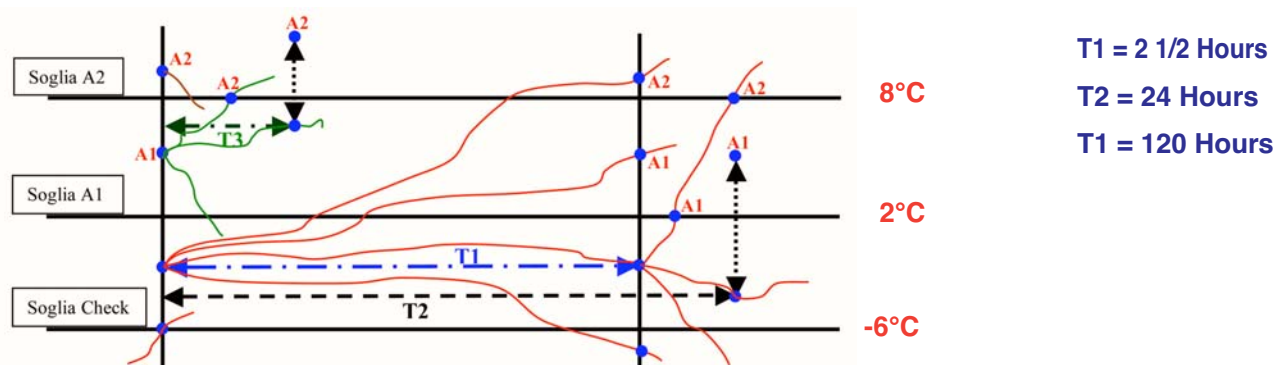
At the same time an audible signal is emitted by the beeper during both alarm modes.

In alarm status the appliance forces operation utilising specific On / Off parameters that control the temperature in the freezer compartment at specific values depending on the type of alarm. To reset the alarm and restore normal operation, the appliance must be set to LOGICAL OFF (freezer knob set to minimum). Control of freezer compartment temperature is continuous during operation of the appliance, by means of the freezer air temperature sensor; this control will proceed even if the appliance is in one of the two available alarm conditions. In the event of a freezer air sensor fault, the alarms will no longer be displayed. Temperature control is not performed for a time parameterised in the EEPROM memory to prevent false alarms both during the testing process and at the time of power-on immediately after the appliance has been purchased.

Temperature control and alarm signalling are managed by means of three thresholds: Check Threshold (the control strategy becomes more intensive when this threshold is exceeded); Threshold A1: when exceeded, alarm A1 is activated; Threshold A2: when exceeded, alarm A2 is activated. The values of the three thresholds are parameterised in the EEPROM memory.

If the control temperature exceeds the Check Threshold but does not exceed the A1 Alarm threshold, a delay time T1 is activated (parameterised in the EEPROM) before performing the next control, to prevent the generation of alarm signals when the placement of large quantities of warm food in the freezer compartment near the freezer air sensor causes unreliable transient temperature readings. At the same time another time interval T2 is activated (parameterised on the EEPROM) after which, if the temperature is constantly maintained between the Check Threshold and the Alarm A1 Threshold, alarm A1 is forced because the persistence of a temperature in this range for this period of time is anyway a symptom of faulty operation and constitutes a risk for the correct preservation of the food.

At the time of activation of alarm A1 also a time interval T3 is activated (parameterised in the EEPROM) after which, if an alarm reset has not been executed, alarm A2 is forced, since in the situation of alarm A1 the freezer compartment is set to a temperature that may not be the same as the temperature selected by the user. This time interval is reset also when power is restored after a mains power failure.



N. B.: The time and temperature values shown in this graph are EEPROM parameters and as such they are subject to modification

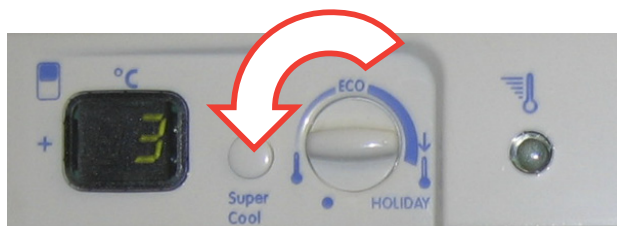
THERMOSTAT CONTROL.

The temperature adjustments in both the compartments are independent from each other and set individually by the relative knobs.

Freezer Compartment Adjustment:

Freezer temperature is managed by the PCB utilising the value detected by the freezer air sensor to switch the compressor on/off.

The On / Off threshold is detected by the EEPROM and it depends on the user setting on the interface.



If the temperature measured by the freezer air sensor is above the On threshold a cooling demand is activated thereby starting the compressor; on the contrary, if the freezer air sensor detects a temperature lower than the Off temperature, the cooling demand is deactivated.

Refrigerator Compartment Adjustment:

Refrigerator temperature control is managed by the PCB according to the temperature measured by the refrigerator air sensor in relation to the user settings on the interface.

If the temperature measured by the refrigerator air sensor is above the On threshold, a cooling demand is activated thereby starting the compressor and the refrigerator fan (if present); on the contrary, if the refrigerator air sensor detects a temperature lower than the Off temperature, the cooling demand is deactivated.



LOADS MANAGEMENT:

Compressor Operation:

The compressor serves to compress the gas in the thermodynamic circuit in order to generate the necessary cooling capacity to chill the appliance compartments.

The compressor is managed by the Main PCB with the aid of a relay and a triac that trips, in parallel with the relay, only at the time of compressor power-on and power-off to protect the relay from electrical arcing when the contact is opened and closed, otherwise the compressor is powered exclusively via the relay when it is running.

The compressor is started whenever a cooling demand is received.

In certain conditions the compressor will remain stopped despite the presence cooling demands; these situations are as follows:

Compressor protection:

The compressor switches on once a minimum safety time interval (parameterised in the EEPROM) has elapsed since the last power off, thereby allowing the pressure of gas to reach a point of equilibrium in the refrigerant circuit. The same minimum safety time is observed in the event of a mains power interruption (voluntary or involuntary). This compressor protection strategy is observed only after the product has been operating continuously for a number of hours defined in the memory. This facilitates the execution of factory tests.

Long periods of activity:

If the compressor runs for a time greater than a value defined in the EEPROM memory, it is switched off even in the presence of a cooling demand from either or both compartments. This feature is designed to protect the compressor.

Fridge Fan Operation: (only in Digit models)

The fan is designed to distribute cold air uniformly inside the fridge compartment. The fan is controlled by

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the PCB and it starts on receipt of a refrigerator compartment cooling demand after a time interval parameterised in the EEPROM following start-up of the compressor.

It may occur that the fan is kept switched off, even though the compressor is running.

This occurs in the event that the fridge door is open.

In order to check that the refrigerator fan is functioning correctly “door closed” conditions must be simulated by applying a magnet.

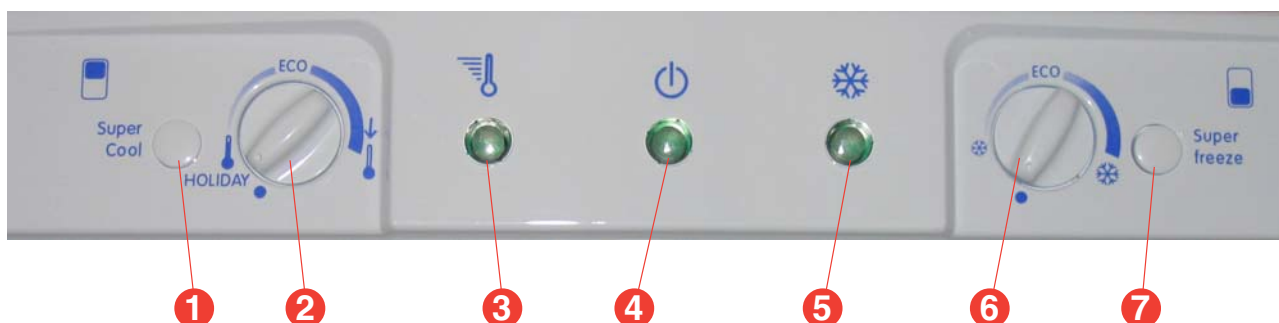
Fridge Lamp Operation:

Housed in a light fixture, the fridge lamp serves to illuminate the refrigerator compartment. The lamp is controlled by a triac on the PCB and it switches on when the door is opened and switches off when it is closed.

If the door is kept open for more than a time interval parameterised on the PCB, the lamp will flash until the door is closed.



BASIC ELECTRONIC NO FROST FRIDGE-FREEZER.



Key:

1. SUPER FRIDGE button.
2. FRIDGE knob.
3. SUPER FRIDGE LED.

4. Power indicator LED.

5. SUPER FREEZER LED.

6. FREEZER knob.

7. SUPER FREEZER button. Accensione/Spegnimento del prodotto:

SWITCHING THE APPLIANCE OFF AND ON:



The appliance is Off when the freezer compartment knob (6) is set to Minimum.

To switch the appliance on turn the freezer knob clockwise, away from the Minimum position. To switch it off turn the knob counterclockwise to the Minimum position. All active functions are deactivated when the appliance is switched off.

If the appliance is On and the refrigerator compart-

ment knob (2) is set to minimum, the refrigerator compartment is Off. To switch on the refrigerator compartment, turn the knob clockwise away from the Minimum position; to switch it off turn the knob counterclockwise to the Minimum position. If the SUPER COOL function is active it will be automatically deactivated by switching the refrigerator compartment off.

TEMPERATURE SETTING:



Turn the refrigerator knob (2) or freezer knob (6) clockwise to decrease the temperature or counterclockwise to increase the temperature until reaching the minimum position; when the re-

frigerator knob is set to minimum the refrigerator compartment will be switched off, while setting the freezer knob to minimum switches off the entire appliance.

SUPER COOL FUNCTION:



Activation of an alarm mode or switching off the appliance or only the refrigerator compartment automatically causes this function to be deactivated. Activation of the SUPER COOL function can be performed by the user pressing button (1) in which case LED (3) will illuminate to confirm the function is active; the function is deactivated by the user pressing the button again, or it will be deactivated automatically at the end of the procedure (number of cycles) as defined in the EEPROM memory.

When the SUPER COOL function is inhibited the appliance returns to the setting that was active before the SUPER COOL function was selected.

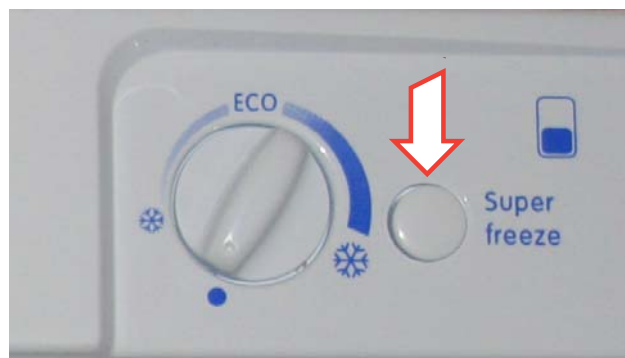
The user can also activate the ECO or HOLIDAY functions, which will become operational as soon as the SUPER COOL function has been deactivated. The SUPER COOL function cannot be activated if the HOLIDAY function is active. In the case of a faulty refrigerator air sensor, this function is timer controlled.

In case of electrical power failures the function is resumed automatically when power is restored, completing the remaining cycles, except in the presence of a temperature alarm.

This function allows optimal chilling of large quantities of food in the refrigerator compartment by altering the refrigerator On and Off set-points in accordance with parameters stored in the EEPROM memory and it is maintained for the number of cycles stored in the memory. The cold air transferred by the fan via the damper serves to chill the refrigerator compartment.

The SUPER COOL function cannot be activated if either of the two alarm modes is active.

SUPER FREEZER FUNCTION:



This function provides optimal freezing of food in the freezer compartment, conserving properties of texture and flavour.

Activating this function forces the compressor run continuously thereby obtaining maximum freezing power in the freezer compartment.

The fan starts after a time interval parameterised in the EEPROM memory from the compressor ON time, thereby displacing the cold air from the evaporator coil and allowing the freezer compartment to be chilled.

The function cannot be activated in the presence of alarm signals. Activation of an alarm mode or switching off the appliance automatically causes this function to be deactivated.

This function is deactivated in the following cases: pressing the relative button again; automatically, when the maximum activation time (24 hours) is reached; when the freezer air temperature sensor detects a temperature below a value parameterised in the EEPROM for a time parameterised in the memory.

When the function is deactivated the appliance resumes the operating mode defined previously by the user. The ECO or HOLIDAY functions can be selected, although they will only become operational when the SUPER FREEZER procedure has terminated.

In the case of a faulty freezer air sensor this function is timer controlled.

In case of electrical power failures the function will be reactivated automatically when power is restored, completing the remaining hours, unless a temperature alarm occurs in this interval.

HOLIDAY FUNCTION:



In case of minimum use of the refrigerator compartment this function makes it possible to store food while reducing power consumption to the minimum (E.g. during holiday periods the freezer can remain full and the refrigerator empty).

The function is activated by turning the refrigerator knob (2) to the HOLIDAY setting (a double beep will sound to indicate that the function is active). To deactivate the function move the knob away from the HOLIDAY position (the appliance will emit a single beep) and the appliance will resume normal operation.

The HOLIDAY function cannot be activated when

alarms are present. Since the two functions are not compatible it is not possible to select the SUPER COOL or SUPER FREEZER functions if the knob is set to HOLIDAY. If these two functions are already active when the HOLIDAY function is selected, SUPER COOL and SUPER FREEZER will be terminated normally, after which the HOLIDAY function will start. If one or more of the sensors is faulty, the function will be controlled by the main PCB utilising alternative parameters. In case of electrical power failures the function will be reactivated automatically when power is restored.

ECO FUNCTION:



This function allows storage of food with the lowest possible power consumption while ensuring excellent results.

The function can be activated by turning the fridge (2) and freezer (6) knobs to the ECO setting.

To deactivate the function simply turn one of the two knobs away from the ECO setting.

The compressor starts in the presence of a cooling demand from either of the two compartments. To optimise operation of the appliance there is a fixed time setting for operation of the freezer at the end of a refrigerator cooling demand; this interval can vary in accordance with the temperature read by the

freezer sensor. Normally, the ECO function adjustment corresponds to the adjustment utilised to calculate power consumption in compliance with European regulations. The SUPER FREEZER and SUPER FRIDGE functions can be activated when the ECO function is set. These functions will assume priority over the ECO function. The appliance returns to ECO function mode once the conditions are met to deactivate the priority procedure. If one or more of the sensors is faulty, the appliance will be controlled by the main PCB utilising alternative parameters. In case of electrical power failures the function will be reactivated automatically when power is restored.

ALARMS MANAGEMENT:

Alarms serve to notify the user of specific conditions such as: prolonged opening of fridge door; excessive temperature in freezer compartment.

Door Open Alarm:

If the fridge door is kept open for a time longer than that defined by a parameter set in EEPROM memory, an audible signal is emitted and the fridge lamp flashes at regular intervals. Close the door to reset the alarm.

Freezer Compartment Temperature Alarm:

There are two types of alarms that can be generated if the freezer compartment temperature rises excessively:

Alarm A1:

In this case it is still possible to recover the food in the freezer by cooking it immediately and either consuming it or re-freezing it once cooked. LEDs 3 and 5 flash on the appliance control panel to indicate the presence of the alarm, while a beeper signal is emitted at the same time.

Alarm A2:

In this case the food in the freezer compartment must be discarded. LEDs 3, 4 and 5 flash on the appliance control panel to indicate the presence of the alarm, while a beeper signal is emitted at the same time.

In alarm status the appliance inhibits all functions or adjustments to force a specific operating mode with specific On/ Off thresholds that set the freezer compartment temperature to given values in relation to the type of alarm (A1 or A2); the new On / Off thresholds for the two alarm types are parameterised in the EEPROM memory. During alarm status forced defrost cycles are executed, activated once the number of hours parameterised in the EEPROM memory have elapsed, as in normal operation. To reset the alarm and restore normal operation, the appliance must be set to LOGICAL OFF (freezer knob set to minimum).

The beeper can be muted by opening and closing the refrigerator door. When alarm status is reset the timer-controlled defrost cycles are deactivated, but if the alarm reset occurs during a defrost cycle, the alarm is reset but the current defrost cycle continues to its natural conclusion. If the appliance is set to logical OFF with A1 or A2 active, and then switched on again after a fixed number of minutes as parameterised in the EEPROM memory, a defrost cycle is forced after which the appliance will resume operation in accordance with the settings that were present before the alarm.

Once the appliance has entered alarm status it is not possible to quit except by means of a reset procedure (the only possible change is the transition from alarm A1 to alarm A2). In the event of a power failure, the state present at the time of interruption is resumed when power is restored.

Control of freezer compartment temperature, performed by means of the freezer air temperature sensor, is executed continuously during appliance operation. In the event of a freezer air sensor fault, the alarms will no longer be displayed.

Temperature control does not start for a time parameterised in the EEPROM memory from the first power-on of the appliance, thus avoiding the possible occurrence of alarms during the testing phases at the first power-on at the user's home.

When the appliance is ON, the temperature control is inhibited for a given time interval parameterised in the EEPROM memory in order to give the compartment time to cool without generating any superfluous alarms.

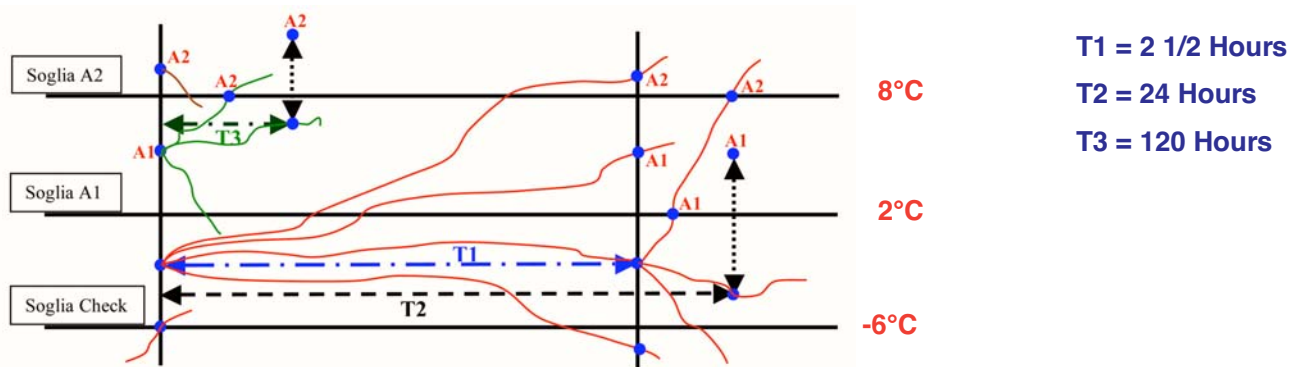
After a mains power failure the freezer compartment temperature is checked immediately, since prolonged absence of electrical power is the main cause for heating of the appliance.

Temperature control and alarm signalling are managed by means of three thresholds: Check Threshold (the control strategy becomes more intensive when this threshold is exceeded); Threshold A1: when exceeded, alarm

A1 is activated; Alarm threshold A2: when exceeded, alarm A2 is activated. The values of the three thresholds are parameterised in the EEPROM memory..

If the control temperature exceeds the Check Threshold but does not exceed the A1 Alarm threshold, a delay time T1 is activated (parameterised in the EEPROM) before performing the next control, to prevent the generation of alarm signals when the placement of large quantities of warm food in the freezer compartment near the freezer air sensor causes unreliable transient temperature readings. At the same time another time interval T2 is activated (parameterised on the EEPROM) after which, if the temperature is constantly maintained between the Check Threshold and the Alarm A1 Threshold, alarm A1 is forced because the persistence of a temperature in this range for this period of time is anyway a symptom of faulty operation and constitutes a risk for the correct preservation of the food.

At the time of activation of alarm A1 also a time interval T3 is activated (parameterised in the EEPROM) after which, if an alarm reset has not been executed, alarm A2 is forced, since in the situation of alarm A1 the freezer compartment is set to a temperature that may not be the same as the temperature selected by the user. This time interval is reset also when power is restored after a mains power failure.



N. B.: The time and temperature values shown in this graph are EEPROM parameters and as such they are subject to modification

THERMOSTAT CONTROL.

The temperature adjustments in both the compartments are independent from each other and set individually by the relative knobs.

Freezer Compartment Adjustment:

Freezer temperature is managed by the PCB utilising the value detected by the freezer air sensor to switch the compressor on/off.

The On / Off threshold is detected by the EEPROM and it depends on the setting selected by the user on the interface.

If the temperature measured by the freezer air sensor is above the On threshold, a cooling demand is activated thereby starting the compressor, the fan, and opening the damper; on the contrary, if the freezer air sensor detects a temperature lower than the Off temperature, the cooling demand is deactivated.



Refrigerator Compartment Adjustment:

Refrigerator temperature control is managed by the PCB according to the temperature measured by the refrigerator air sensor in relation to the user settings on the interface. If the temperature measured by the refrigerator air sensor is above the On threshold, a cooling demand is activated thereby starting the compressor and the refrigerator fan and opening the damper; on the contrary, if the refrigerator air sensor detects a temperature lower than the Off temperature, the cooling demand is deactivated.



Special Conditions

Optimisation of power consumption: Temperature adjustment follows different rules if the following conditions occur:

- Only ECO ON
- Temperature detected by PCB sensor (on the PCB) between two values parameterised in the EEPROM memory.
- Time since the last time the door was opened greater than the parameters stored in the EEPROM memory.
- Duration of last compressor On cycle less than a parameter stored in the EEPROM memory.

If these conditions are all met, with every cooling demand from the refrigerator compartment, because of the rise in the relative temperature above the set On threshold, also the freezer compartment is forced to transmit a cooling demand.

Cancellation of this situation can occur if at least one of the previous conditions is no longer detected, or because the condition persists for a time greater than the relative parameter set in the EEPROM memory.

LOADS MANAGEMENT:

Compressor Operation:

The compressor serves to compress the gas in the thermodynamic circuit in order to generate the necessary cooling capacity to chill the appliance compartments.

The compressor is managed by the Main PCB with the aid of a relay and a triac that trips, in parallel with the relay, only at the time of compressor power-on and power-off to protect the relay from electrical arcing when the contact is opened and closed, otherwise the compressor is powered exclusively via the relay when it is running.

The compressor is started whenever a cooling demand is received from either of the two compartments.

When both compartments no longer require cooling, the compressor will be switched off.

In certain conditions the compressor will remain stopped despite the presence cooling demands; these situations are as follows:

Compressor protection: the compressor switches on once a minimum safety time interval (parameterised in the EEPROM) has elapsed since the last power off, thereby allowing the pressure of gas to reach a point of equilibrium in the refrigerant circuit. The same minimum safety time is observed in the event of a mains power interruption (voluntary or involuntary). This compressor protection strategy is observed only after the product has been operating continuously for a number of hours defined in the memory. This facilitates the execution of factory tests.

Long periods of activity: if the compressor runs for a time greater than a value defined in the EEPROM memory, it is switched off even in the presence of a cooling demand from either or both compartments. This feature is designed to protect the compressor.

Pause after defrost: at the end of every defrost cycle the compressor observes a number of protection minutes parameterised in the EEPROM memory to allow the defrost water to drain completely.

DEFROST HEATING ELEMENTS AND DRIP TRAY:

Connection of the defrost and drip tray heating elements occurs when a defrost cycle is required; this event is controlled by the PCB by means of a procedure that considers that total compressor run time since the last defrost cycle, the duration of the last defrost cycle, and the duration of door open times. The purpose of the defrost heating element is to melt any ice on the evaporating coil. This ice compromises the heat exchange between the evaporator and the air, reducing the refrigeration properties in the two compartments of the appliance. The drip tray heating element melts any ice that detaches from the evaporator and falls into the drip tray, and also prevents blockage of the tube that transfers defrost water from the drip tray to the drain pipe.

The defrost and drip tray heating elements are connected in parallel and controlled by the PCB. When these heating elements are switched on, the compressor remains switched off, even in presence of cooling demands from either of the two compartments.

Deactivation of the heating elements is managed by the freezer evaporator sensor. When the temperature detected by the evaporator sensor reaches the value parameterised in the EEPROM memory, the defrost and drip tray heating elements are switched off. A defrost cycle cannot last more than a given time parameterised in the EEPROM memory.

At the end of each defrost cycle the number of hours is calculated that the compressor needs to run before starting the next defrost cycle. This calculation is performed on the basis of the duration of the defrost cycle that has just been terminated; specifically, if said duration is greater than an ideal value stored in the memory, for each fixed number of extra minutes parameterised in the memory one hour is deducted from the ideal value of compressor run hours parameterised in the memory; on the contrary, if the duration is less than the ideal value, for each fixed number of minutes below the ideal number an hour is added to the ideal value of compressor run hours.

This control makes it possible to anticipate the next defrost cycle if the defrost cycle that has just ended lasted too long, and vice versa. The duration of the defrost cycle can be related to the presence of ice on the evaporator coil, because a long defrost cycle means that an excessive amount of ice has accumulated on the coil. The duration of door open times between two defrost cycles contributes to reducing the number of compressor run hours that must be accumulated before the next defrost cycle. Specifically, each fixed number of minutes in which the door is open, as parameterised in the EEPROM memory, serves to reduce by one unit the number of compressor run hours that must be accumulated before the next defrost cycle.

Finally, the time that elapses between two defrost cycle can never be greater than a value parameterised in the EEPROM memory or lower than another value parameterised in the EEPROM; the first strategy serves to guarantee a defrost cycle at least every number of preset hours, while the second serves to avoid excessively frequent defrost cycles. If the last defrost cycle was interrupted according to timer control, the minimum time between defrost cycles is equal to another value parameterised in the EEPROM memory.

Special conditions in which a defrost cycle can occur:

1. If the SUPER FREEZE function is activated, there may be an immediate defrost cycle if the accumulated compressor run hours are more than a parameter set in the EEPROM memory, otherwise the function proceeds as specified.

A defrost during the SUPER FREEZE function is possible, specifically, after a number of hours from the end of the function as parameterised in the EEPROM memory, the compressor is switched off and a defrost cycle is executed, ending with the conditions already discussed for normal operation. At the end of this defrost cycle, the compressor is switched on again to complete the hours remaining for the SUPER FREEZE function.

2. Prolonged refrigerator door open time: in the case of a refrigerator door open time greater than a value parameterised in the EEPROM memory, the system activates forced defrost cycles managed as per normal operation, every number of hours parameterised in the EEPROM memory.

3. Optimisation of power consumption: connection of the defrost and drip tray heating elements is managed differently in the case of the conditions already described in the heading "Compartments adjustment" under the subheading "Special Conditions"; in this condition defrost requests are activated only in accordance with the time that has elapsed since the last defrost cycle on the basis of a parameter stored in the EEPROM memory. Defrosting is managed in the same manner as described above.

In order to check whether or not the defrost and drip tray heating elements are switched on, check whether the drip tray is hot or whether any water due to the melting of ice on the evaporator coil is coming out of the drain tube.

FREEZER FAN

The purpose of the freezer fan is to distribute the cold air, produced by the evaporator coil, inside the freezer compartment. The freezer fan, located in front of the evaporator coil, is switched on by the PCB.

The freezer fan is switched on after a time interval parameterised in the EEPROM memory from the time when the compressor was connected due to a freezer cooling demand. On the contrary, in the case of a refrigerator cooling demand the fan is started at the same time as the compressor. When the compressor is switched off also the fan is switched off.

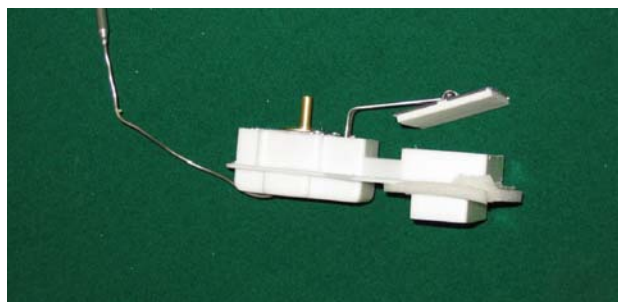


Pre-defrost: connection of the defrost and drip tray heating elements during a defrost cycle is preceded by activation of the freezer fan for a time interval parameterised in the EEPROM memory.

Post defrost: the delay in starting of the freezer fan in the event that the compressor is started for the first time after a defrost cycle is a parameter stored in the EEPROM memory and is different from the delay time utilised during normal operation. In order to check whether the freezer fan is running check for the presence of an air flow issued from the vents on the bottom of the freezer compartment.

DAMPER

The purpose of the damper is to allow the cold air produced by the evaporator coil to be distributed inside the refrigerator compartment. By means of the damper, which is positioned in the upper zone on the base of the refrigerator compartment, and by means of an air duct that connects the evaporator coil to the damper, cold air from the evaporator coil is distributed in the refrigerator compartment by means of openings on the multiflow unit.



Opening and closing of the damper are managed by the PCB through the activation of a triac on the board. The damper is opened in the presence of a cooling demand from the refrigerator compartment and when the compressor is running.

When there is no cooling demand from the refrigerator compartment, the damper is closed, even though the compressor may continue to run to meet cooling demand from the freezer compartment.

Pre-defrost: connection of the defrost and drip tray heating elements during a defrost cycle is preceded by opening of the damper and activation of the freezer fan for a time interval parameterised in the EEPROM memory.

Post defrost: the delay interval before opening the damper if the compressor is started for the first time after a defrost cycle is a parameter stored in the EEPROM memory.

Refrigerator Door: there exists a condition wherein, despite the fact that the compressor is running, the damper is not kept open; this is the case in which the refrigerator door is open: in this condition the damper is closed even in the presence of a cooling demand from the refrigerator compartment and when the compressor is running. The damper is opened again only when the fridge door is closed.

To check opening of the damper check whether there is an air flow from the vents on the base of the refrigerator compartment in the presence of an active cooling demand from the refrigerator compartment and simulating door closed conditions by applying a magnet.

To check closing of the damper check that there is no air flow from the vents on the multiflow unit on the base of the refrigerator compartment with the fridge door open and the freezer fan running.

FRIDGE LAMP OPERATION:

Housed in a light fixture, the fridge lamp serves to illuminate the refrigerator compartment. The lamp is controlled by a triac on the PCB and it switches on when the door is opened and switches off when it is closed.

If the door is kept open for more than a time interval parameterised on the PCB, the lamp will flash until the door is closed.



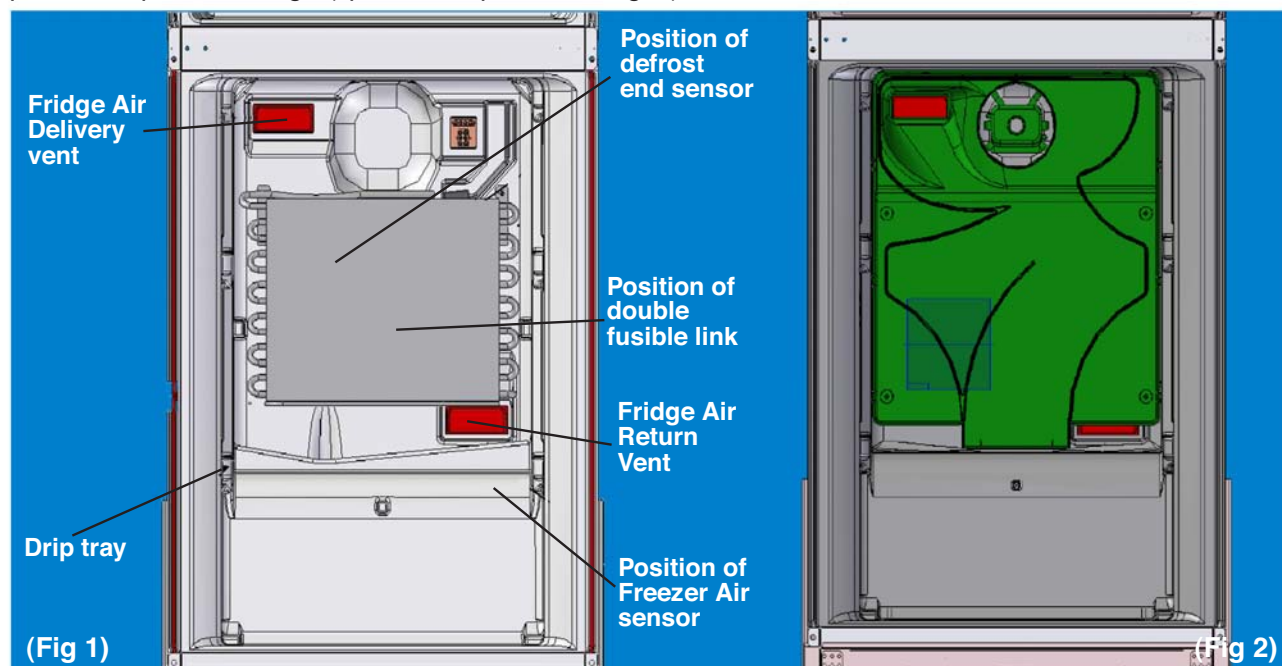
STATISTICS MANAGEMENT:

There are several parameters recorded in the memory that serve to identify the behaviour of the user and the appliance. The parameters are divided on a daily basis and recorded each week in rolling mode. When the current day is stored in the memory data for the oldest date are deleted.

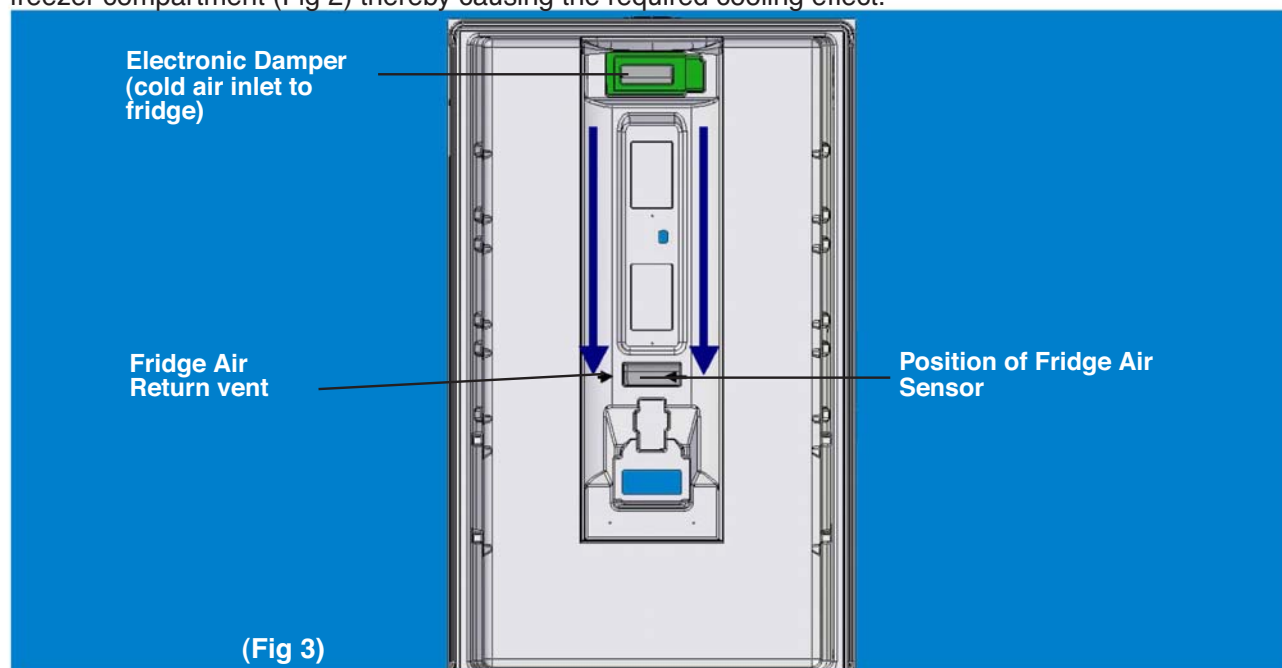
APPLIANCE THERMODYNAMICS:

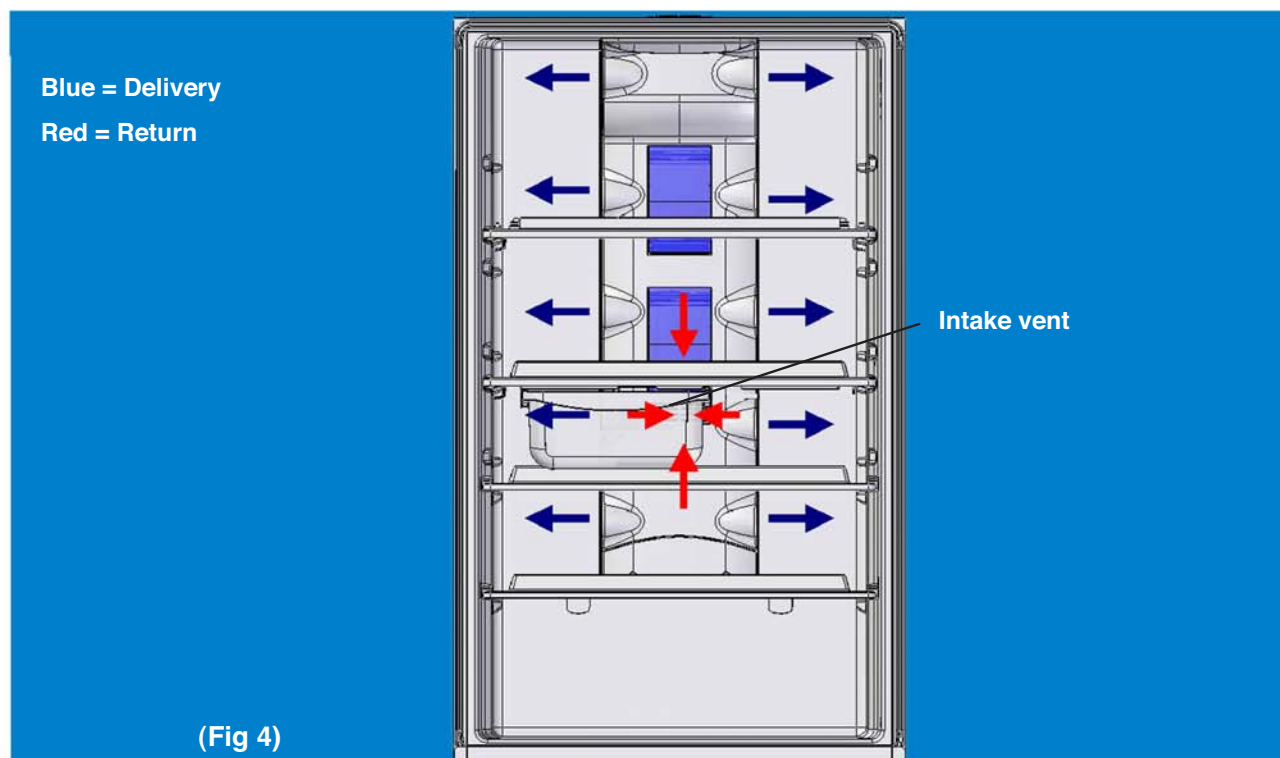
Interior chilling performance of new No-Frost appliance:

The refrigeration system of the new no frost refrigerator consists of a cooling circuit whose main elements are a vertical finned evaporator (Fig 1) and a fan located in the freezer compartment (behind the compartments partition - Fig. 2).

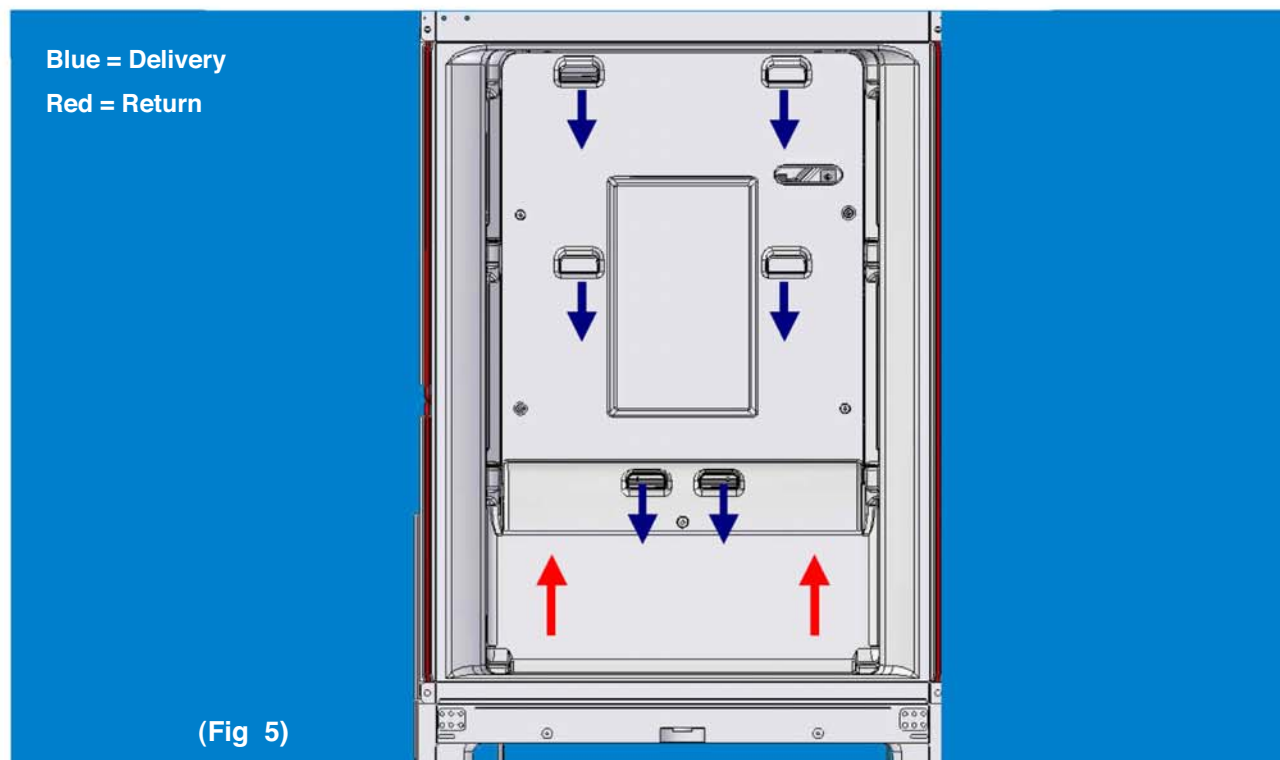


The cold air that flows through the evaporator coil is routed to the Refrigerator compartment (Fig 3) and the freezer compartment (Fig 2) thereby causing the required cooling effect.

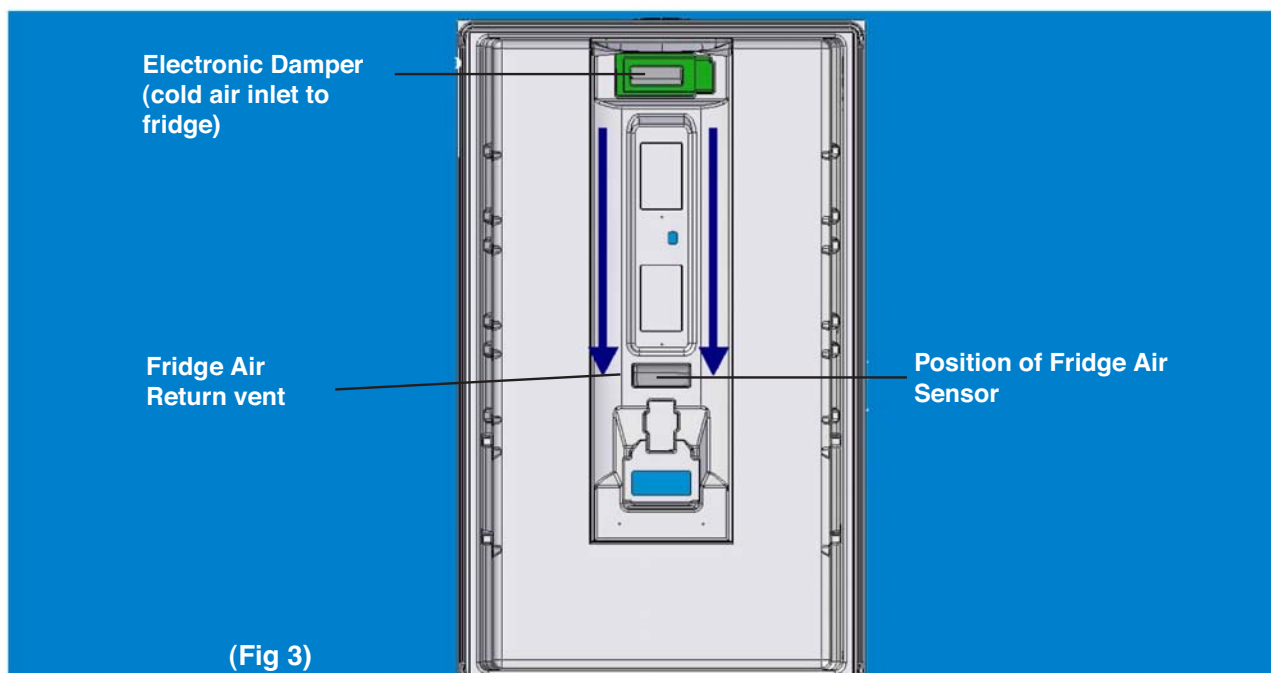
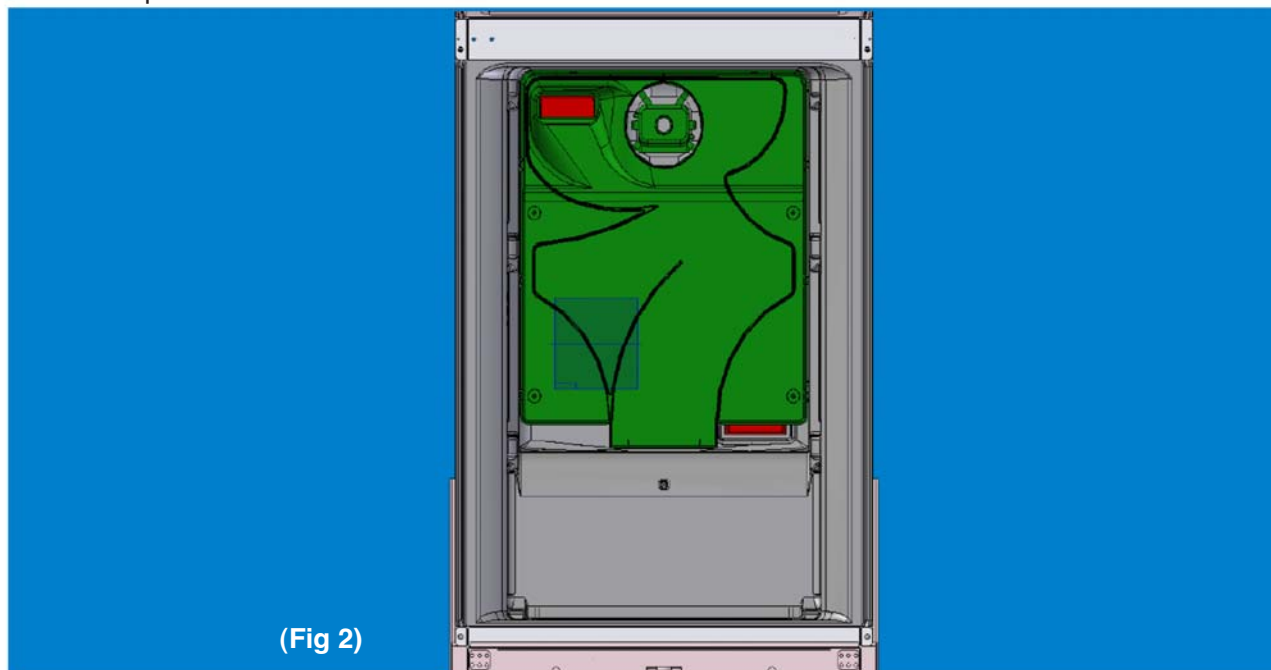


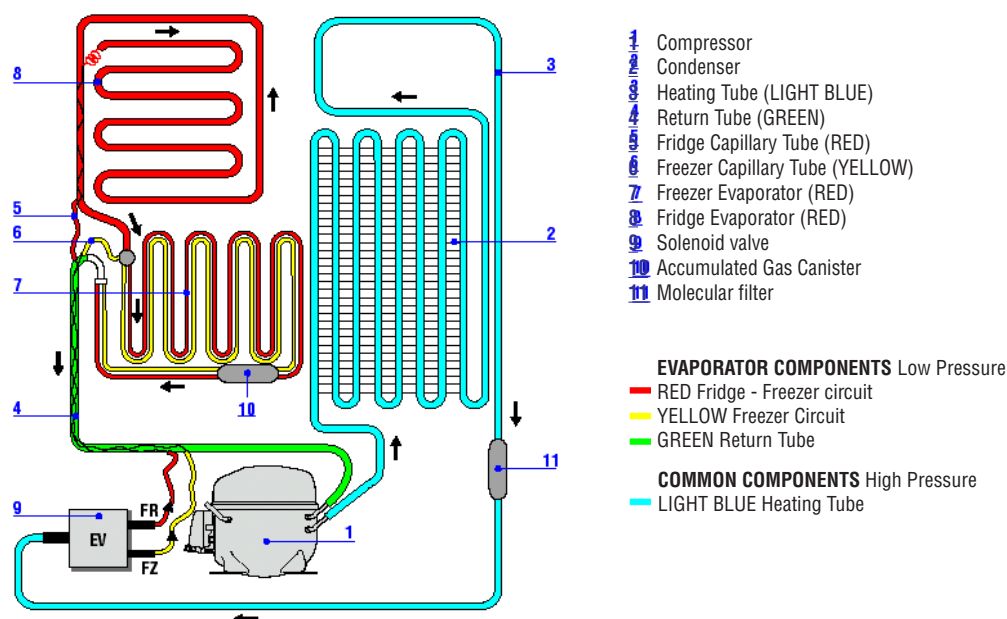


The cold air is delivered from the vents serving the refrigerator compartment (fig. 4) and the freezer compartment (fig. 5).



The thermodynamic cycle is closed thanks to the intake of refrigerator air (Fig 3) and freezer air (Fig 2), whereby the air heated after the thermal exchange is cooled and dehumidified by the coil. The ice that accumulates on the coil is periodically removed by means of a system of heating elements, and the resulting melt water is collected in the drip tray and routed through the drain tube to the compressor bowl from which it evaporates.



Functional description of the refrigerant circuit:

Cold is generated inside the appliance by means of constant variations of pressure and volume of a constant mass of refrigerant fluid.

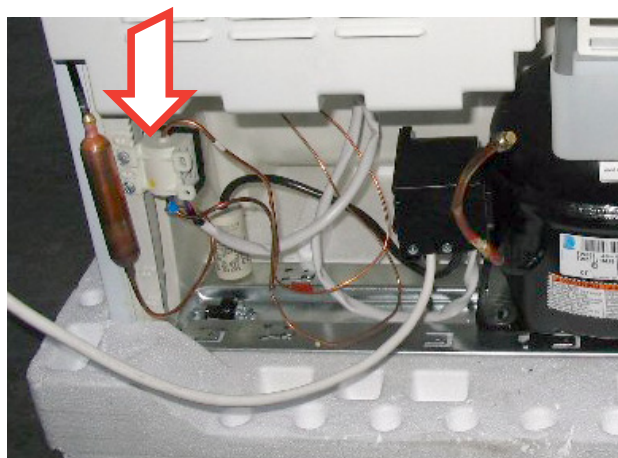
The refrigerant is compressed in the compressor, and due to the effect of the work expended by the compressor motor, it is brought to the state of superheated vapour. Before entering the condenser, the refrigerant passes through a hot anti-condensation tube.

In the condenser the refrigerant releases heat to the exterior environment and then, by flowing through the capillary tube, the refrigerant is subjected to a sudden pressure drop that enables it to evaporate at low temperature. The fluid evaporates inside the refrigerator and freezer evaporators.

During these phase changes the fluid absorbs heat from the surrounding environment thereby causing the refrigerator and freezer compartments to be chilled down to the required temperature values, which are regulated by means of suitable thermostat control.

Function of the solenoid valve:

The solenoid valve is controlled in such a way as to route the cold refrigerant to the refrigerator or freezer compartment depending on the user settings of the temperature adjustment knobs, thereby allowing full independence of cooling demands from the two compartments. When the cooling demand is transmitted from the freezer compartment the thermodynamic circuit is closed by the solenoid valve thereby intensifying cooling capacity in the freezer compartment. When the cooling demand comes from the refrigerator compartment the thermodynamic circuit causes the fluid to evaporate first in the refrigerator evaporator and then to cool also the freezer compartment.

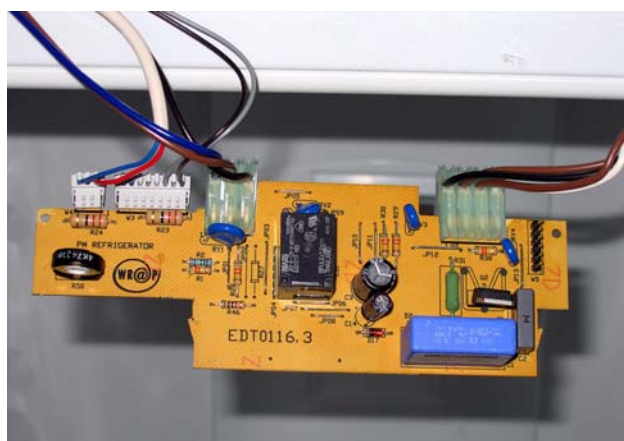


3. COMPONENTS:

ELECTRONIC THERMOSTAT NO FROST FRIDGE-FREEZER.



Control Panel



Thermostat PCB



Mechanical damper



Multiflow unit



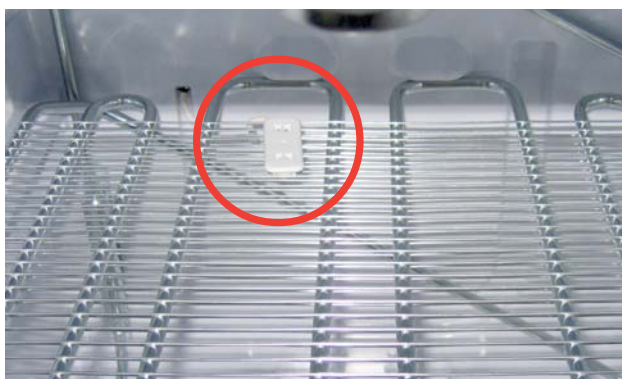
Mechanical damper sensor



Fridge compartment

**Freezer compartment****Light Fixture****Freezer compartment air sensor****Rear Components:****Key:**

- | | |
|---------------------------|-------------------|
| 1. Compressor Compartment | 4. Filter |
| 2. Compressor | 5. Delivery Tube |
| 3. Water Bowl | 6. Return Tube |
| | 7. Capillary tube |

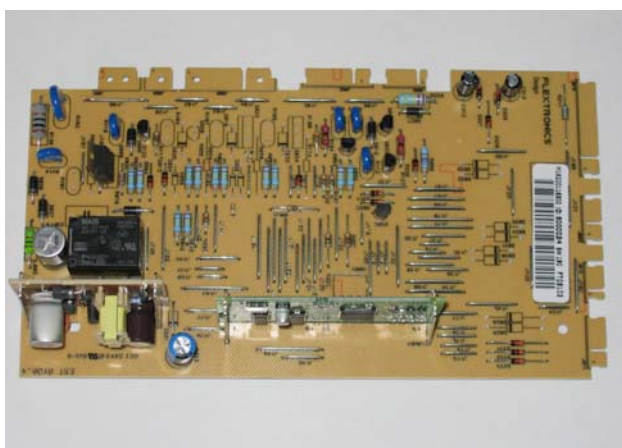
BASIC ELECTRONIC STATIC FRIDGE-FREEZER OR EVOLUTION MODEL**Basic control panel****Evolution control panel****Freezer Air Sensor****Freezer Evaporator****Fridge compartment****Freezer compartment**



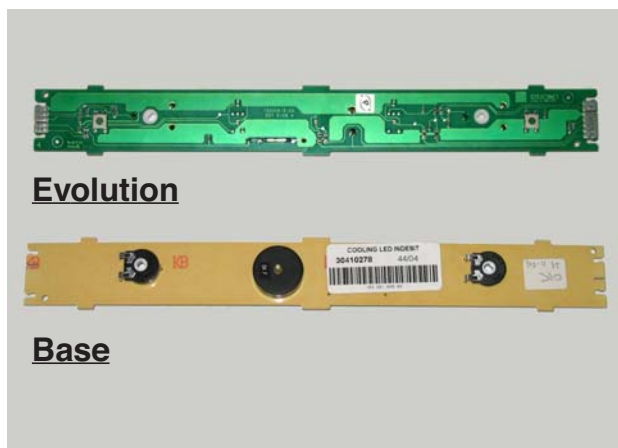
Fridge fan (evolution model only) and lamp holder



Ice container and drawer



Main PCB (strip)



Evolution

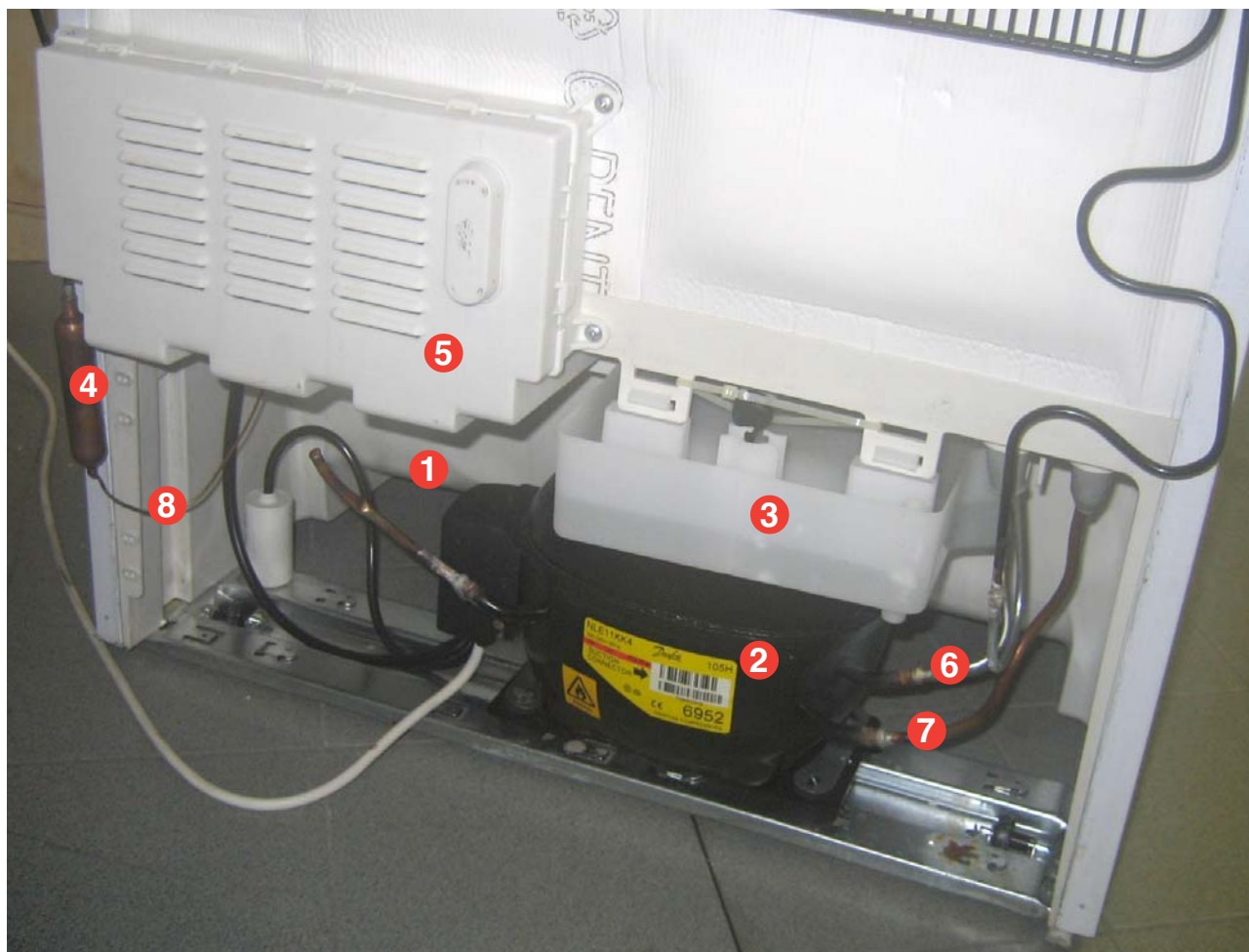
Base

Display/Interface PCB:



Main PCB Cover:

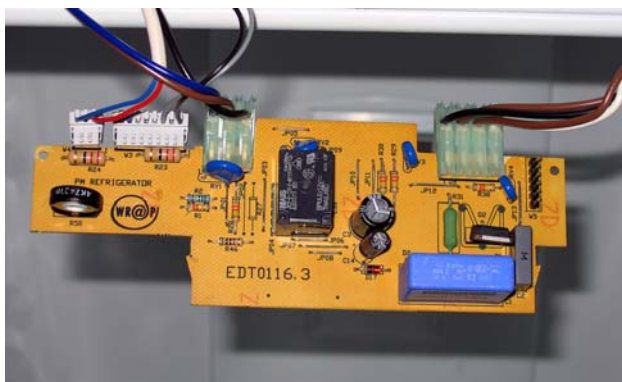
1. Main PCB Cover
2. Hardware Key Interface



Rear Components:

Key:

1. Compressor Compartment
2. Compressor
3. Water Bowl
4. Filter
5. Main PCB
6. Delivery Tube
7. Return Tube
8. Capillary tube

ELECTRONIC THERMOSTAT DOUBLE DOOR NO FROST.**Control Panel****Freezer Air Sensor****Thermostat PCB****Freezer compartment fan****Freezer compartment****Freezer compartment evaporator coil**



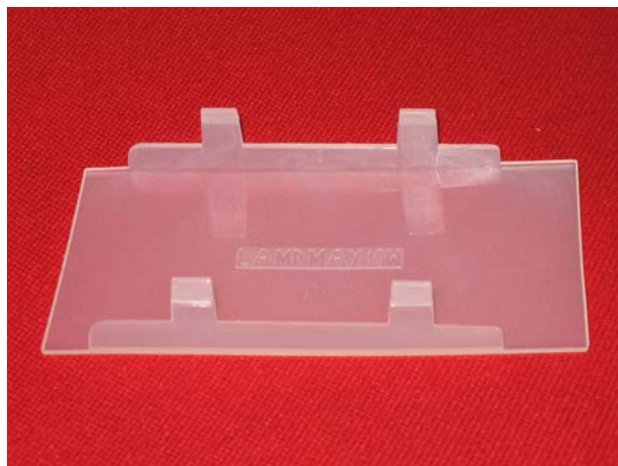
Fridge compartment



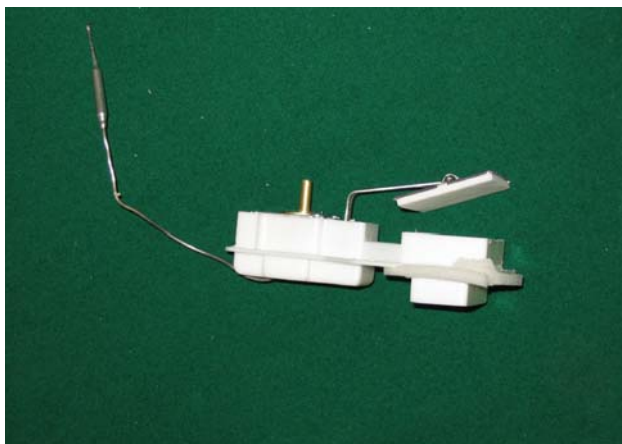
Damper Cover



Multiflow unit



Light Fixture



Mechanical damper



Mechanical damper sensor



Rear Components:

Key:

1. Compressor Compartment
2. Compressor
3. Water Bowl
4. Filter
5. Delivery Tube
6. Return Tube
7. Capillary tube

SPECIFICATIONS OF LOADS**REFRIGERANT CIRCUIT SOLENOID VALVES**

Dual state:	
Load type:	inductive
Electrical specifications (datasheet):	Voltage (V): 220-240 Frequency (Hz): 50-60 Resistance min/max(W): 1600/3750 \pm 10% at T=25°C
Control techniques:	Control is executed by transmitting a finite number of positive or negative half-waves of the voltage

FRIDGE AC FAN UNITS

Electrical characteristics (measured)	Voltage (V): 220-240 Frequency (Hz): 50-60 Resistance (W): - - Min/max Power (W): 3.5
Control techniques:	Control is executed by transmitting the entire mains voltage

FREEZER AC FAN UNITS

Electrical characteristics (measured)	Voltage (V): 220-240 Frequency (Hz): 50 Resistance (W): 529 \pm 10% Min/max Power (W): 3.1/16
Control techniques:	Control is executed by transmitting the entire mains voltage

HEATING ELEMENTS

Load type:	resistive
Electrical specifications (datasheet):	Voltage (V): 220V/240 Frequency (Hz): 50
drip tray:	Power (W): 30 \pm 10 Resistance (W): 1613 \pm 5%
evaporator coil Power (W):	125 \pm Resistance (W): 387 \pm 10%
Control techniques:	Control is executed by transmitting the entire mains voltage

ELECTRONIC DAMPER

Stepping:	
Load type:	2-phase stepper motor
Electrical specifications (datasheet):	Voltage (V): 12V DC Frequency (Hz): 50/60Hz Current (mA): 60
Control techniques:	Dual pole control

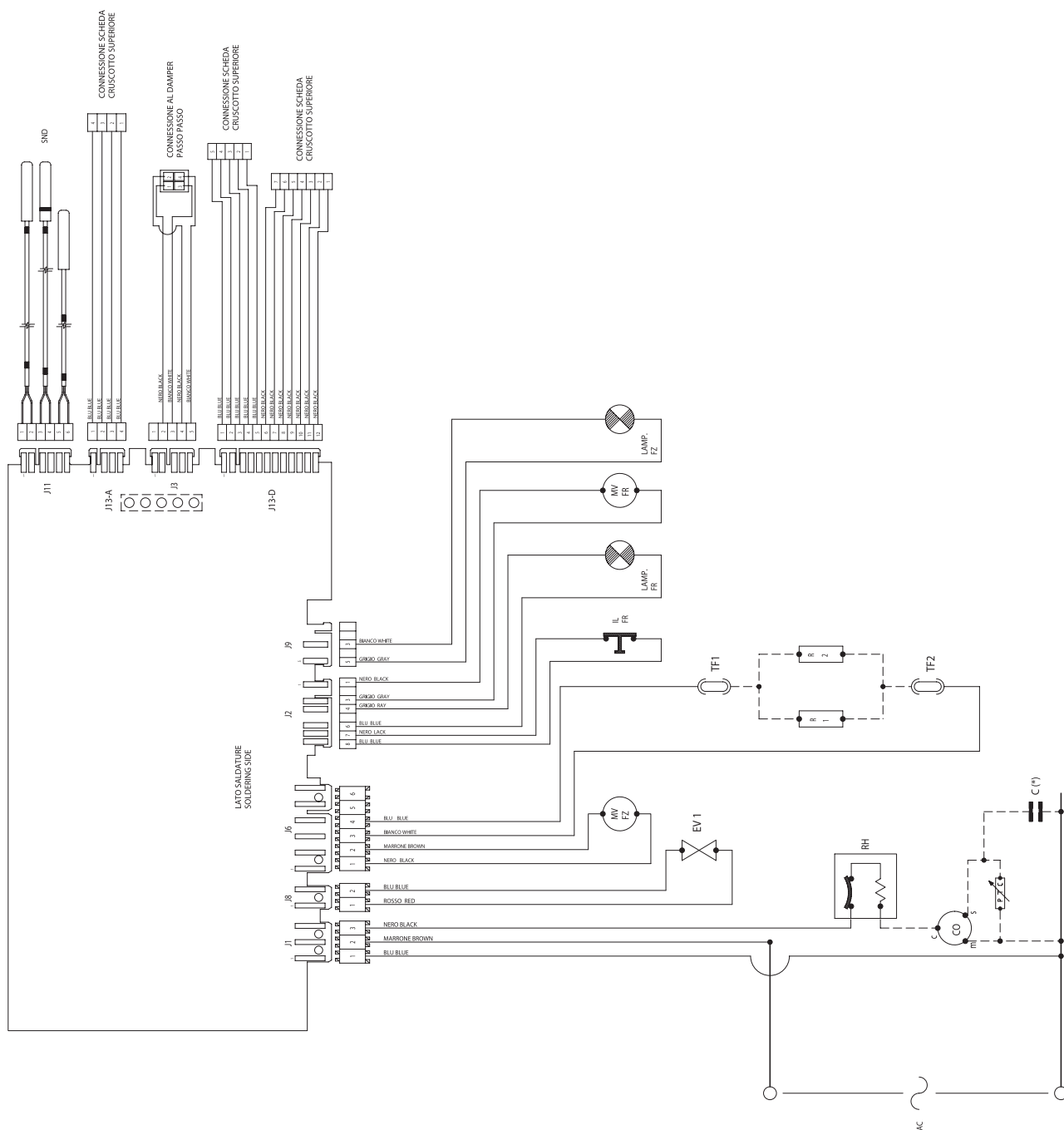
LAMPS

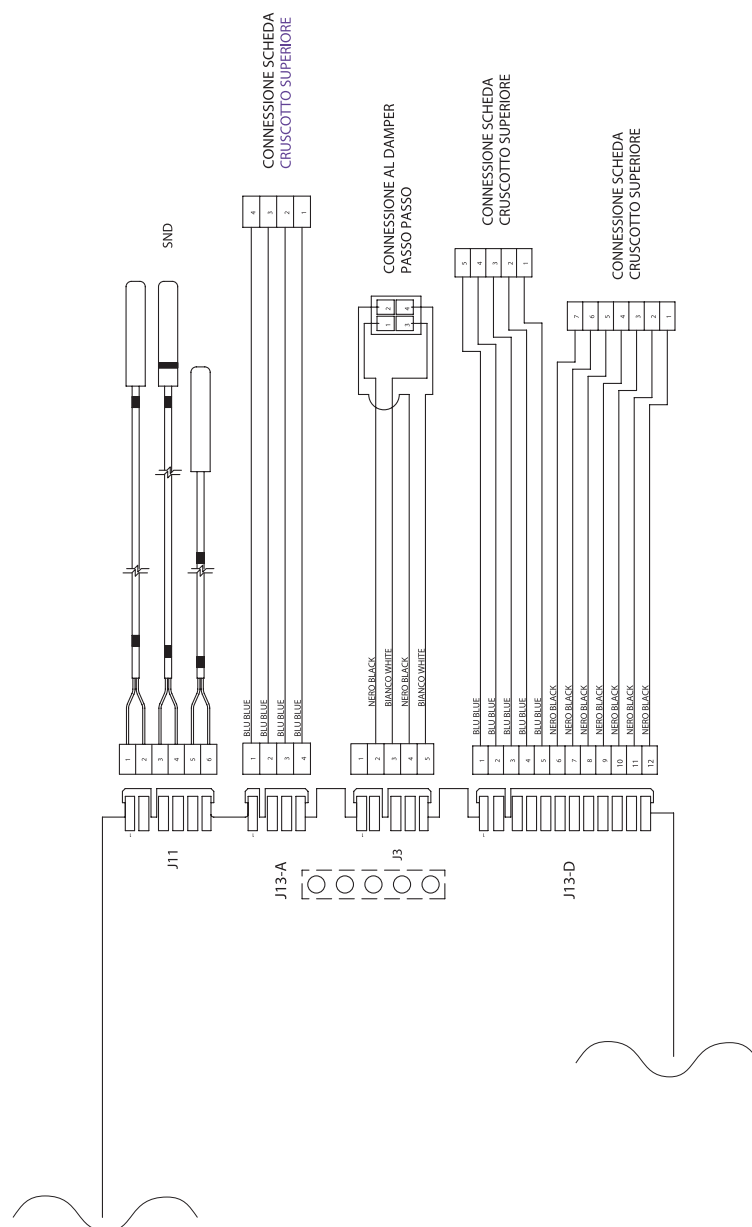
Load type:	resistive
Electrical specifications (datasheet):	Voltage (V): 220-240, 115-130 Frequency (Hz): 50-60, 60 Power (W): 10 Power (W): 15 Power (W): 25
Control techniques:	Control is executed by transmitting the entire mains voltage

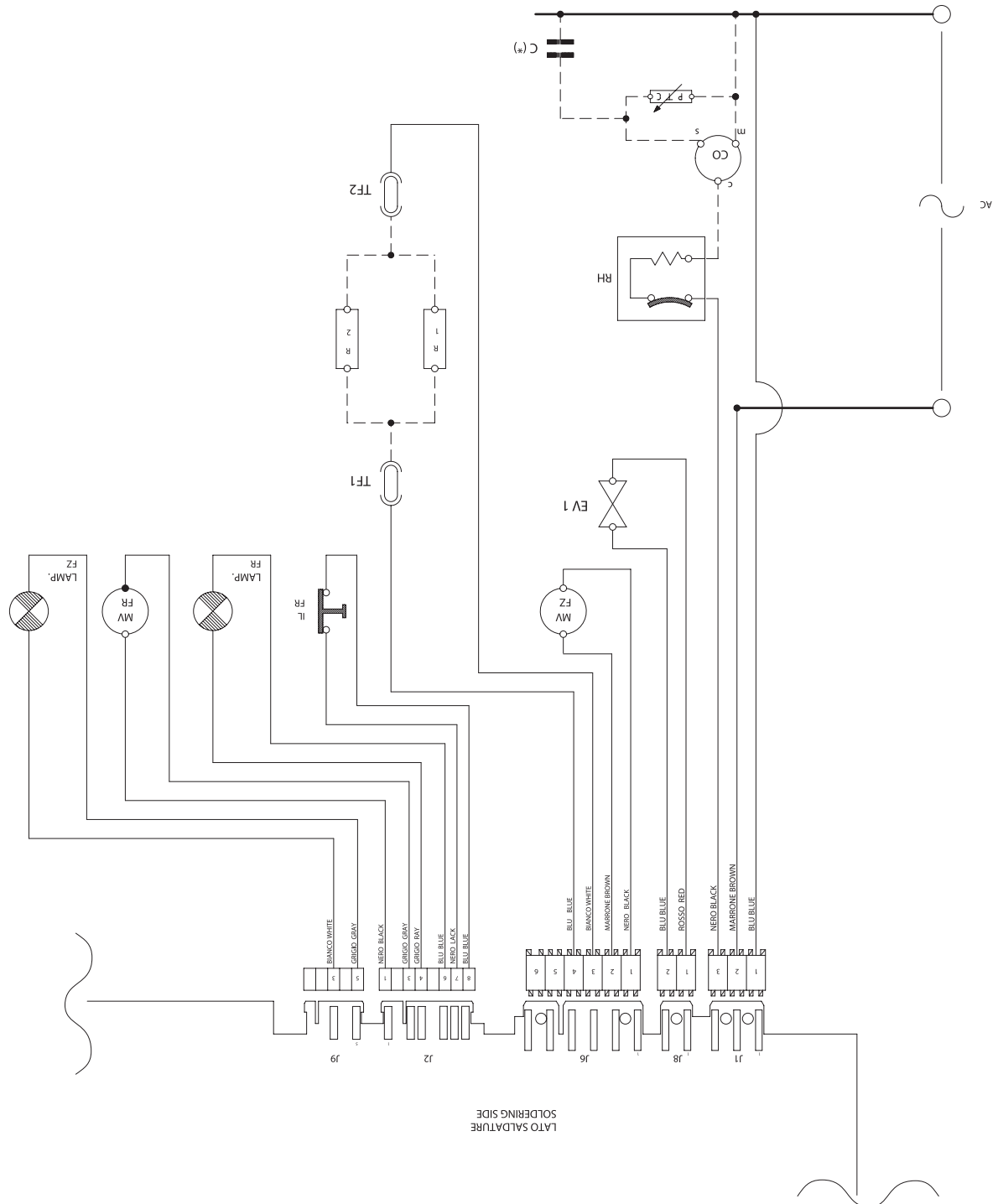
COMPRESSORS

Load type:	inductive
Electrical specifications (datasheet):	Voltage (V): 220-240 Frequency (Hz): 50-60
Control techniques:	Control is executed by transmitting the entire mains voltage

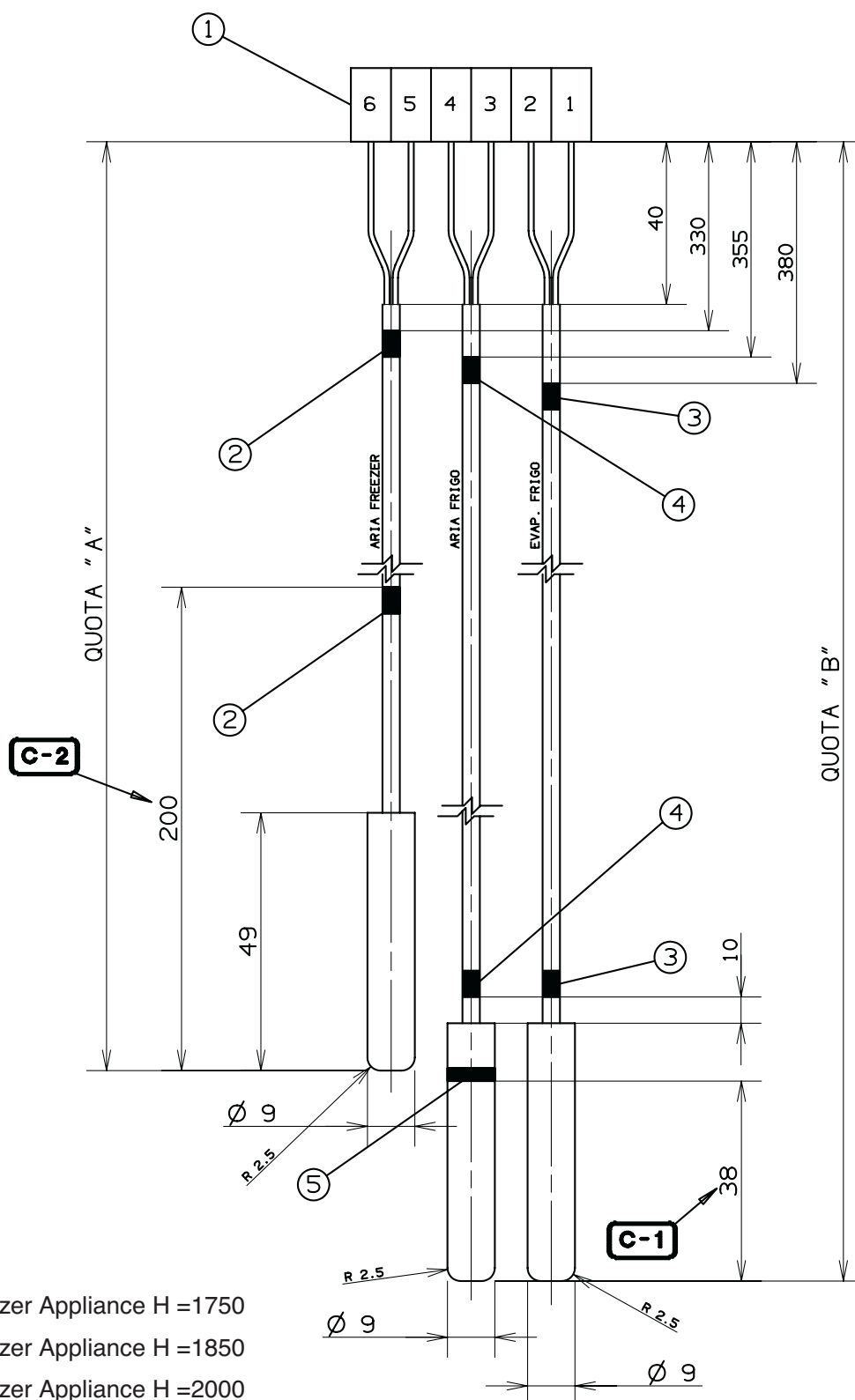
4. WIRING DIAGRAMS:







SENSOR DIAGRAM 1



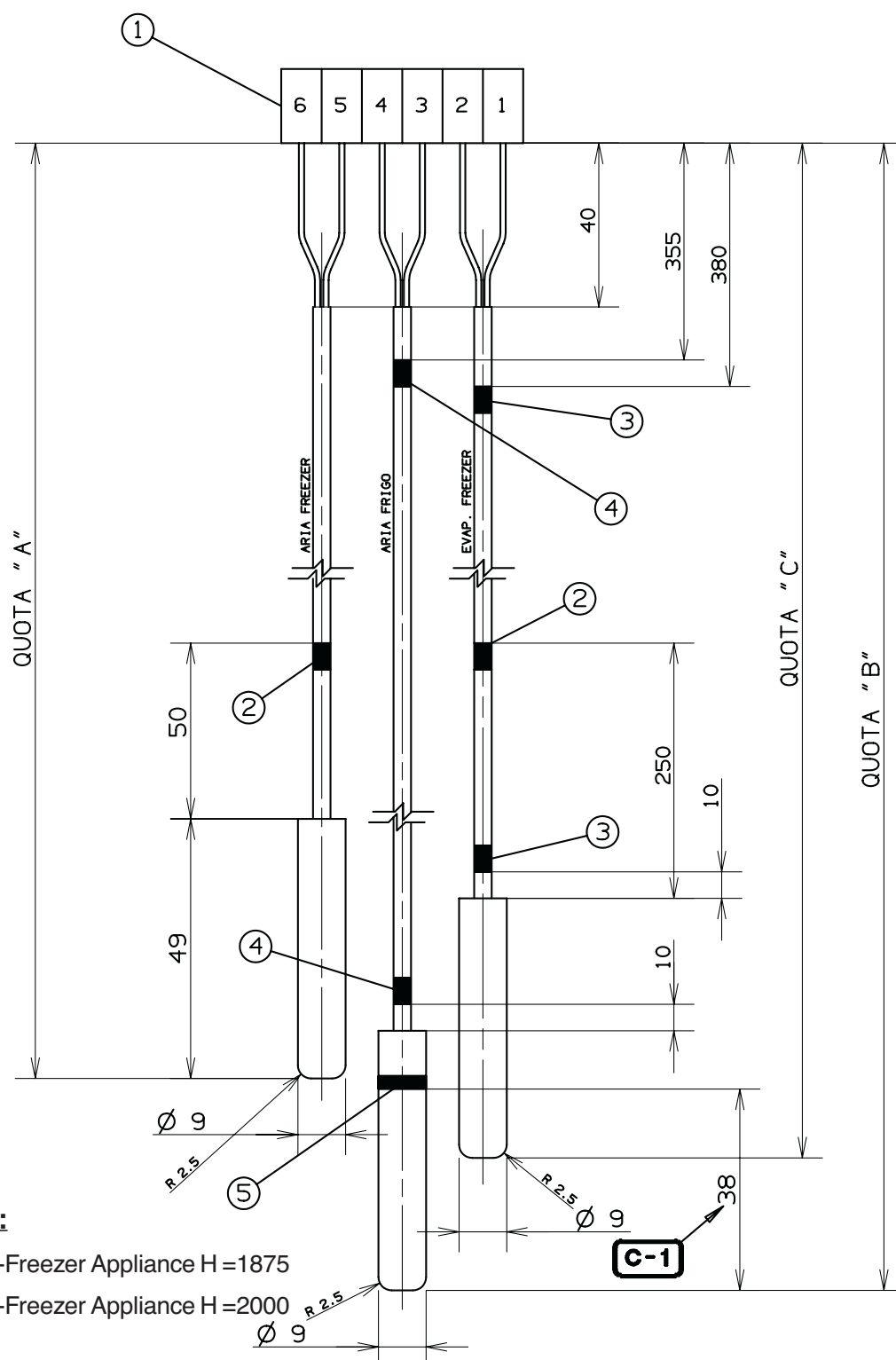
Used in:

Fridge-Freezer Appliance H =1750

Fridge-Freezer Appliance H =1850

Fridge-Freezer Appliance H =2000

SENSOR DIAGRAM 2

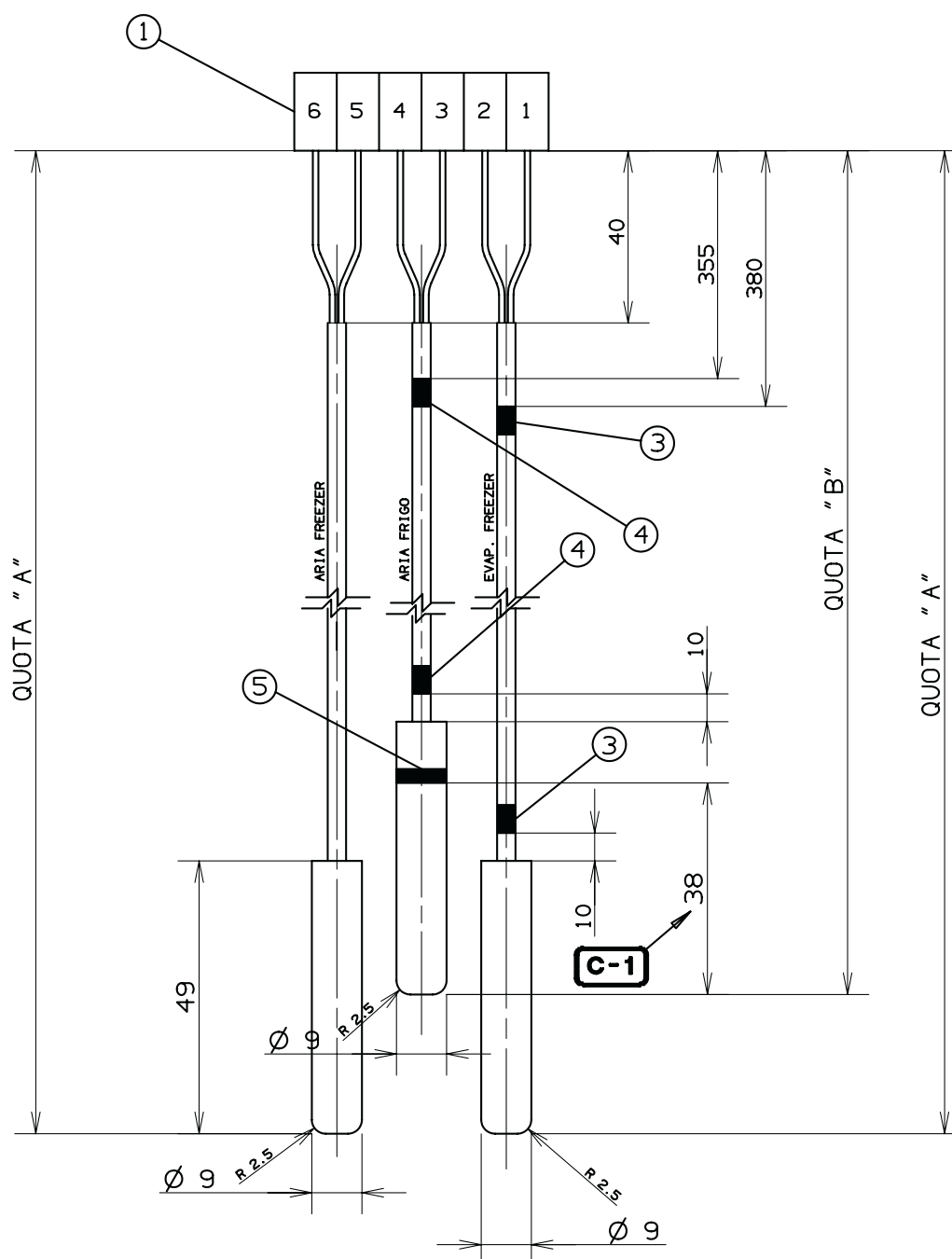


Used in:

NF Fridge-Freezer Appliance H = 1875

NF Fridge-Freezer Appliance H = 2000

SENSOR DIAGRAM 3

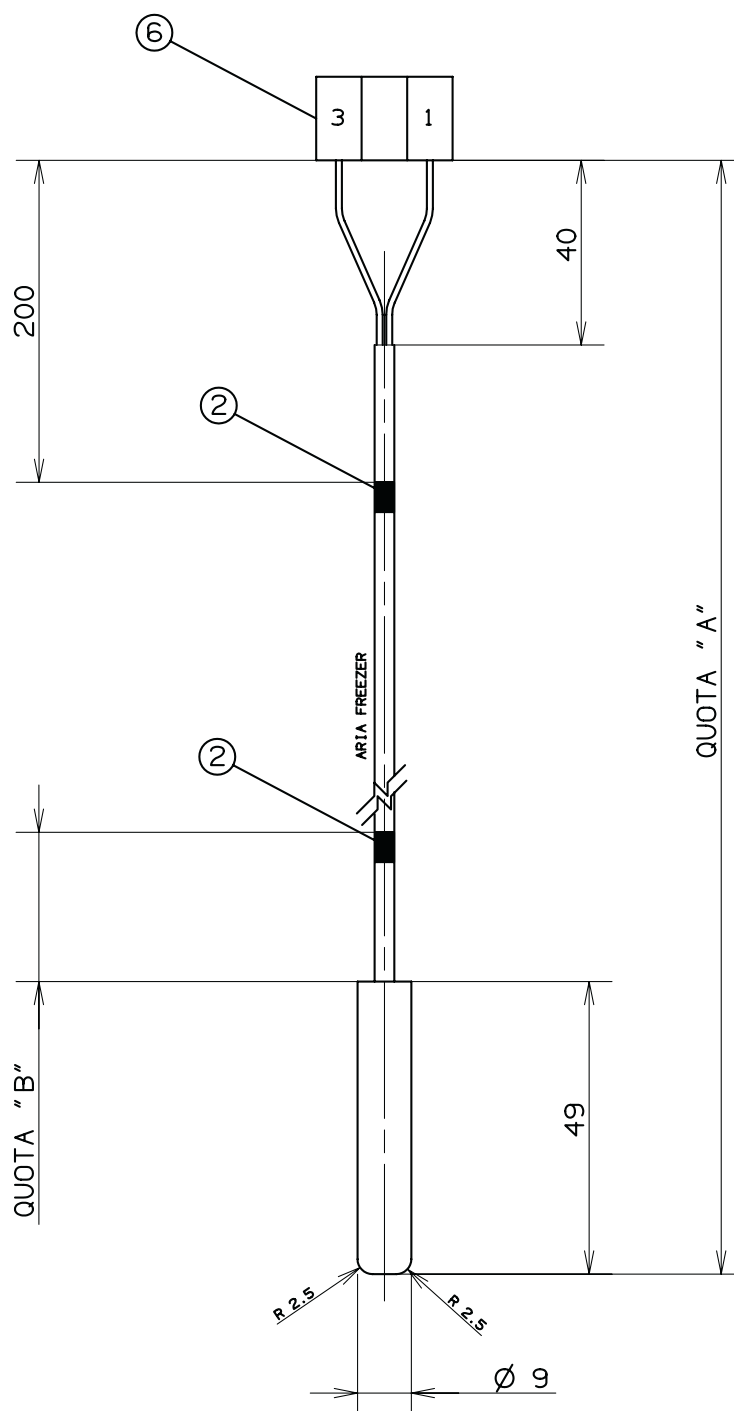


Used in:

Double Door Appliance H =1750

Double Door Appliance H =1850

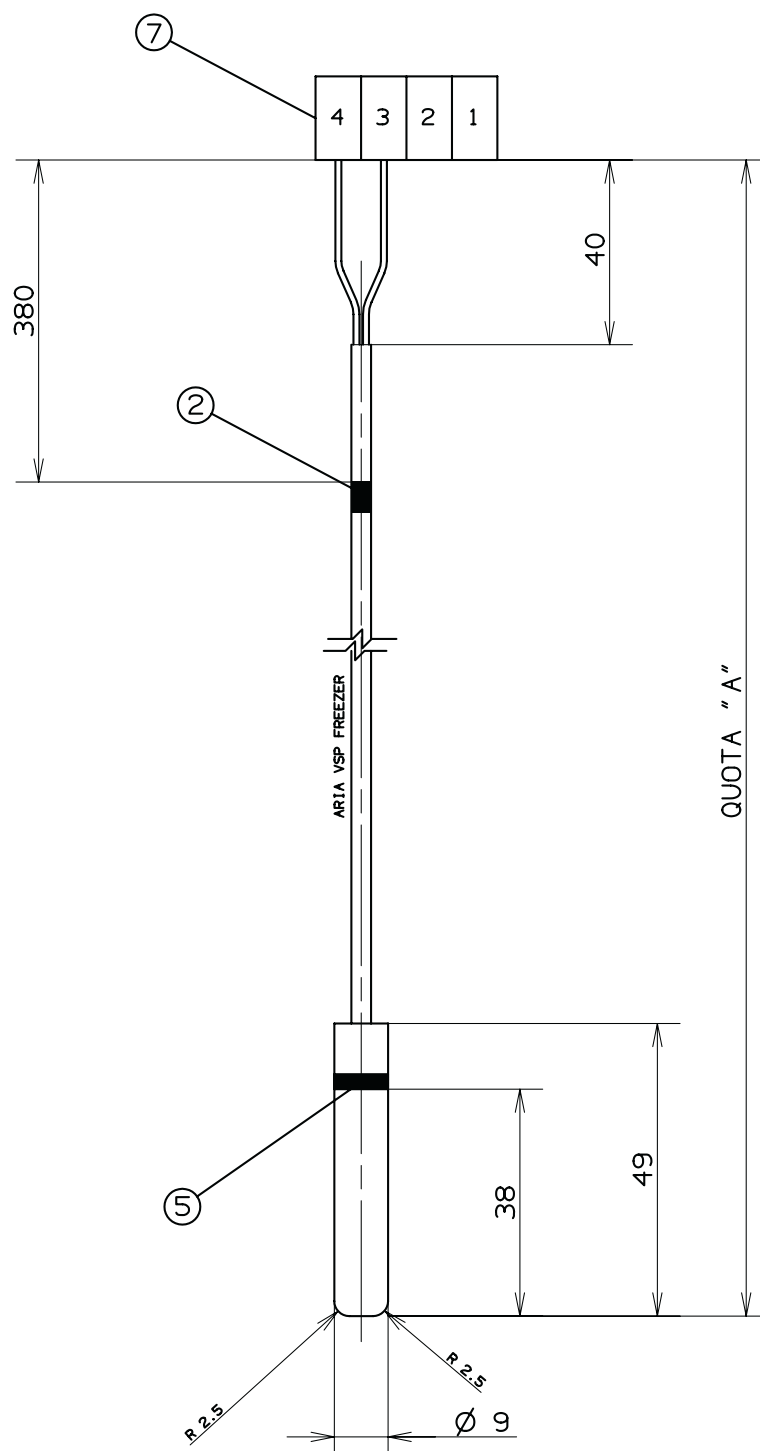
SENSOR DIAGRAM 4



Used in:

All products with mini PCB in control Panel

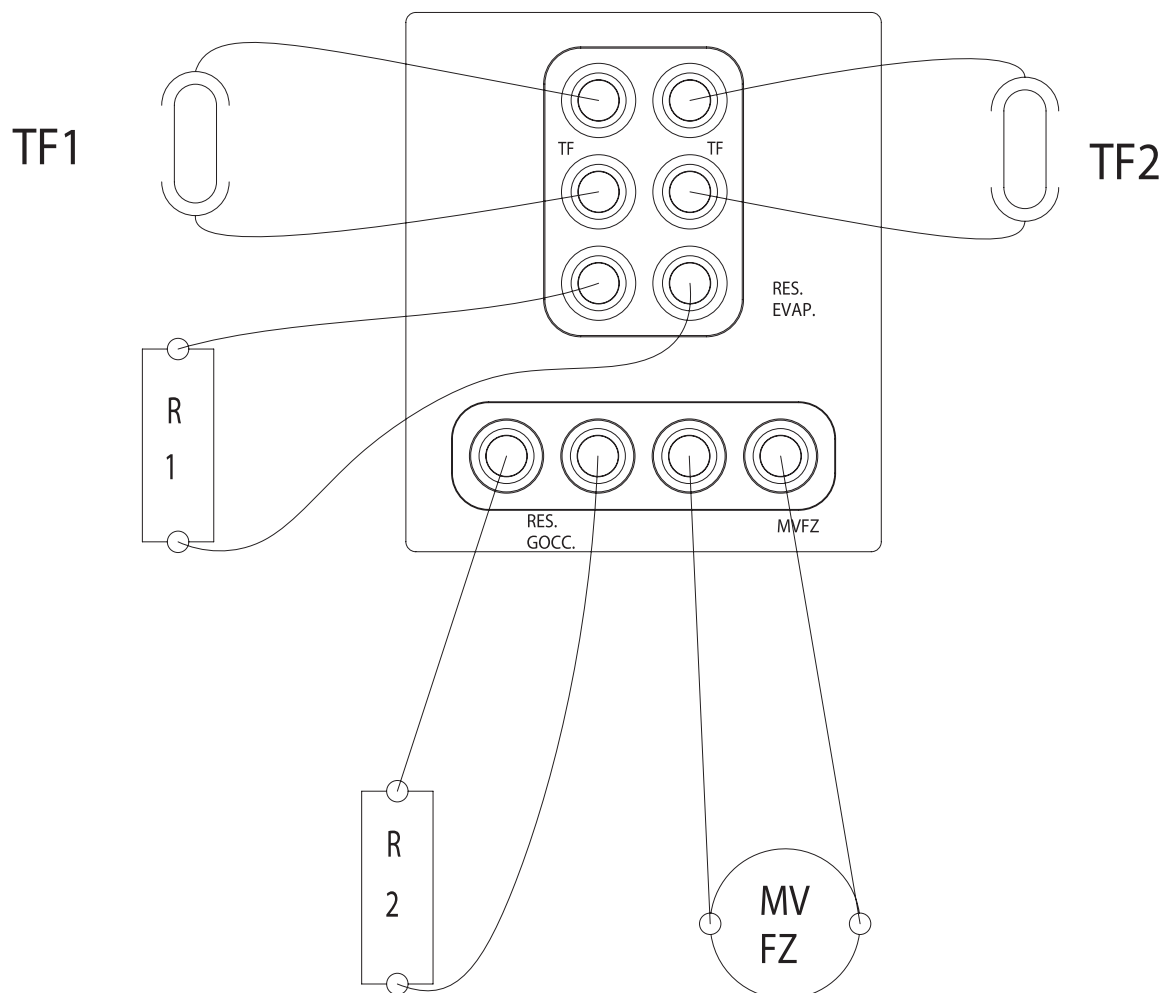
SENSOR DIAGRAM 5



Used in:

Fridge-freezer appliances with special compartment

FREEZER COMPARTMENT FRONT SIDE ELECTRICAL WIRING DIAGRAM



Used in all No Frost appliances:

- R1** = Coil heating element
- R2** = Drip tray heating element
- TF1 and TF2** = Fusible links
- MVZF** = Freezer fan motor

5. ASSISTANCE:

5.1. DEMO MODE:

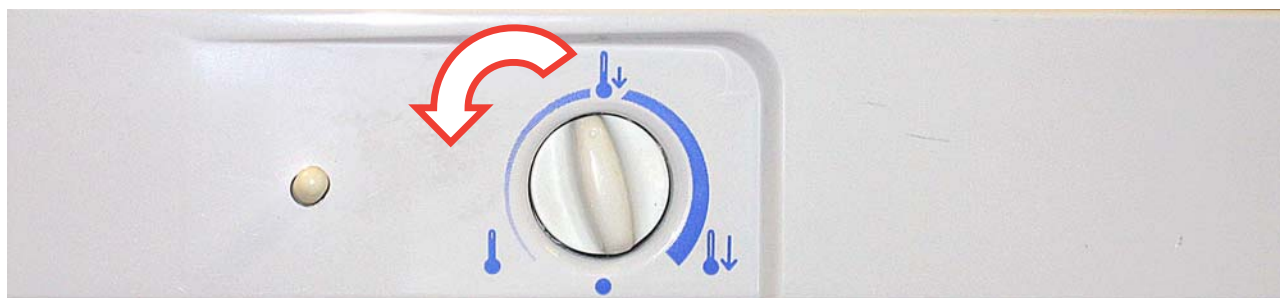
The refrigerators shown in this manual are not equipped with the Demo Mode procedure.

5.2. AUTO TEST:

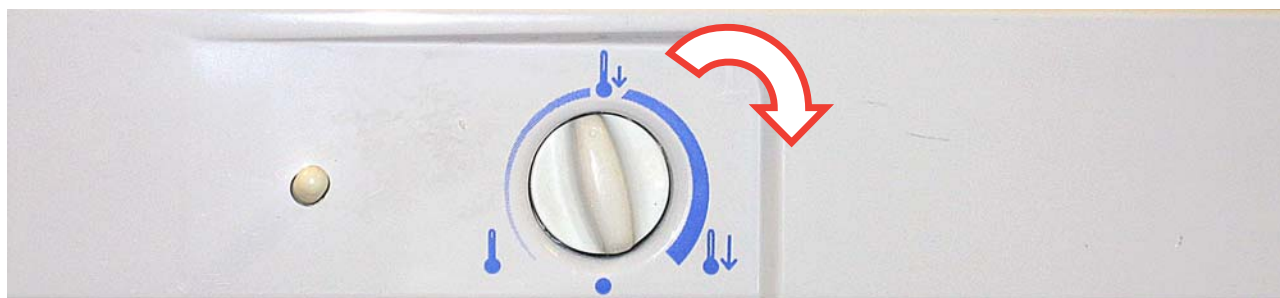
The appliances feature an Autotest procedure that is able to assess correct operation of various loads and sensors.

Electronic Thermostat Autotest:

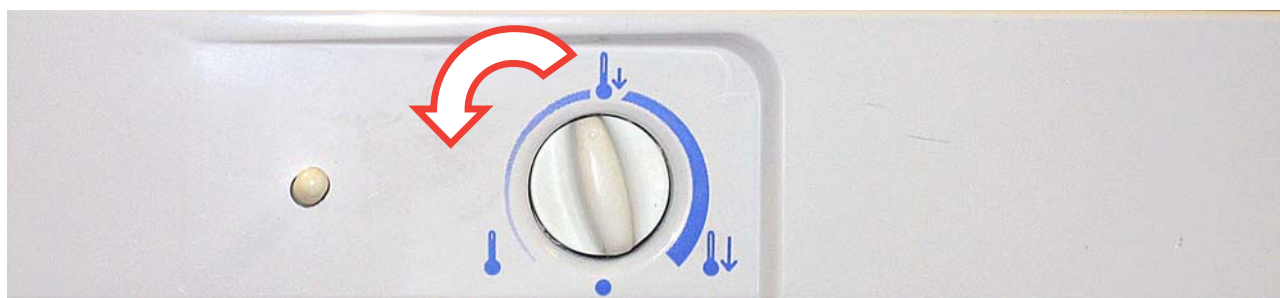
Activation of the Autotest procedure for this appliance must be performed by executing the following movements of the knob:



1. Turn the knob from its current setting to the minimum setting (appliance OFF position)



2. Turn the knob from OFF to the maximum setting.



3. Turn the knob from maximum to minimum (appliance OFF).

The function terminates automatically after 255 seconds.

You can interrupt the autotest function by switching on the appliance by means of the freezer knob or by disconnecting and reconnecting the mains power supply.

With regard to appliance loads driven by the PCB during the autotest procedure and the tested sensors, any faults will be signalled by flashing of the fridge lamp.

Autotest for: Basis Electronic Fridge Freezers. Electronic Digit Fridge Freezers, Basic No Frost Electronic Fridge Freezers.

Activation of the Autotest function for these appliances must be performed by executing the following procedure:



1. Turn the Fridge knob to the minimum position (compartment OFF).



2. Turn the Freezer knob to the minimum position (appliance OFF).



3. Press the SUPER FREEZER button for approximately 5 seconds.

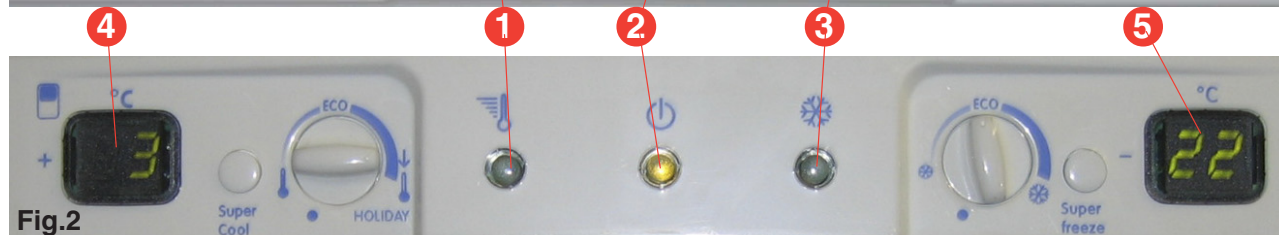
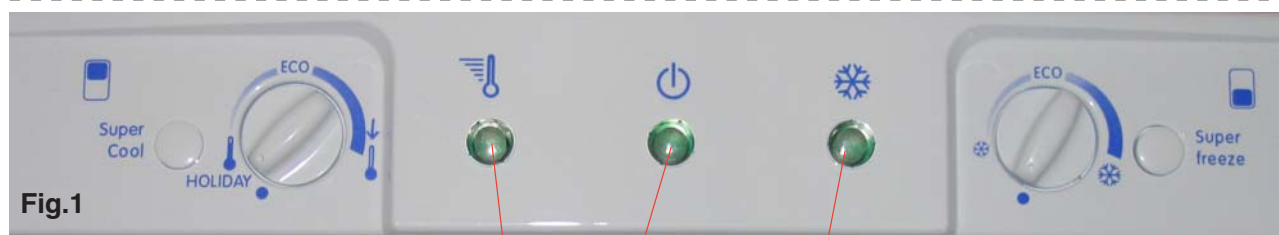
When the autotest procedure has been activated the 3 LEDs will illuminate steadily for approximately 5 seconds (if the digital interface is present the 2 digits will illuminate together with the LEDs).

The function terminates automatically after 255 seconds.

You can interrupt the autotest function by switching on the appliance by means of the freezer knob or by disconnecting and reconnecting the mains power supply.

With regard to appliance loads driven by the PCB during the autotest procedure and the tested sensors, any faults will be signalled by flashing of the fridge lamp.

5.2. FAULTS AND SOLUTIONS:



Key: 1 = LED 1; 2 = LED 2; 3 = LED 3; 4 = DIGIT FR; 5 = DIGIT FZ

The fault type can be signalled in various different ways:

1. by means of the LEDs in the case of the basic interface (see fig.1)
2. by means of the LEDs and digits in the case of the Evolution interface (see fig.2)

Reading of faults shown by LEDs

The control panel LEDs illuminate to show the fault in accordance with the following table (the LEDs remain lit as long as the fault persists).

Fault	Indication		
	Led1	Led2	Led3
F01	Off	Flashing	Off
F02	On	Flashing	Off
F03	Off	Flashing	On
F04	On	Flashing	On
F05	Flashing	Flashing	On
F06	On	Flashing	Flashing
F07	Off	Flashing	Flashing
F08	Flashing	Flashing	Off
F09	Flashing	Flashing	Flashing
F12	Off	Off	On
F14	On	Off	On
F21	On	On	Flashing
F22	Flashing	On	On
F23	Flashing	On	Flashing
F24	Off	On	Flashing
F25	On	Off	Flashing

LED Fault Table ■ **Critical Faults** ■ **Non-critical Faults**

The first 9 faults are critical: the user will have to call service to repair the appliance; the next 8 faults can be checked by a technical engineer by means of the autotest procedure.

5.2. DIGITAL FAULTS AND SOLUTIONS:



FAULT	CAUSE	CORRECTIVE ACTIONS
F01	Compressor relay sticking	<ul style="list-style-type: none"> - Check for water leaks that may affect connector J1 causing the relative contacts to short; - Check the motor terminal PCB (any problems due to incorrect connection may cause short-circuits); - Renew motor; - Renew PCB.
F02	Compressor relay open	<ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J1; - Check that there is an impedance value on wiring connector J1 between pins 3 and 2 that is compatible with the value given in the specific table. - Check that the compressor is not stopped due to overtemperature conditions (thermal cutout open) - Renew motor; - Renew PCB.
F03	Faulty power PCB	<ul style="list-style-type: none"> - Renew PCB.
F04	Freezer fan unit does not run	<ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J6; - Check impedance on wiring connector J6 pins 2 and 1, ensuring that the value is compatible with the value given in the relevant table; - Check correct connection of the freezer fan on the freezer compartment wiring junction box; - Renew freezer fan unit; - Renew PCB.
F05	Electronic damper does not open/close	<ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J3; - Check efficiency of the electronic damper connection to the foam embedded connector behind the multiflow unit; - Renew electronic damper; - Renew PCB.
F06	Short circuit of triac controlling defrost heating element	<ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J6; - Check condition by checking for impedance on wiring connector J6 pins 3 and 4 - Check connections of the defrost heating elements and possible short circuits on the freezer compartment wiring junction box; - Renew heating element. - Renew PCB.
F07	No power draw of defrosting heating element	<ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J6; - Check for continuity of the defrost heating element on pins 3 and 4 of connector JK6, ensuring that the impedance value read is compatible with the value given in the relevant table; - Check for the correct connection of the defrost heating element and the drip tray heating element on the freezer compartment wiring junction box; - Check the correct impedance value on the defrost heating element across the heating element terminals; - Check that the fusible links are not open; - Renew defrost heating element; - Renew PCB.

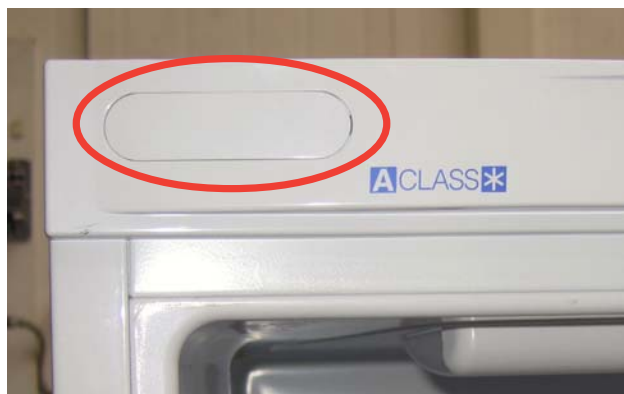
FAULT	CAUSE	CORRECTIVE ACTIONS
F08	Incorrect switching of solenoid valve	<ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J8; - Check for impedance on wiring connector J8 pins 2 and 1 and ensure that the value is compatible with the value given in the relevant table; - Check correct switching of the solenoid valve. Check, with the compressor running, that the solenoid valve switches when the refrigerator compartment is set to OFF by means of the temperature control knob - Renew solenoid valve; - Renew PCB.
F09	File setup error (EEPROM not programmed or faulty).	<ul style="list-style-type: none"> - In the case of an original production PCB, renew PCB and EEPROM; - In the case of replacement PCB and EEPROM, check correct insertion of EEPROM in PCB socket.
F12	No communication between display PCB and control PCB	<p>For LED interface PCB:</p> <ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J13; - Check continuity of connector J13 / 5-way and 7-way connectors of LED PCB; - Renew main PCB; - Renew display PCB; <p>For Digit interface PCB:</p> <ul style="list-style-type: none"> - Check efficiency of contacts on PCB connector J13; - Check continuity of connector J13 / 4-way interface PCB connector; - Renew main PCB; - Renew display PCB.
F14	FRIDGE Evaporator NTC sensor open / short circuit	<ul style="list-style-type: none"> - Renew PCB.
F21	Faulty power PCB	<ul style="list-style-type: none"> - Renew PCB.
F22	FRIDGE Air NTC sensor open / short circuit	<ul style="list-style-type: none"> - Check efficiency of contacts of PCB connector J11; - Check NTC sensor, ensuring that the impedance value read on pins 3 and 4 of wiring connector J11 is compatible with the values in the temperature-impedance correlation table (also heat the sensor by holding it with your hand where possible and checking the change in the impedance value); - Renew PCB.
F23	FREEZER Air NTC sensor open / short circuit	<ul style="list-style-type: none"> - Check efficiency of contacts of PCB connector J11; - Check NTC sensor, ensuring that the impedance value read on pins 1 and 2 of wiring connector J11 is compatible with the values in the temperature-impedance correlation table (also heat the sensor by holding it with your hand where possible and checking the change in the impedance value) - Renew PCB. - Renew appliance
F24	Ambient NTC sensor UI	<ul style="list-style-type: none"> - Check efficiency of contacts of PCB connector J11; - Check NTC sensor, ensuring that the impedance value read on pins 5 and 6 of wiring connector J11 is compatible with the values in the temperature-impedance correlation table (also heat the sensor by holding it with your hand where possible and checking the change in the impedance value); - Renew PCB.
F25	FREEZER Evaporator NTC sensor open / short circuit	<ul style="list-style-type: none"> - Check efficiency of contacts of PCB connector J11; - Check NTC sensor, ensuring that the impedance value read on pins 1 and 2 of wiring connector J11 is compatible with the values in the temperature-impedance correlation table (also heat the sensor by holding it with your hand where possible and checking the change in the impedance value) - Renew PCB.

5.5. TROUBLESHOOTING:

PROBLEM	ANALYSIS
Fails to switch on.	<ul style="list-style-type: none"> - Check voltage on socket outlet. - Check power cord.
Compressor fails to start	<ul style="list-style-type: none"> - Check continuity of windings - Check operation of Klixon relay. - Faulty PCB. - Appliance set to OFF.
Compressor runs but appliance fails to cool.	<ul style="list-style-type: none"> - Compressor is cold - check refrigerant charge. - Compressor is very hot - Check for traces of oil or refrigerant circuit is blocked. - Check for possible faulty compressor.
Compressor unable to start.	<ul style="list-style-type: none"> - Faulty Klixon relay. - Faulty compressor. - Mains voltage very low.
Water under crisper drawers.	<ul style="list-style-type: none"> - Drain hole blocked. - Container or wrapping paper touching refrigeration wall.
Water on floor.	<ul style="list-style-type: none"> - Condensate collection bowl broken. - Water drain tube incorrectly positioned. - Condensate collection bowl not in contact with compressor.
Compressor fails to stop.	<ul style="list-style-type: none"> - Faulty thermostat. - Incorrectly positioned thermostat. - Unsuitable installation on electrical Klixon. - Door fails to close properly. - Refrigerant circuit insufficient charge or blocked.
Compressor fails to start.	<ul style="list-style-type: none"> - Damaged compressor. - Check Thermostat/PCB.
Door open alarm sounds continuously.	<ul style="list-style-type: none"> - No magnet in door. - Faulty PCB. - Door is distorted.
Display switches off intermittently.	<ul style="list-style-type: none"> - Check display cable. - Check display PCB.
For No-Frost appliances: the compartments are insufficiently cold.	<ul style="list-style-type: none"> - Evaporator coil clogged with ice. - Check fusible link. - Check heating elements.
For No-Frost appliances: the refrigerator compartment does not cool properly.	<ul style="list-style-type: none"> - Chilled air suction fan motor. - Ice has formed in the duct between the refrigerator and freezer compartments.
Refrigerator compartment too cold - food tends to freeze.	<ul style="list-style-type: none"> - Check temperature sensors.

5.6. DISASSEMBLY:**NO FROST ELECTRONIC THERMOSTAT.****Removing the Display PCB:**

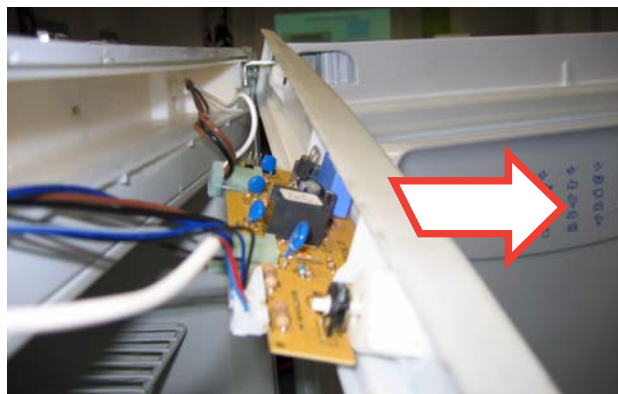
1. Remove plastic cover from both sides of the refrigerator.



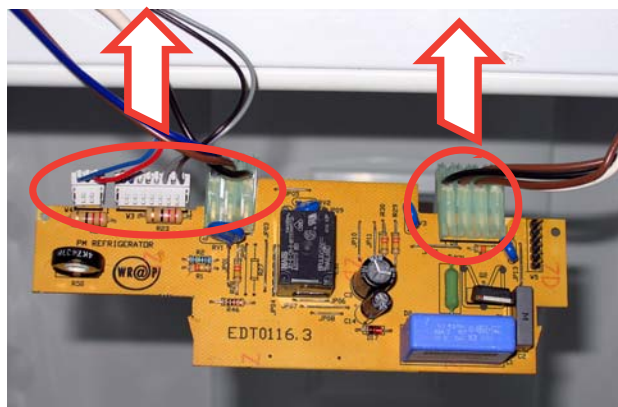
2. Unscrew the two screws (one for each side) responsible for securing the control panel.



3. Pull the control panel (pressure fit) and remove the temperature control knob.



4. Disconnect the PCB terminals.

**Removing fridge-freezer refrigerator compartment components:**

1. Remove fridge compartment shelves.



2. Remove damper temperature adjustment knob.



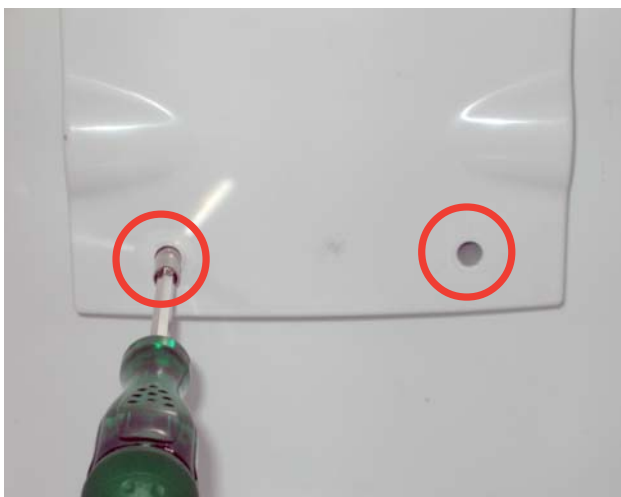
3 Remove plastic cover from light fixture.



5 Pull multiflow unit causing it to slide downwards by a couple of centimetres.



4 Unscrew the screws at base of multiflow unit and screw inside lamp holder.



6 Disconnect terminals from lamp holder.



7 Extract pressure-fit damper and remove with your hands.



Removing Fridge-Freezer freezer compartment components:

1 Remove the drawer from the freezer compartment.



2 Unscrew the five cover screws.



3 Insert a slotted screwdriver into the cover upper holes to unclip the cover.



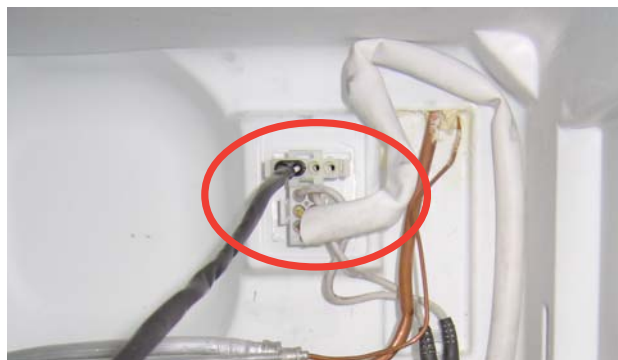
4 Pull cover forward.



5 Detach the two clips (one on each side). Pull outwards.



6 Disconnect fan terminals.



Removing double door appliance freezer compartment components:

1. Remove small plastic cover.



3 Pull cover.



2. Insert a slotted screwdriver in both sides of the cover and detach.



4 Unscrew the two screws holding the internal part of the cover at the point in which the fan is mounted.



5 Pull cover outwards.



6 Detach fan connector.



N.B.: The freezer compartment air temperature sensor is attached to a specific location.



To remove or refit, simply apply pressure in the necessary direction. To remove the cover of the freezer compartment air return vent simply insert a slotted screwdriver in the outer part and press upwards, taking care you do not break off the fixing clips.



To remove the cover of the freezer compartment air return vent simply insert a slotted screwdriver in the outer part and press upwards, taking care you do not break off the fixing clips.

Disassembling double door appliance fridge compartment:

1. Detach the two lamp covers.



2 Unscrew the two screws that secure the multiflow unit to the interior wall of the refrigerator compartment

- 3 Pull the multiflow unit causing it to slide downwards, taking care not to damage the damper sensor.



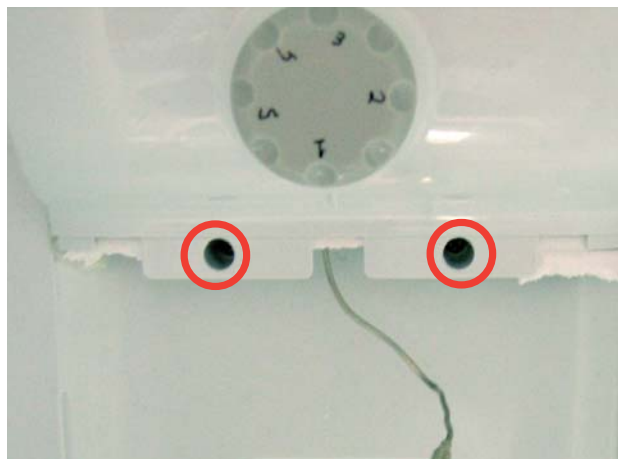
- 4 Disconnect the lamps power terminal.



- 5 Remove the damper temperature adjustment knob.



- 6 Unscrew the two screws that secure the plastic cover and withdraw the cover by pushing it downwards.

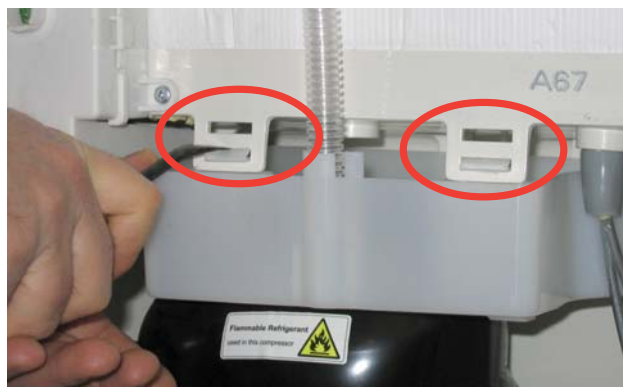


- 7 The damper features a pressure-fit systems. To remove it no tools are required.



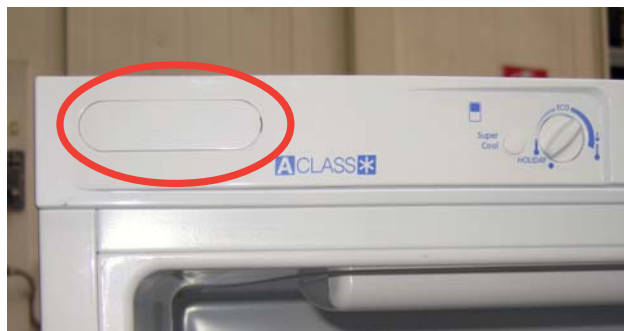
Removing the water collection bowl:

1. Use a screwdriver to detach the clips on both sides.
2. After detaching the clips remove the compressor compartment.



BASIC ELECTRONIC STATIC FRIDGE-FREEZER OR EVOLUTION MODEL**Removing the Display PCB:**

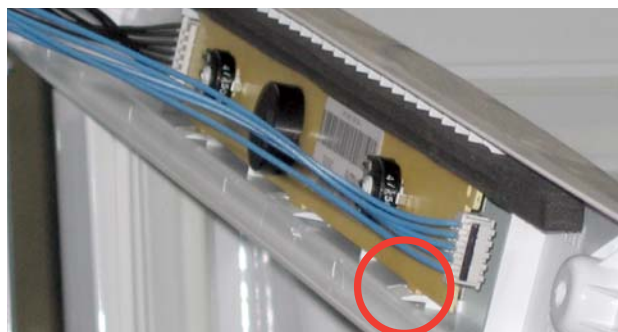
1. Remove plastic cover from both sides of the refrigerator.
3. Disconnect the PCB terminals.



2. Unscrew the two screws (one on each side) responsible for securing the control panel.



4. Press the fixing tabs and remove the PCB

**Removing the fan:**

1. Remove the refrigerator fan cover by pressing with your hand on one of the two sides and then extract it.



2. Unscrew the two screws (one on each side) responsible for fixing the fan.

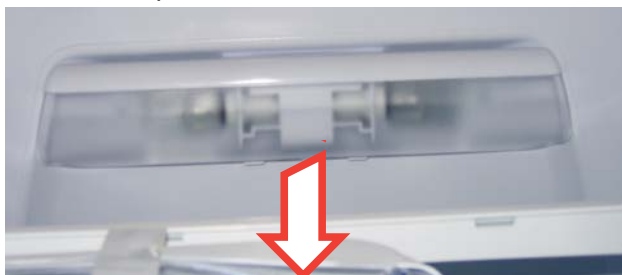


3. Detach the connector.



Removing the Lamp holder:

1. Slide the plastic cover to the rear.



2. Remove cover.



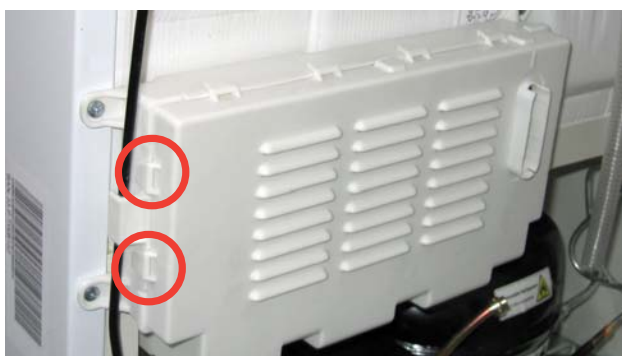
3. Unscrew the screws on both sides of lamp holder.



4. Disconnect the terminal board.

**Removing the Main PCB:**

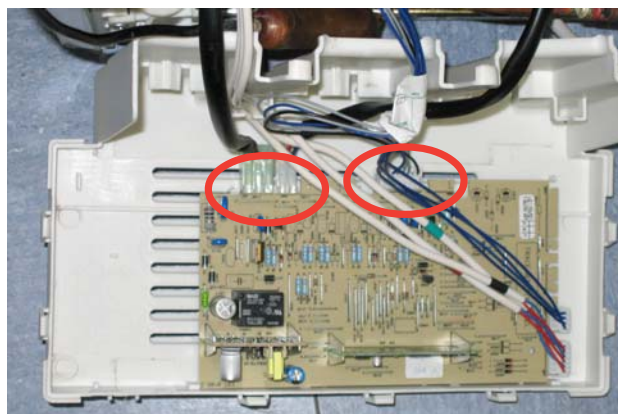
1. Undo the plastic clips securing the plastic cover.

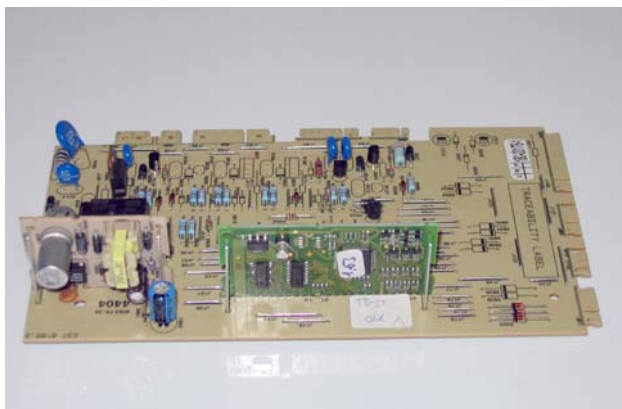


2. Remove the cover.



3. Disconnect the PCB terminals.





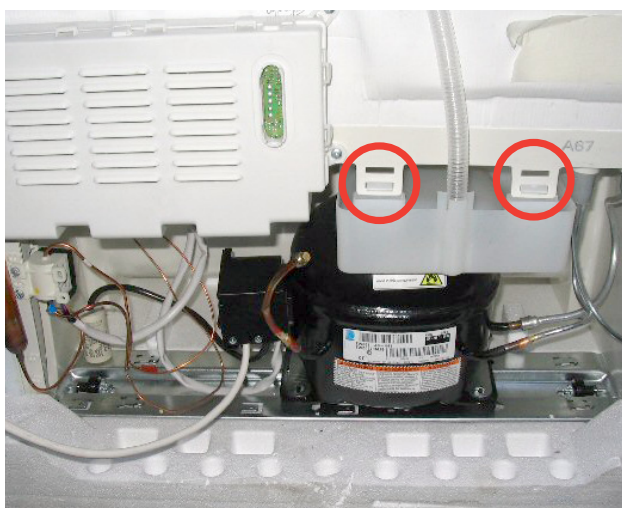
4. Remove PCB from cover.

Removing the water collection bowl:

1. Use a screwdriver to detach the clips on both sides.

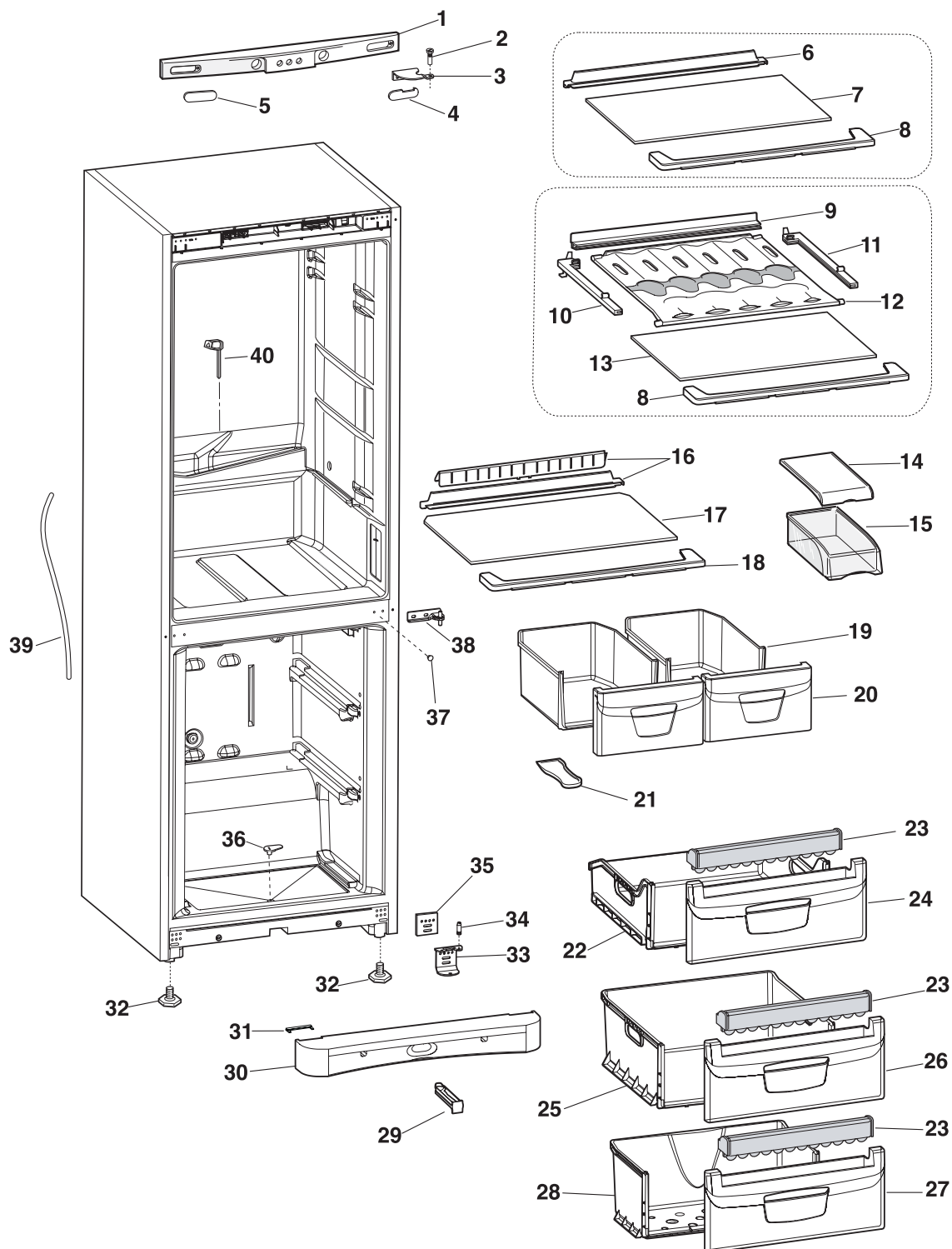


2. After detaching the clips remove the compressor compartment.



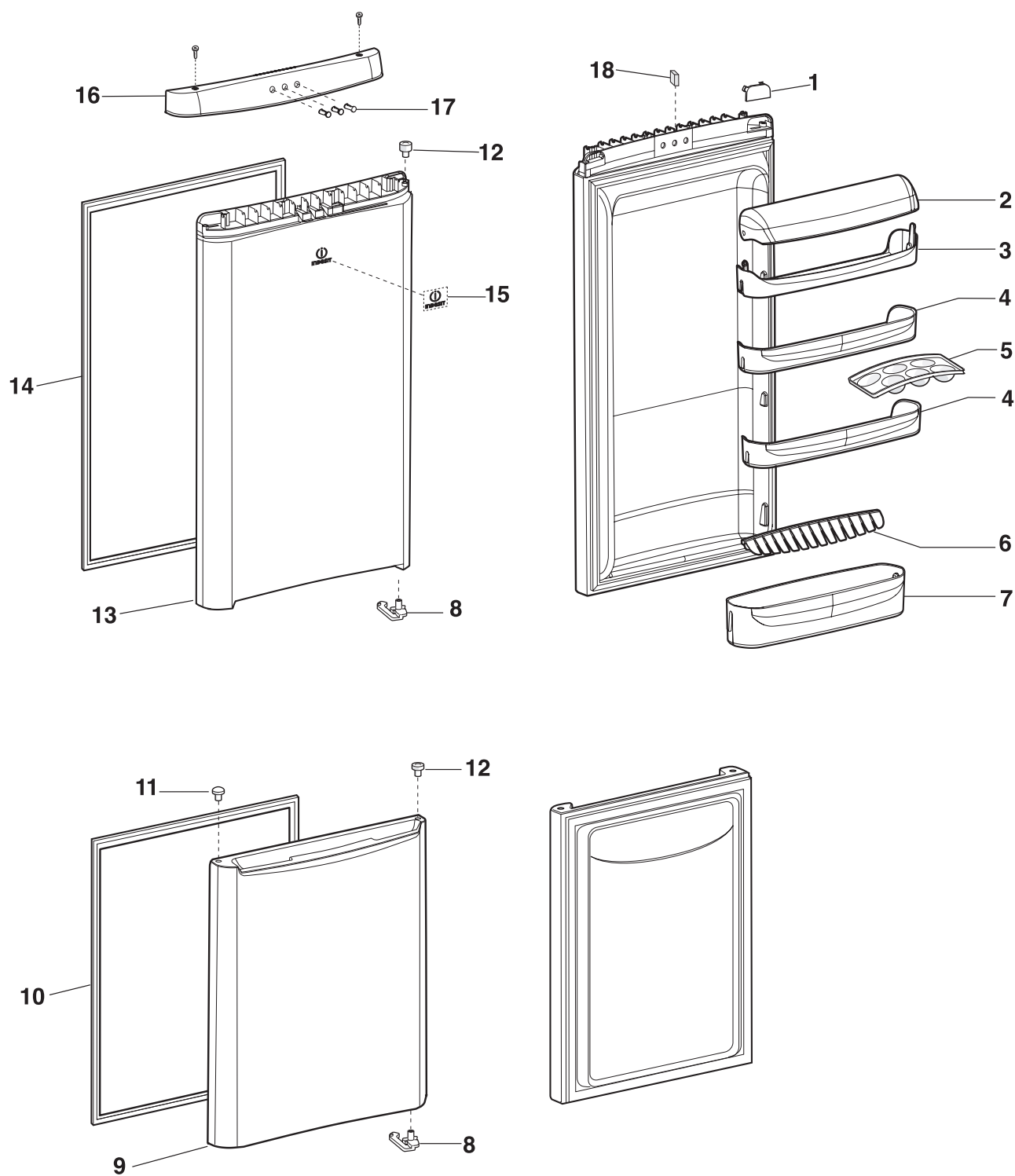
6. EXPLODED VIEWS:

DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.



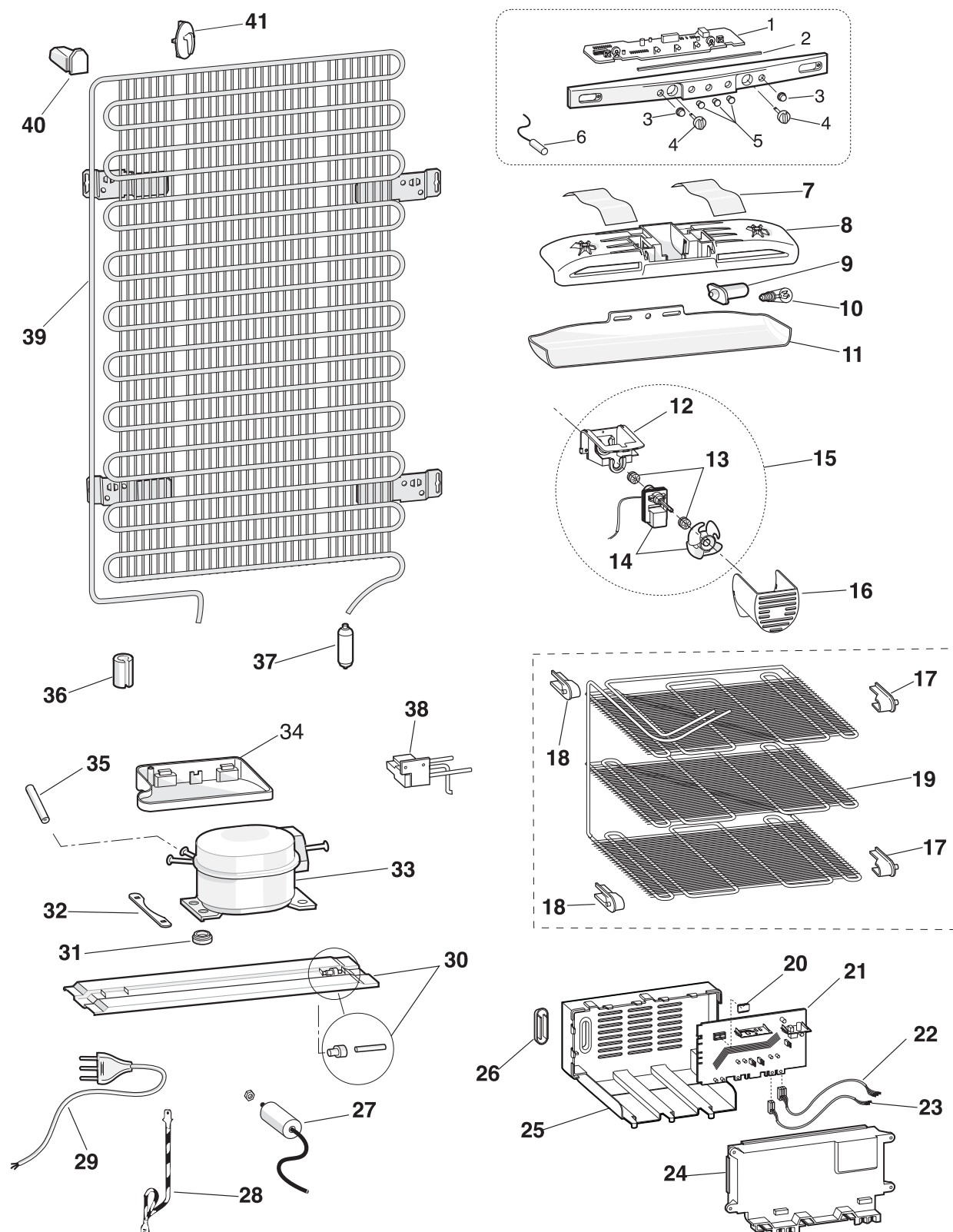
Indesit Company

DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.



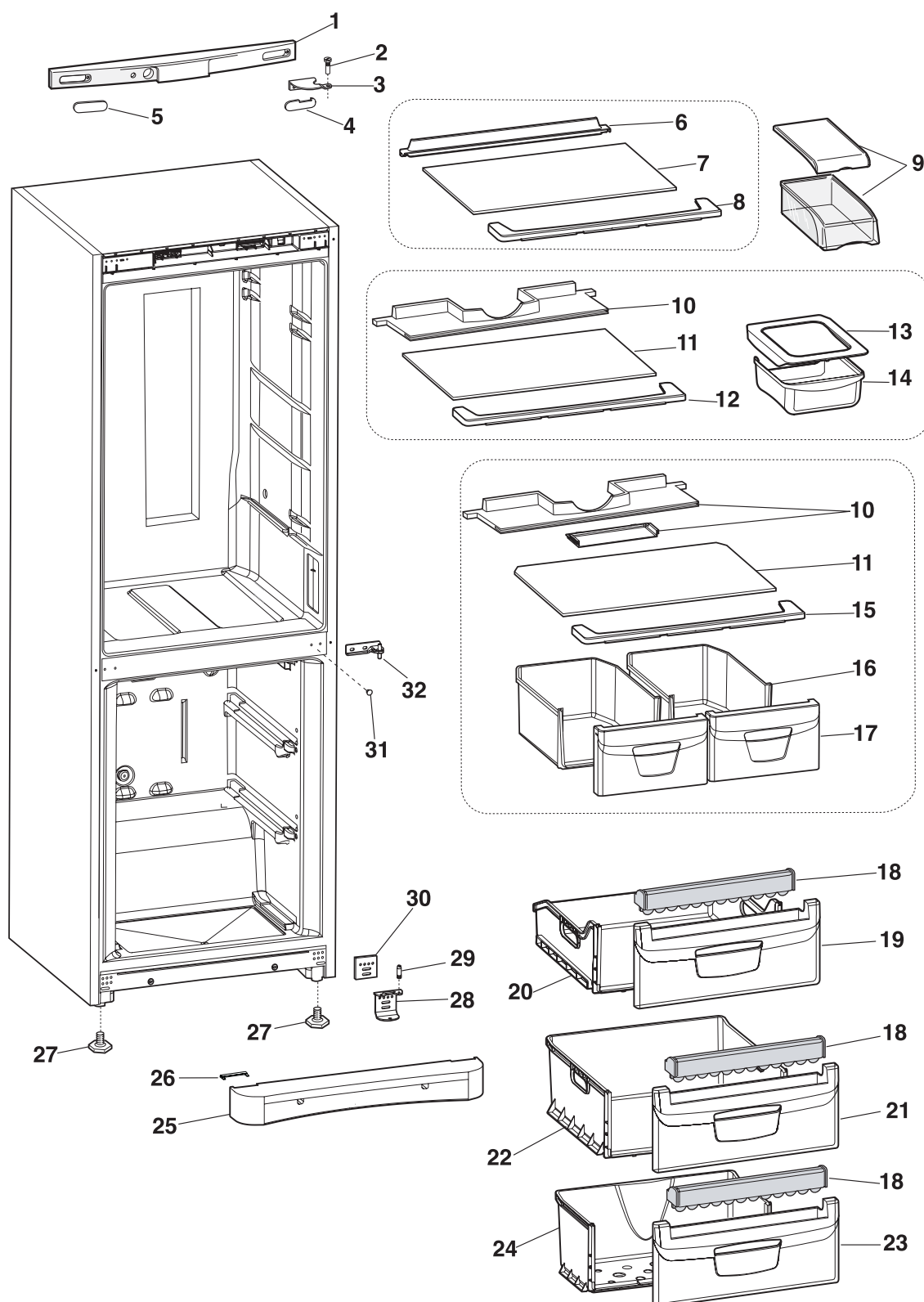
EXPLODED VIEWS

DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.

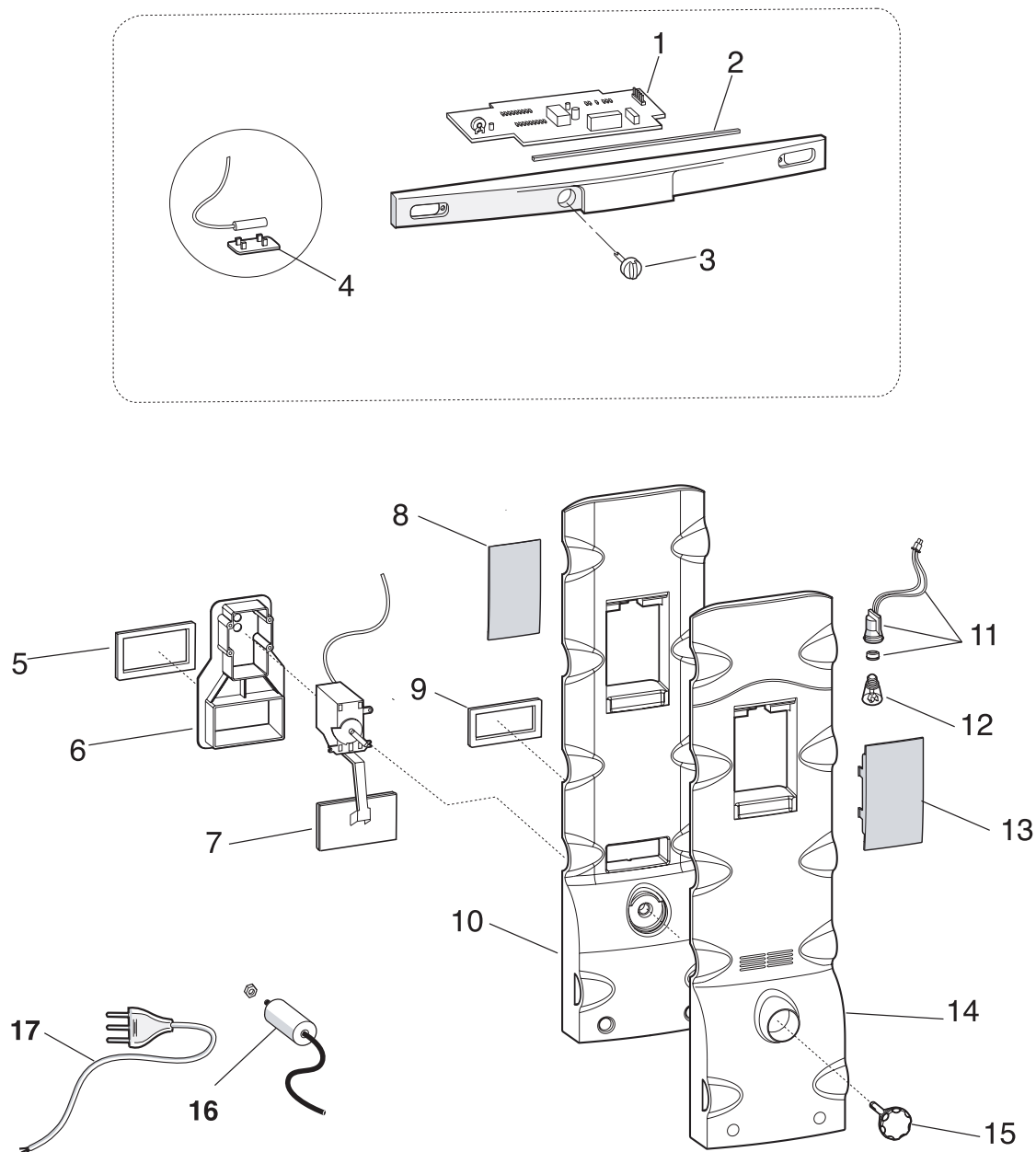


Indesit Company

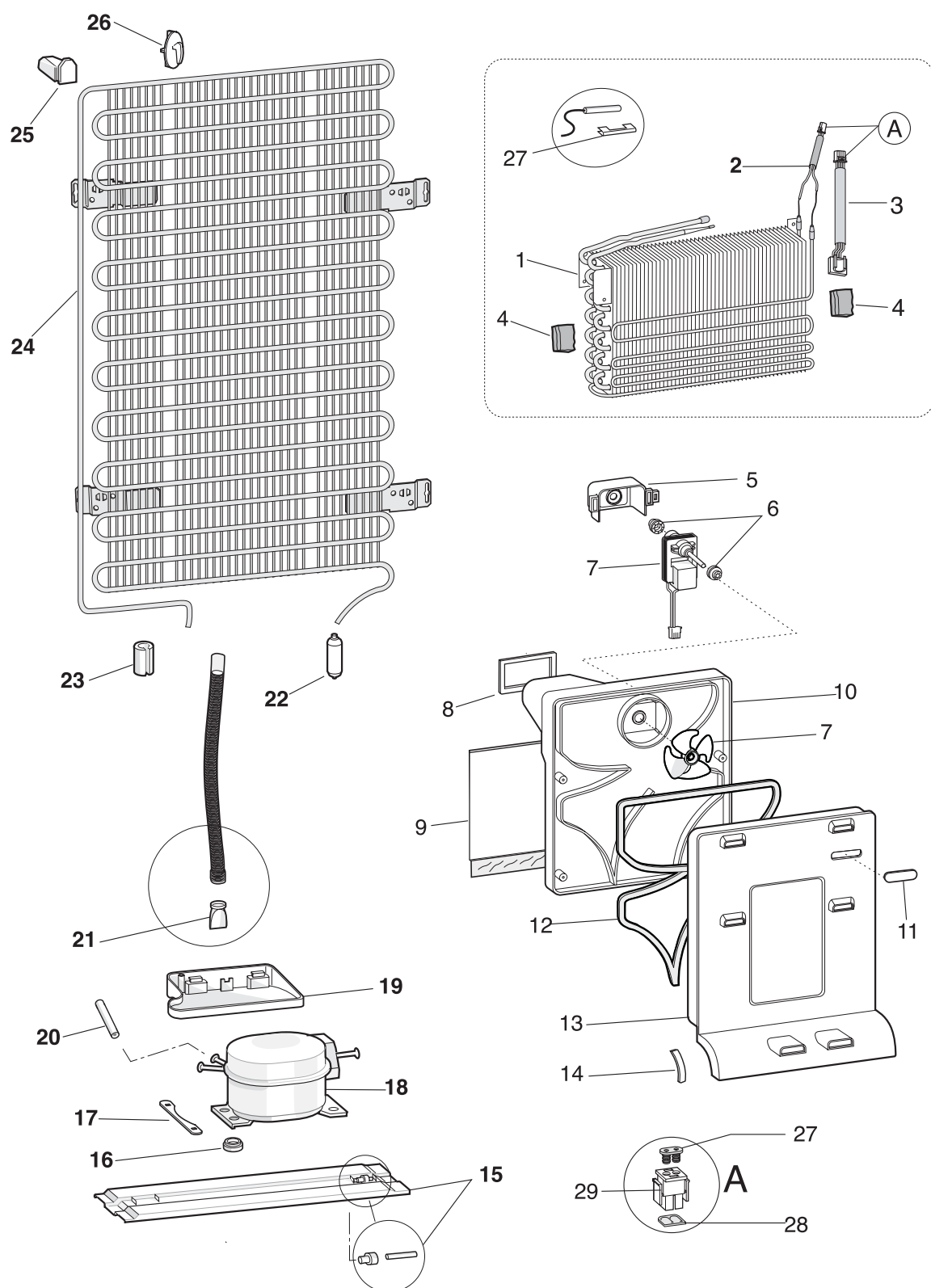
DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.



EXPLODED VIEWS

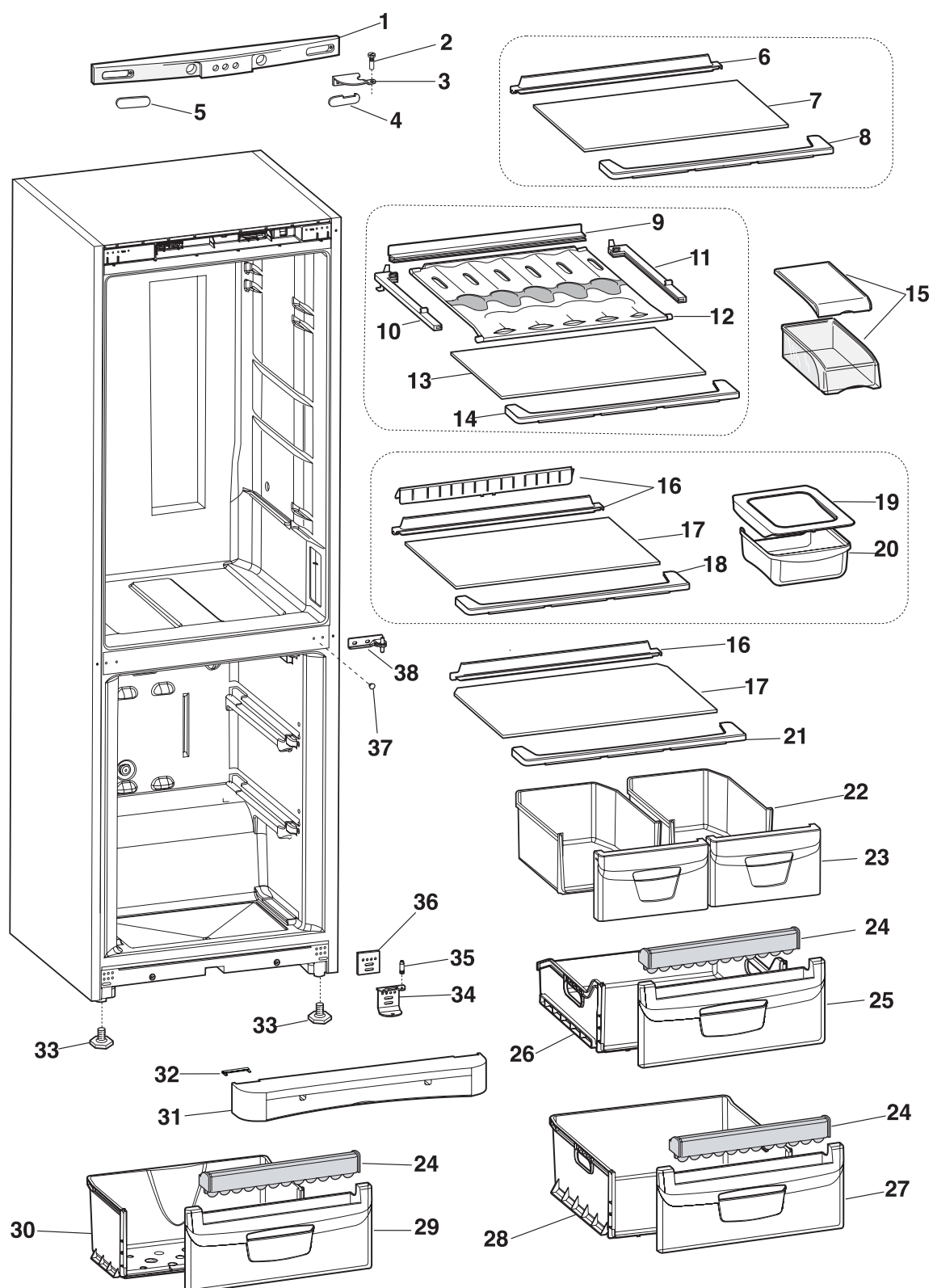
DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.

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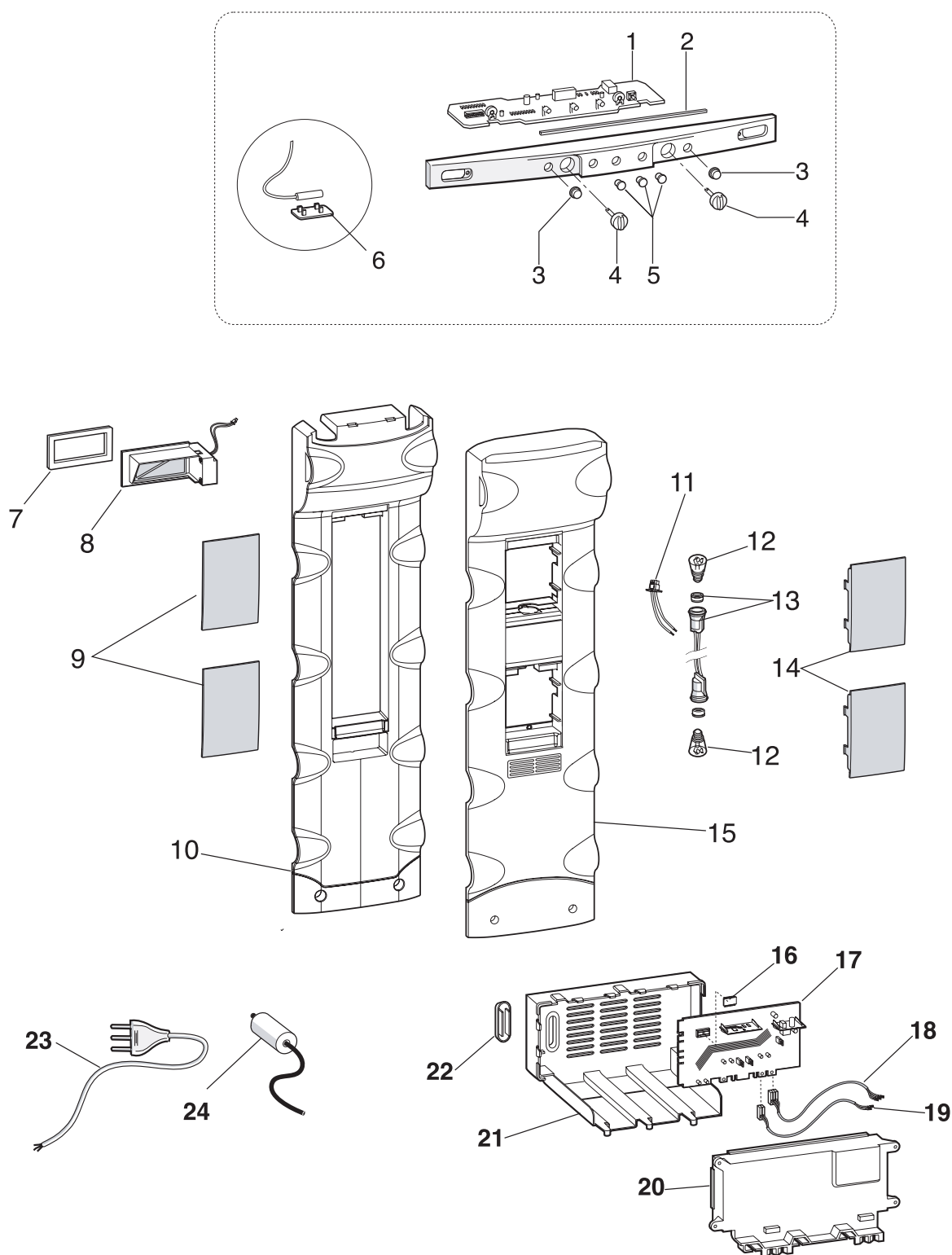
DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.

EXPLODED VIEWS

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DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.

EXPLODED VIEWS

DIGITAL ELECTRONIC STATIC FRIDGE-FREEZER.

7. APPENDIX:

Sensors Temperature Table:

Temperatures (degC)	Impedance (Ohms)
-30	175199,63
-25	129286,93
-20	96358,16
-15	72500,36
-10	55045,94
-5	42156,97
0	32554,20
5	25338,55
10	19872,17
15	15698,46
20	12487,74
25	10000,00
30	8059,08
35	6534,72
40	5329,87
45	4371,72
50	3605,27
55	2988,68
60	2489,95
65	2084,43
70	1753,04

Temperatures (degC)	Impedance (Ohms)
75	1480,91
80	1256,39
85	1070,31
90	915,42
95	785,96
100	677,30
105	585,75
110	508,32
115	442,59
120	386,60
125	338,74
130	297,70
135	262,38
140	231,91
145	205,53
150	182,63
155	162,70
160	145,30
165	130,06
170	116,70
175	104,94

Compressor	Brand	Refrigerant	Capacity [W]	COP [W/W]
GVY 57 AA	ACC	R134a	151	1,33
TWB 1360 MJS	Tecumseh	R600a	155	1,60
GVY 66 AA	ACC	R134a	181	1,33
TWB 1370 MJS	Tecumseh	R600a	170	1,62
NLX 10 KK2	Danfoss	R600a	187	1,87
TWB 1370 MKS	Tecumseh	R600a	170	1,54
TWB 1374 MJS	Tecumseh	R600a	191	1,61
NLX 11 KK2	Danfoss	R600a	205	1,87

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