TB 15-18

INSTRUCTIONS FOR USE

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Caution: Read the instructions and safety warnings carefully before using the refrigerator.

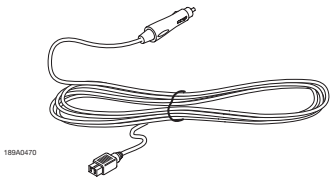
DESCRIPTION

The TB15-TB18 represent professional refrigerators. They are powered by a 12-24 VDC direct-power supply. They can be used both as refrigerators and freezers.
They are made up of a:
- plastic external structure;
- plastic internal compartment access door;
- internal, insulated compartment, for holding products;
- compressor cooling unit;
- control panel;
- power cable.

They are also equipped with a strap, so that they can be easily transported and used even outside, after having disconnected the power cable.

TB15-TB18

DC POWER CABLE



DATA SHEET

MODEL	TB15	TB18
External dimensions (HxLxD)	360x235x565 (mm)	405x235x565 (mm)
Net weight	8,2 Kg	8,6 Kg
Installed power	35 W	35 W
Supply voltage	DC 12-24 V	DC 12-24 V
Electrical power (within the shell)	Fuse 10A	Fuse 10A
Temperature setting	+10 to -18 °C	+10 to -18 °C
Cooling system	Danfoss BD Micro (Bd1.4F)	Danfoss BD Micro (Bd1.4F)
Refrigerant gas	R134a - CFC Free	R134a - CFC Free
Cooling	No	No
Insulation	CFC Free PU Foam	CFC Free PU Foam

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INSTALLATION

- Place the refrigerator on a dry, protected surface, away from corners. Do not use the refrigerator in uncovered, outdoor areas or areas exposed to the elements.
- The refrigerator requires good ventilation. Leave a space of at least 15 cm across all its sides.
- Avoid placing the refrigerator near to a heat source, for example, a cooker, radiator or exposing it to direct sunlight.
- Do not place ice or liquids which are not sealed in containers within the refrigerator.
- Do not place hot products within the refrigerator.

ATTACHMENT OF THE REFRIGERATOR IN THE VESSEL

In order to use the refrigerator within the vessel, you must firmly fix it in the compartment using a Kit which includes relevant strap and brackets, supplied separately as an option.
The refrigerator is equipped with relative plug, which must be connected to the cigarette lighter outlet.
In the instance where the above mentioned cable is not used and the supply comes directly from the vessel battery, use cables with suitable sections and lengths (see following table).

CABLE SECTION	MAX. LENGTH CABLE METRES	
	12V	24V
2,5 (AWG 13)	2,5 (8 FT)	5 (16FT)
4 (AWG 11)	4 (13 FT)	8 (26 FT)
6 (AWG 9)	6 (20 FT)	12 (40 FT)

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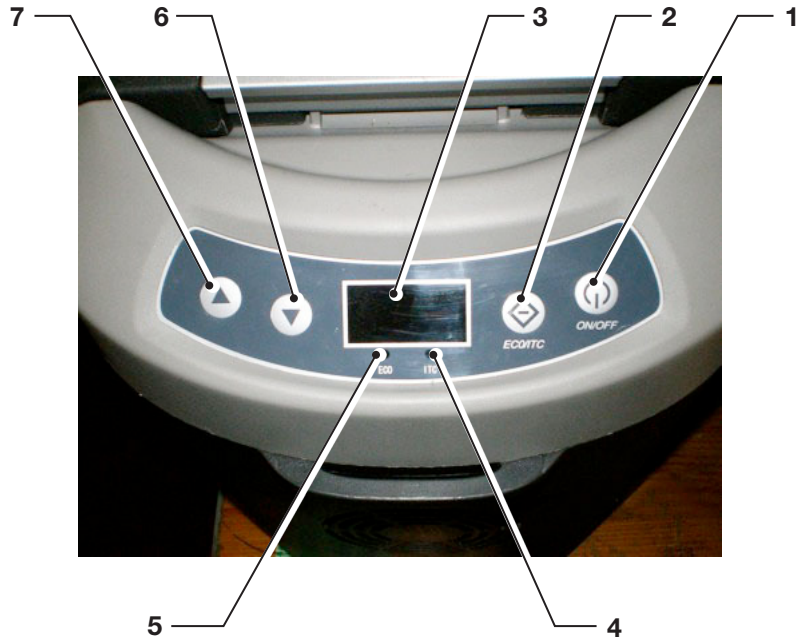
REFRIGERATOR USE

CONTROL PANEL DESCRIPTION



1 Start key
2 ECO/ITC modify function key
3 Display
4 LED function ITC active
5 LED function ECO active
6 Temperature decrease or scroll menu key
7 Temperature increase or scroll menu key

INITIAL SWITCH-ON

Press key **1** to switch on the refrigerator.
The compressor enters ON mode according to the manufacturer's default settings.
The temperature presented on the display appears in centigrade and corresponds with, in the case of the initial switch-on, the ambient temperature.
The ECO function automatically initiates, which is described in the following paragraphs, and the compressor rpm value adjusts itself every 2,000 revolutions.

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SETTING THE COOLING COMPARTMENT TEMPERATURE

To increase the temperature of the cooling compartment press key **7** until the desired value appears on the display.
To decrease the temperature of the cooling compartment, press key **6** until the desired value appears on the display.
The refrigerator will maintain this set value up until it is modified once again.

ECO" OR "ITC" FUNCTION

The **ECO** or **ITC** functions will alternatively activate upon pressing key **2**. When one of the two functions is active, the corresponding LED, under the display, will light up.

With the **ECO** function active, the refrigerator works at minimum power, in energy-saving mode; the compressor works at 2,000 rpm.

With the **ITC** function active, the number of compressor revolutions is varied according to the voltage and the cooled compartment is sub-cooled by 1°C when compared to the set temperature.

Where the voltage is ≥ than 13 V or 26 V, the compressor sub-cools amassing the cold air (the sub-cooling value is re-set to -1°C when compared to the temperature selected). With the motor on, the compressor automatically works at the maximum number of revolutions/rpm.
Where the voltage is ≤ than 12 V or 25 V (with the motor off, the compressor draws voltage from the battery) the compressor optimises the number of revolutions/rpm dependent on the temperature selected.

"O.C." (OVER-COOLING) FUNCTION

It is only activated with the **ITC** function on and only operates according to the following logic: where the voltage is high (vehicle motor on), the refrigerator sub-cools 3°C when compared to the set temperature and it never reaches sub-zero temperatures (under 0°C) where a positive/higher temperature to 0°C is selected (that is where the appliance is used as a refrigerator and not a freezer).

SETTINGS MENU

The refrigerator includes a settings menu, from where it is possible to modify values and thresholds set by the manufacturer, more specifically:

1 (PRO) Battery protection level
2 (OFS) OFF-SET value
3 (F-C) Fahrenheit or Centigrade settings
4 (O-C) Over-Cooling function

To access the menu, press, with the refrigerator powered but off, keys 2-6-7 at the same time for a few moments.
To scroll through the various functions within the menu, use keys 6 and 7, to change the parameters of the selected function, press key 2, the value will begin to flash, set the desired value, again using keys 6 and 7. The new value will be saved.
If no keys are pressed, you will automatically exit the menu mode.

BATTERY PROTECTION LEVEL

It is possible to set three different battery protection threshold levels:

Battery protection	Display	12V	24V
MIN.	1 Bar	9.6	21.3
MED.	2 Bar	10.1	22.3
MAX.	3 Bar	11.1	24.3

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OFF-SET VALUE

The OFF-SET value refers to the difference between the temperature inside the cooling compartment and the temperature set and presented on the display.
It is possible to set three different OFF-SET levels dependent on the temperature set on the display. The recommended OFF-SET value is 2°C, in order to achieve a temperature within the cooling compartment which corresponds with the temperatures presented on the display.
Note: we do not recommend modifying the preset OFF-SET values.

DEGREES FAHRENHEIT/CENTIGRADE

To set the temperature unit of measurement to degrees Fahrenheit or Centigrade, activate symbols **F** or **C**

OVER - COOLING

The Over - Cooling function, described above, is set by activating symbols **O C**.

FAULTS

Any operation faults will be displayed after 90 seconds and will be presented on the display with the following codes:

1	The thermostat has short-circuited or is not correctly connected to the control unit:	**R6**
2	The compressor is blocked:	**R3**
3	The ventilator is sending the control unit a value which exceeds 0.6A:	**R2**
4	The cooling system holds too much gas and the compressor is not able to operate at the minimum number of revolutions/rpm:	**R4**
5	The ambient temperature is too high:	**R5**
6	Insufficient voltage (Voltage below the cut-out value):	**LO**
7	No communication between the display and control unit, a **scrolling horizontal line** appears on the DISPLAY for a few seconds, the refrigerator turns itself off.	**-**

HELPFUL ADVICE

Use the product in ECO mode in the following cases:
- when the product is used as a refrigerator and, particularly, where the ambient temperature is not high;
- When the vessel motor is off

REPLENISHMENT

Avoid placing hot food in the refrigerator. Place the products so that they do not knock against each other or break when the vehicle is in motion.
Ensure that the lid is always firmly on and reduce the time it is left open to the minimum possible.

DEFROSTING

Defrosting must be carried out where the layer of ice is greater than 4 mm thick.
This operation must be performed with the refrigerator off.
Do not remove the layer of ice using sharp or cutting utensils.
Wait until the defrost process has completely finished before switching the refrigerator back on.

MAINTENANCE

Caution
Before carrying out any maintenance operations on the refrigerator, disconnect the power cable from the plug..

CLEANING

Regularly clean the inside of the refrigerator using baking soda dissolved in warm water.
Do not, in any case, use abrasive products, detergents or soaps; after washing, rinse with clean water and carefully dry.
Where the refrigerator is not being used, thoroughly clean and dry the inside in order to avoid the formation of mould or foul odours.

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HELPFUL ADVICE

Where the refrigerator does not function or functions incorrectly, before contacting one of our technical assistance centres, ensure that:
a) there is a power supply.
b) the voltage complies with that indicated on the plate.
c) the connections and poles are correct.
d) the ventilation grids are not obstructed.
e) the fridge unit is not placed near to a heat source.
f) the power supply fuse is not interrupted.

Caution

The power cable must only be replaced by qualified technical personnel and by an assistance body authorised by the Manufacturer.