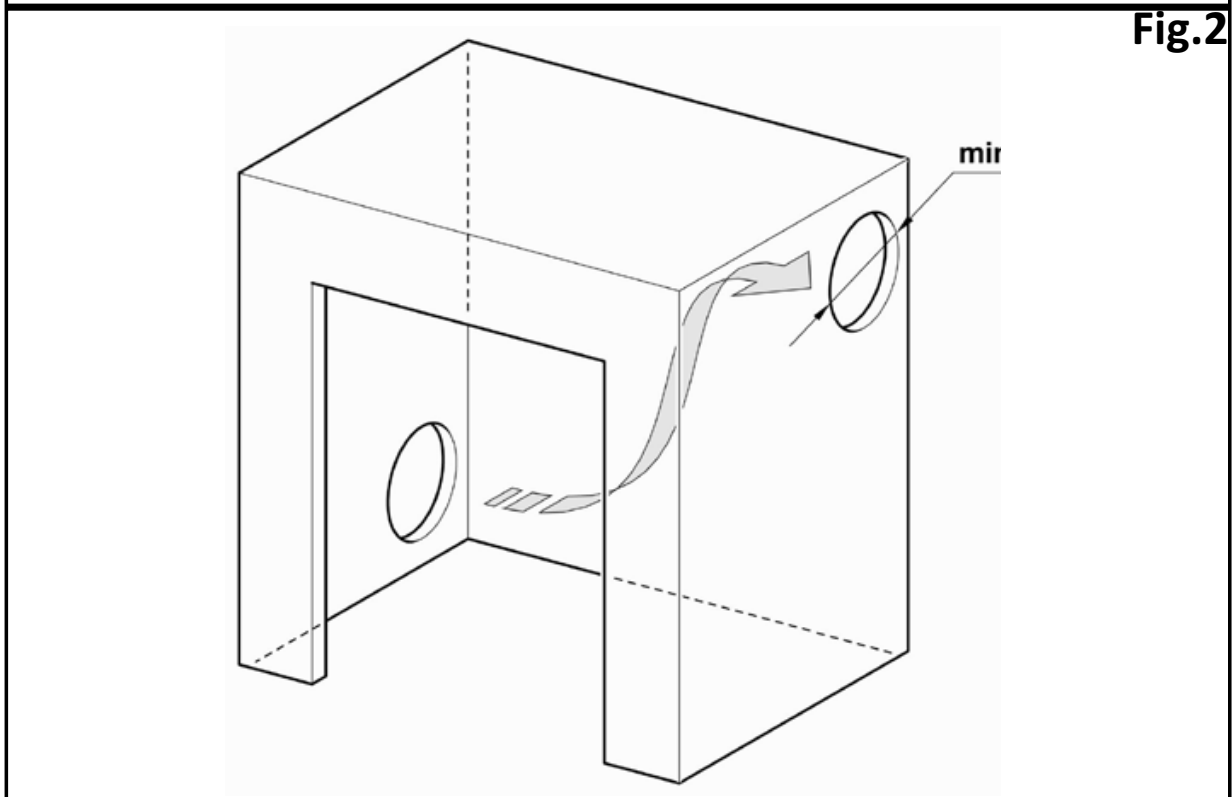
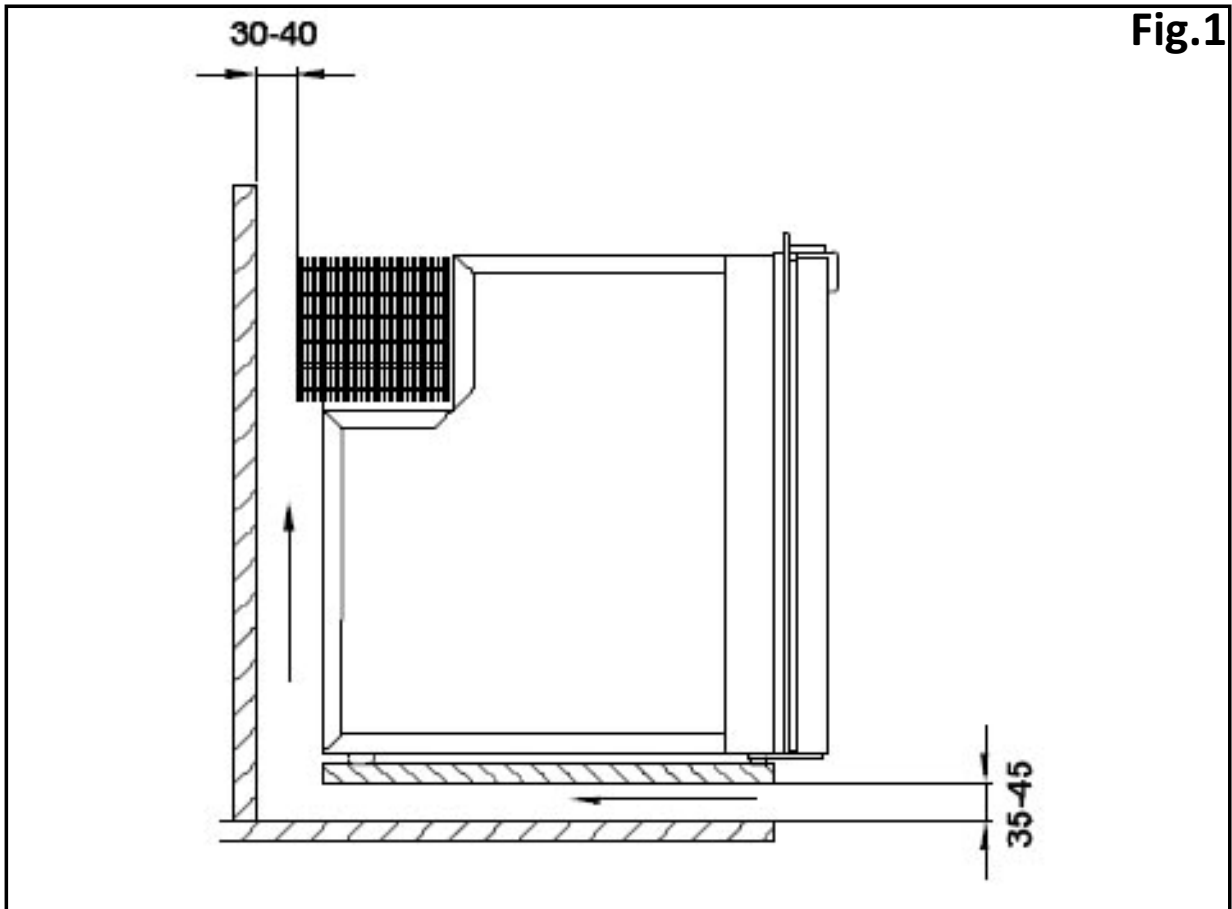




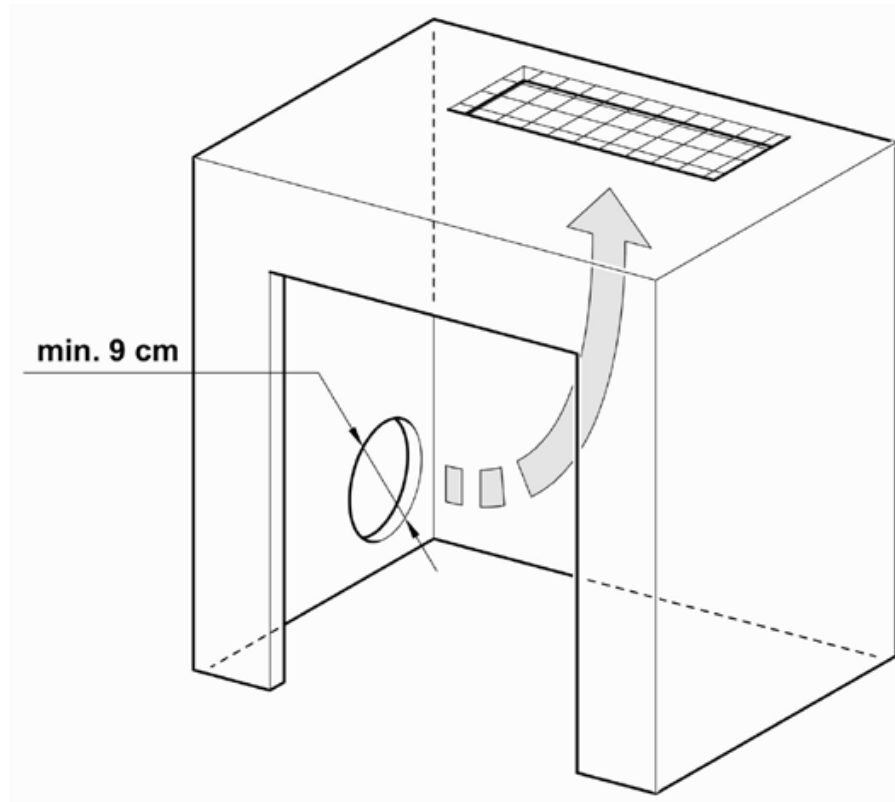
# USER MANUAL

## ISOTHERM DRAWER REFRIGERATORS AND FREEZERS

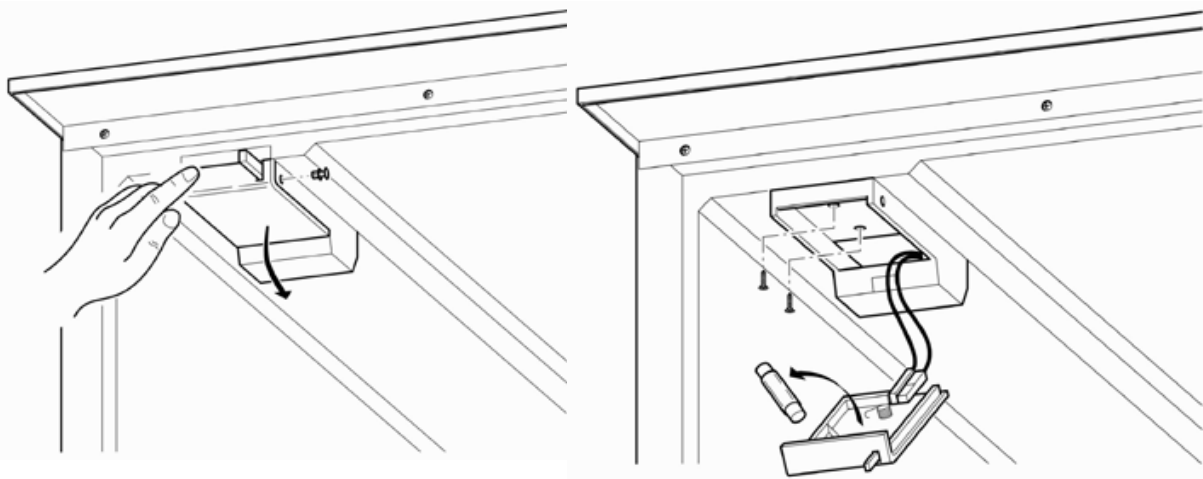




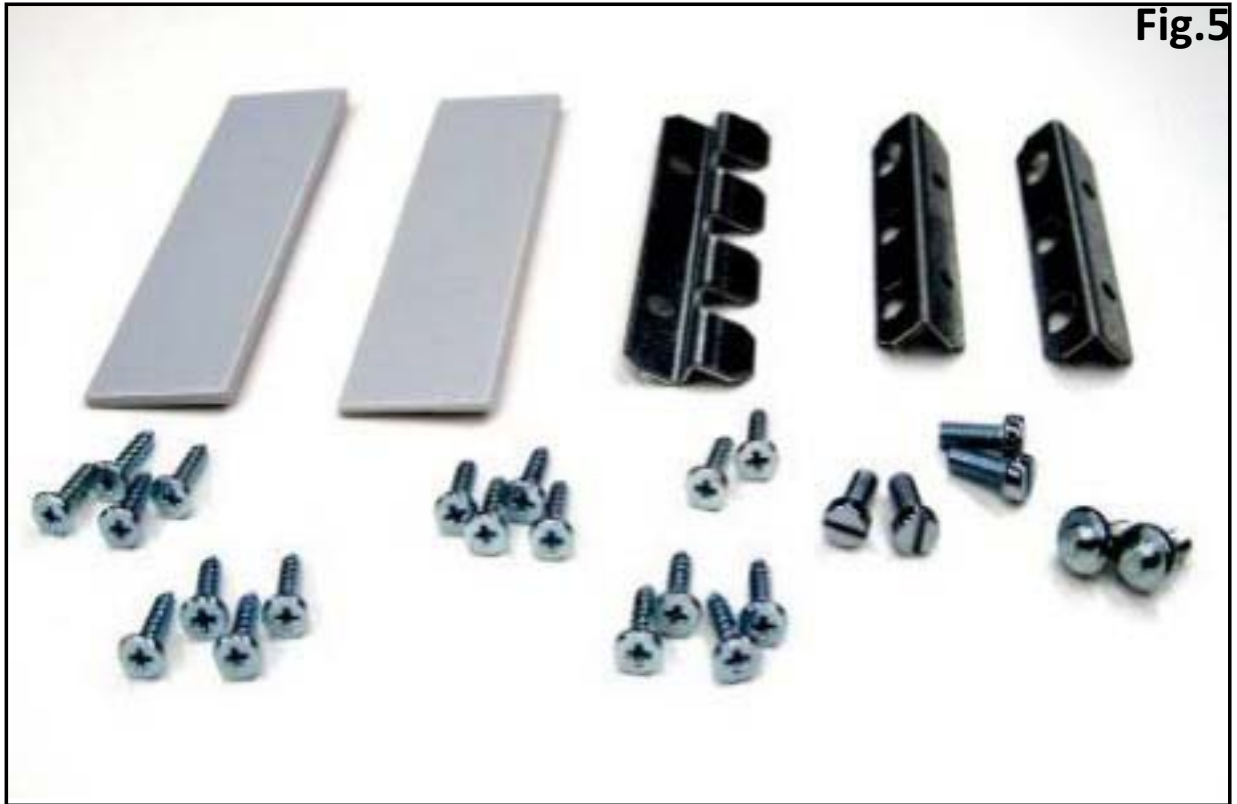
**Fig.3**



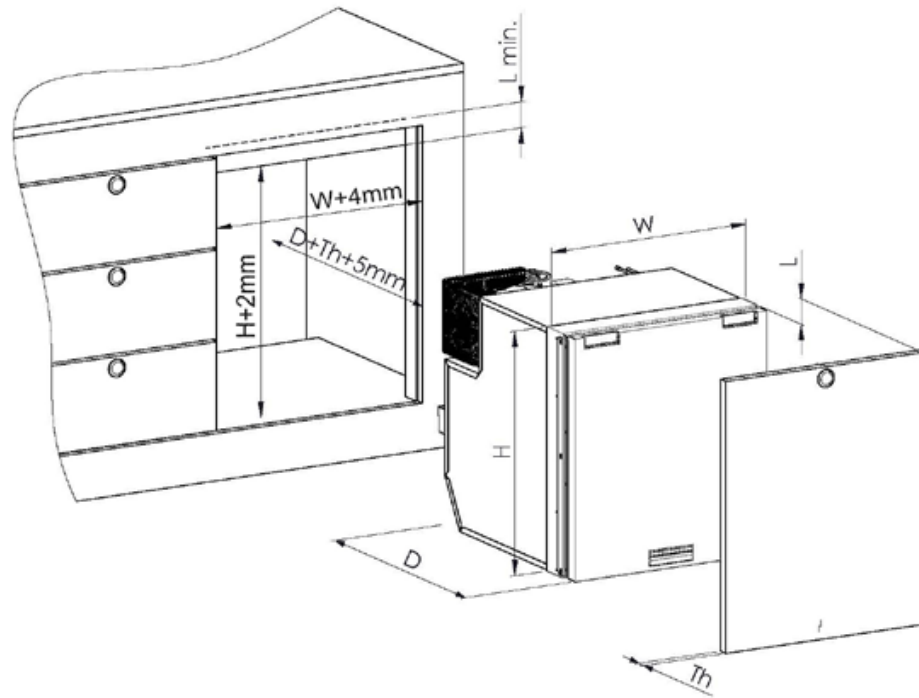
**Fig.4**



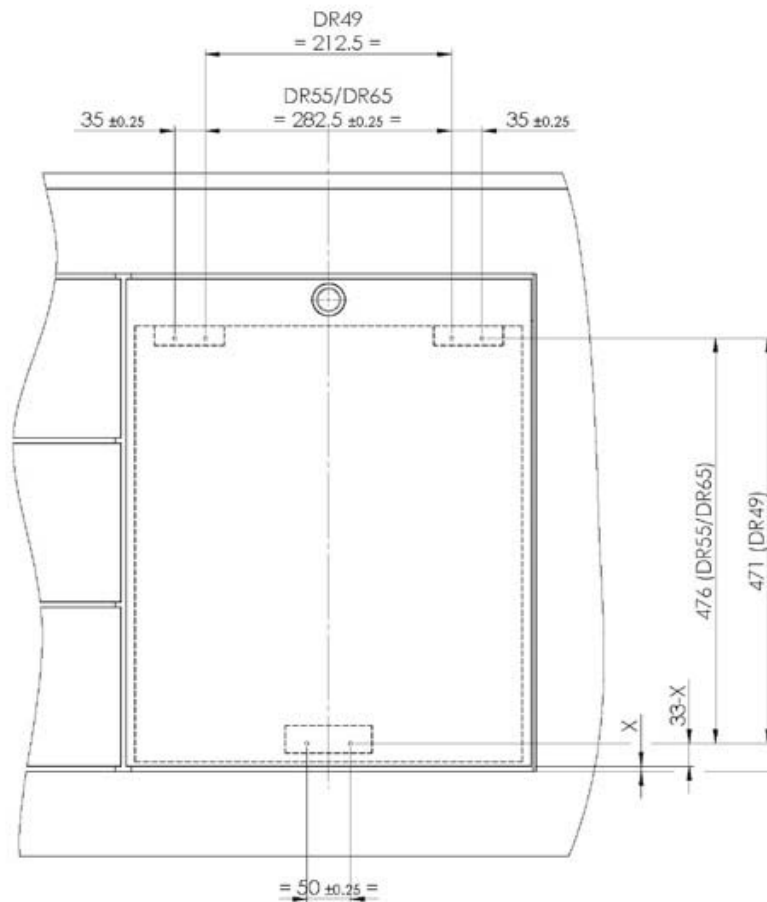
# Isotherm Drawer Custom



**Fig.7**

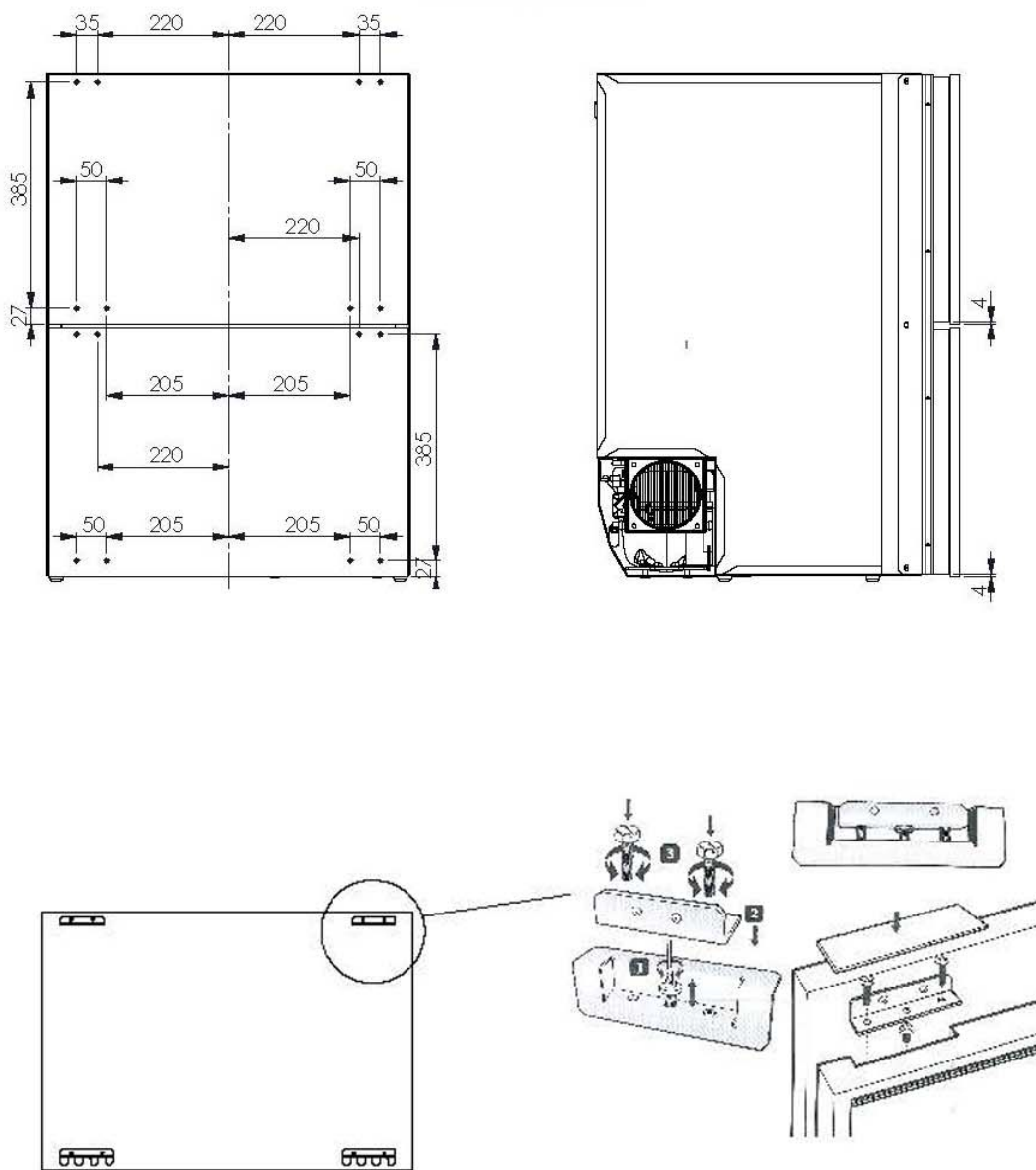


**Fig.8**

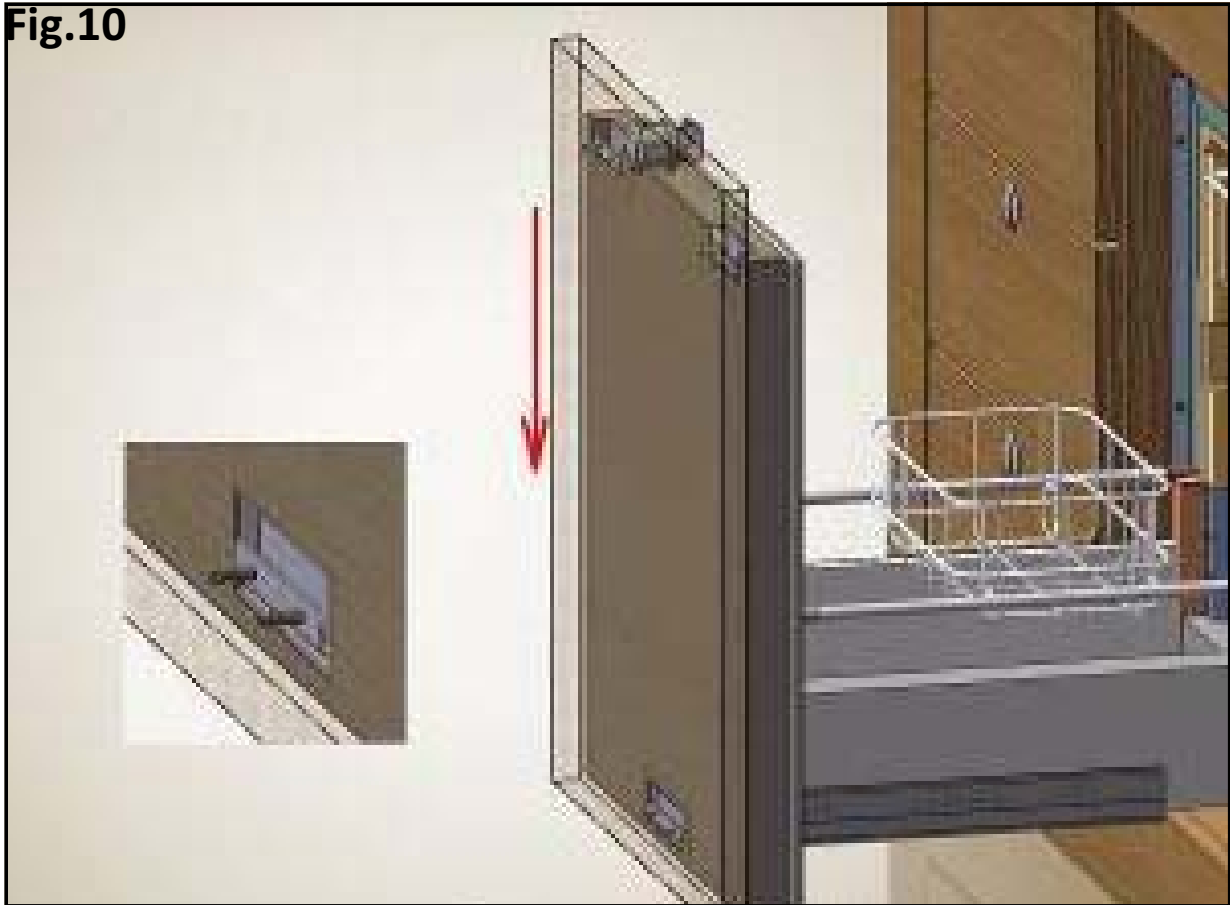


# Isotherm Drawer Custom

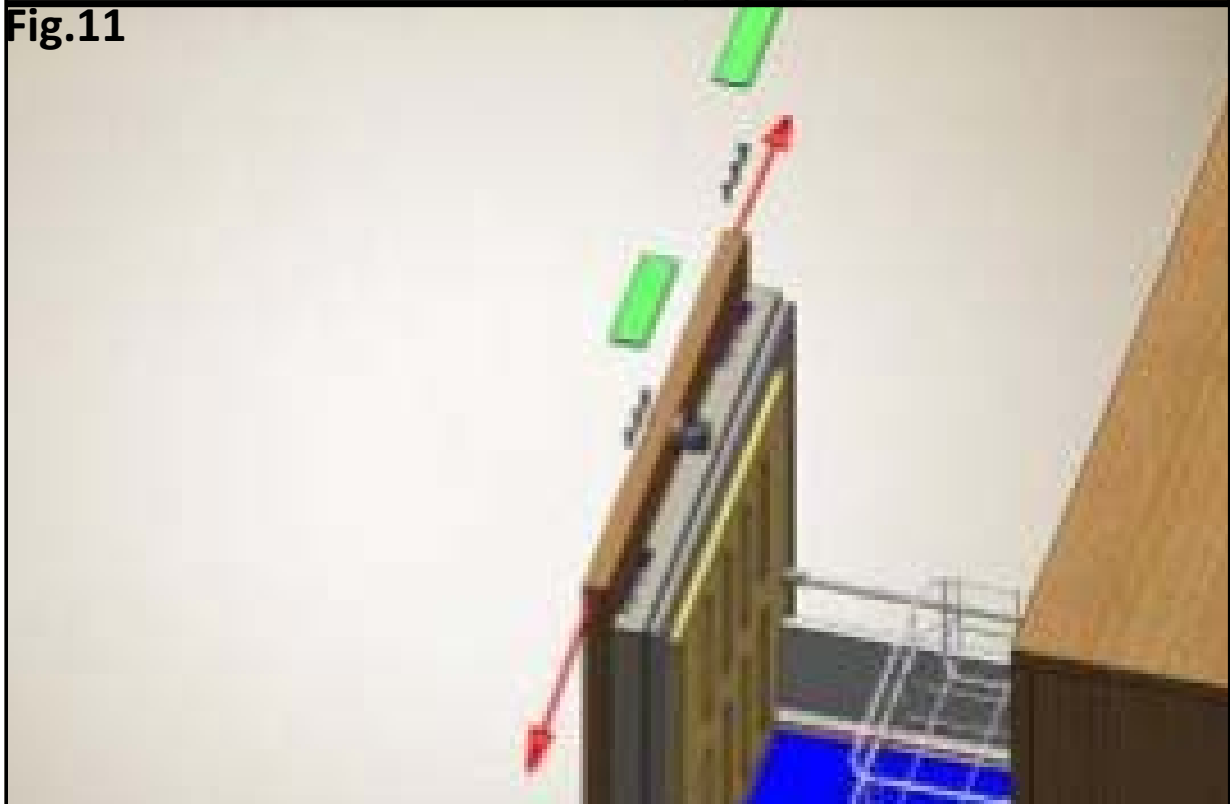
Fig.9



**Fig.10**



**Fig.11**



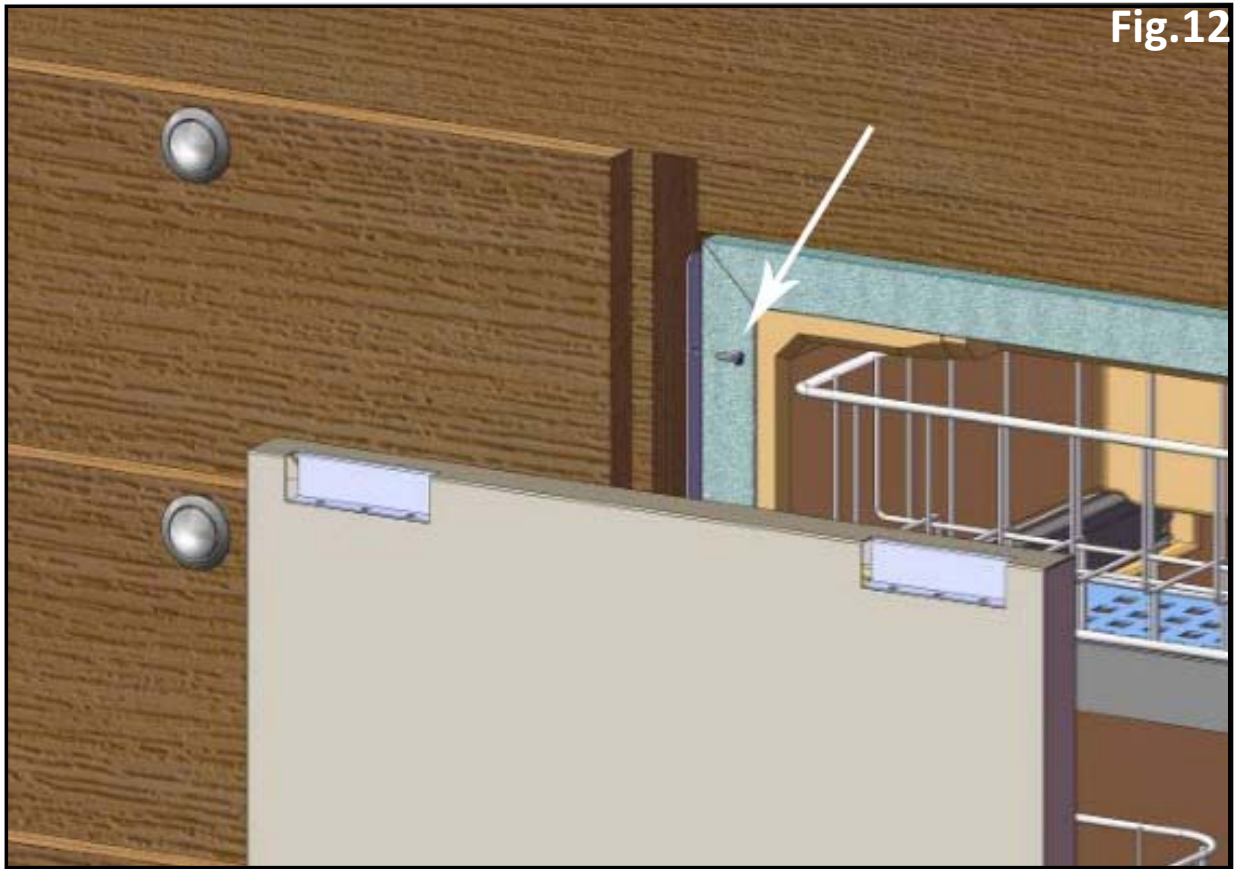


Fig.12



# User Manual

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# User Manual

## 1. Instruction and Use

This manual contains warnings to signal dangers to the user or particular behaviour to comply with; these warnings are indicated as follows:










WARNING!



Do not start the product before reading this instruction

manual.

<p>Obligation to read instructions The presence of this symbol mandates reading of instructions before putting the unit into operation.</p>	
<p>Obligation to disconnect The presence of this symbol mandates immediate disconnection of the unit from the mains in case of failures.</p>	
<p>Obligation to wear gloves The presence of this symbol mandates each operator wear suitable protective gloves.</p>	
<p>Obligation to wear shoes The presence of this symbol mandates each operator wear shoes designed to decrease the risk of injury.</p>	
<p>General hazard The presence of this symbol mandates special attention by the operator.</p>	
<p>Shock Hazard The presence of this symbol tells personnel involved that the described operation may present a risk of electric shock.</p>	
<p>High intensity light hazard The presence of this symbol indicates that you must take special care with the high intensity bright lights, risk to eyesight.</p>	



**WARNING!** This manual must be kept for future reference. We recommend that users:

- Store this manual in an accessible location protected from moisture and heat and protected from the direct rays of the sun.
- Use the manual in such a way as to avoid damaging it or any part of its content.
- Do not remove, alter or tear on any part of the manual.


Despite the care and thoroughness with which this manual has been prepared, Indel Webasto Marine Srl cannot guarantee that the information within covers every possible event associated with installation of the product. Contact our technicians immediately in the event of uncertainty. In the event of selling or transferring the unit to another person, this manual and related documents should be delivered intact to the new user.

## 1.2 Environment

This product complies with the Directive 2002/96/EC regarding waste electrical and electronic equipment (WEEE).

The product's proper disposal is essential to preventing negative consequences for the environment and human health.




The symbol  on the product, the packaging and/or the accompanying documentation indicates that the product should not be disposed of as household waste. The product must be taken to an authorized collection centre for the recycling of electrical and electronic equipment. The product must be disposed of in compliance with the current local environmental regulations regarding waste disposal.

For more information regarding the disposal, recycling and reuse of the product, please contact your local authorities, your local waste collection service or the retailer/distributor from whom the product was purchased.

Packaging is manufactured from recyclable material. It bears the




recycling symbol  and must be delivered to a collection centre.

# User Manual

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The symbol  indicates that the product complies with all European Union provisions provided for its use.



**WARNING!** This unit contains fluorinated greenhouse gas R134a within a hermetically sealed system whose operation depends on the presence of said gas.



**WARNING!** Never open the refrigerant circuit except for the normal connection/disconnection of couplings (where present). The R134a refrigerant contained within the unit is non-flammable in normal conditions. Never dispose of the refrigerant R134a in the environment.

Contact a qualified certified technician for handling fluorinated gases in the event of damage to the refrigerant circuit.

## 1.3 Safety Standards



**WARNING!** Indel Webasto Marine Srl disclaims all liability for any malfunction or damage to persons or property due to improper use of the machine or with materials with different characteristics than those described in this manual.

Improper use or use of the product not in line with the information contained in this manual cannot result in claims against the manufacturer and/or supplier.



**WARNING!** The refrigerator is only suitable for the preservation and/or storage of food items. The food items must be stored in their original packing or else in suitable containers. Do not consume expired food products as such behaviour could result in food poisoning.



WARNING! If medicines are to be stored in the refrigerator, check that the unit has a cooling capacity that will meet the requirements of the respective medicines.



WARNING! The only purpose and function of the product when used as a freezer is to maintain already frozen food completely frozen.

The refrigerator will not freeze non-frozen or partially frozen food products. If a non-frozen or partially frozen food product is stored in the freezer, this is considered improper use and can cause possible unintended thawing of food which may lead to problems related to safety, illness or injury if swallowed.

The preservation of non-frozen or partially frozen food in the freezer can also affect the quality of other frozen food products stored in the freezer.

Exposure to temperatures above the temperature of the climatic class range for which the freezer was built, power supply interruptions and/or frequent opening of the freezer can influence the effectiveness of the refrigerator and the quality of the contents of the freezer.

The user should always check food quality before ingesting.



WARNING! For extended periods of disuse or when defrosting, remove the



unit's light bulb or disconnect all of its power supplies. Leave the refrigerator door slightly open to air out the inside of the product and prevent the formation of mould.



WARNING! Eliminate all sources of heat and sparks within the unit's vicinity; in the event of coolant leakage, remove the unit's power plug and ventilate the room thoroughly.

# User Manual

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**WARNING!**



Disconnect the unit from the mains power supply immediately in the event of any malfunction. Never touch any damaged or non-insulated electrical cables while the electrical power supply is enabled. This observation is particularly true when the unit is connected to 115V or 230V mains voltage.

If the power cable is damaged, it must be replaced. Contact qualified personnel or the Service Centre.



**WARNING!** Do not store inside the unit or in the vicinity of its electrical parts: flammable substance-based spray cans, explosive materials, electrical equipment, live animals.

Spray cans containing flammable substances may have leakage of these gases which, in contact with electrical parts, can ignite or cause explosions.

Keep any drinks with high alcohol content tightly closed and upright.

Avoid flames or sparks inside the unit.

Do not use electrical equipment inside the refrigerator.



**WARNING!** The unit can be used by children under 8 years of age and by people with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, provided they are supervised or after they have received instructions on safe use of and understanding of the dangers inherent in it.

Children should not play with the unit. Cleaning and maintenance meant to be performed by the user and must not be performed by unsupervised children.



**WARNING!** Do not use plugs and switches if you have wet hands or feet.

## 2. Usage instructions

The climate class is indicated on the data plate inside the unit itself.

**SN** or **extended temperate class** (ambient temperature from 10°C to 32°C)

**N** or **temperate class** (ambient temperature from 16°C to 32°C)

**ST** or **subtropical class** (ambient temperature from 18°C to 38°C)

**T** or **tropical class** (ambient temperature from 18°C to 43°C)

### 2.1 Thermostat-controlled temperature regulation

The refrigerator's temperature is continuously regulated by the thermostat, which also includes a power-off function if turned counter clockwise to the end position.

In order to turn off the unit, it is necessary to overcome the slight resistance of the knob. The location of the thermostat knob depends on the type of refrigerator.

To adjust the temperature, proceed as follows: turn the thermostat clockwise to lower the temperature, and vice versa.

It is recommended to keep the refrigerator at a temperature of 5-6°C. Since the outside temperature can affect the refrigerator's internal temperature, it can be difficult to maintain the desired temperature when the refrigerator is exposed to heat and/or direct sunlight.

Thermostat Knob



## 2.2 Usage recommendations

- If possible, the refrigerator should be turned on for about 6 hours prior to inserting the food items.
- Frequent opening of the refrigerator door will result in greater power consumption.
- Ensuring adequate ventilation for the compressor and the condensing unit will significantly reduce power consumption.
- Never obstruct the refrigerator's ventilation system.
- The electrical system must be kept in good condition. Inspect the batteries and check the charge levels regularly. Always use a starter battery separate from the motor.
- Keep the inside of the refrigerator clean and dry. Remove the condensation water from the drip tray beneath the refrigerator's freezer compartment where present.
- To keep the surface of the door in good conditions and intact, make sure that it is always clean and dry.
- The unit has been designed with a product lock protection in the event of low battery voltage. In the event of a compressor block, follow the instructions in this manual and/or contact specialised technicians or Indel Webasto Marine Srl service centres.
- The compressor can operate up to an angle of 30°, while greater angles can cause permanent damage to the compressor.



## 2.3 Standard model defrosting

Since the evaporator operates at temperatures well below freezing, ice and frost will inevitably form upon it.

The humidity in the air, the temperature and the number of times the door is opened will have a significant impact on frost formation.

The refrigerator should always be defrosted when the layer of frost on the evaporator reaches a thickness of 3-4 mm or more.

Turn off the refrigerator by turning the thermostat to its 0 position.

Defrosting should be performed when the products can remain as cool as possible outside of the refrigerator itself. Do not use sharp objects to remove ice and frost from the evaporator, as this could damage it and result in leaks.

Only turn the refrigerator back on once it has been defrosted (not including Frost Free models), cleaned and thoroughly dried. Remove, empty and dry the drip tray beneath the evaporator. A towel can be placed at the base of the refrigerator during the defrosting procedure in order to facilitate water collection.

## 2.4 No-Frost model defrosting

In No-Frost models, defrosting is performed fully automatically with times defined by the manufacturer.

The No-Frost system is composed of a fan which forces air circulation inside the trunk. The humidity inside the unit is deposited on the evaporator unit, creating a thickness of frost that is automatically eliminated during the defrost cycle. The condensation caused by defrosting is conveyed outside the trunk and made to evaporate by means of a natural heating system of the condensing unit/compressor.

# User Manual

## 2.5 Ice Maker (DR160 COMBO model only)

The ice production kit, present on the DR160 COMBO model only, has a production capacity of about 8kg of ice per day. The technology used is called "pushed." Water is frozen into cubes in a special tray and then is "pushed" out of the tray. The ice cubes then drop into the collection container.

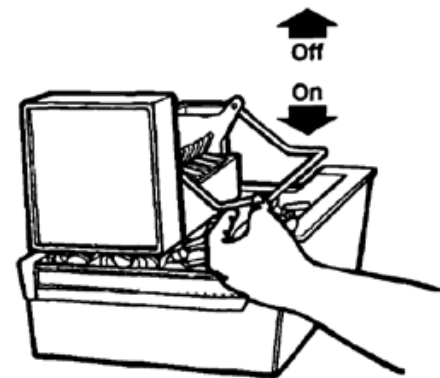


The cube produced is white with a special half-moon shape. See photo.

To activate the ice maker, move the stop lever to the ON position. (see figure).

The ice maker will begin its production cycle and, once the ice collection tray is full, the stop lever will raise slightly from the accumulation of ice, stopping the production cycle. Once the ice is removed, the lever will return to the ON position and the production cycle will restart.

To stop ice production, bring the stop lever to the OFF position as shown in the figure.



## 3. Maintenance

Isotherm Drawer refrigerators are equipped with closed cooling systems, which do not require maintenance or refrigerant refills.

The compressor is specifically designed for mobile applications and guarantees maximum performance and durability. In the winter, the refrigerator must be stored inside the vehicle, but the compressor will not work at temperatures near or below 0°C. Seasonal maintenance is limited to the cleaning of the condensing unit behind the refrigerator. In particular, it is necessary to brush/vacuum out all the dust that has accumulated due to the fan. This can be done using a soft brush and a vacuum cleaner. It is important to keep the inside of the refrigerator clean by washing it with warm water and mild soap and by drying any water/condensation that may be encountered.

To keep the surface of the door in good conditions and intact, make sure that it is always dry and clean.

In order to prevent damage to the electrical/mechanical components and/or the formation of mould, when shutting off the refrigerator for extended periods of time it is necessary to wait for the unit to defrost completely and to eliminate any condensation that may have formed, both inside the unit and in the external water collection tray. The natural defrosting time can vary from a few minutes to several hours. In the wintertime and when the refrigerator is shut off, the door should be left slightly ajar for ventilation and **all power disconnected**.

### 3.1 Low voltage protection

In order to prevent excessive battery depletion, a protection device shuts off the compressor in case of insufficient voltage and turns it back on when the voltage in the system increases after the batteries have been charged.

System Voltage	Shut-down Voltage	Minimum Operating Voltage
12V	9.6 (10.4) V	10.9 (11.7) V
24V	21.3 (22.8) V	22.7 (24.2) V

If the bridge is removed between C and P, the values indicated in the parentheses are valid.



**WARNINGS:** Before switching on the unit, always make sure that the batteries are in optimal condition.

# User Manual

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## 4 Installation Warnings



WARNING!



In order to guarantee the unit's safe functionality, follow the indications included with in these instructions when installing and connecting the unit.



WARNING! Always use PPE



(Personal Protective

Equipment) during product handling and installation.



WARNING! Any changes made to the product without the knowledge of the manufacturer will be the sole responsibility of those carrying out said changes. Changes made without the permission of Indel Webasto Marine Srl will void all warranties and may void the declaration of conformity to applicable directives.



WARNING! Check for any visible damage on the refrigerator's mechanical and electrical components prior to use.



WARNING! Do not damage refrigerant circuit pipes. Coolant sprays can damage eyesight.



WARNING! In the event of damage to the unit itself, notify the supplier immediately before performing the connections.



WARNING! If the power cable is damaged, it must be replaced by the manufacturer, an authorized Service Centre or a qualified technician.



WARNING! Install the refrigerator in a dry place that's sheltered against water spray. The unit's electrical components must NOT be exposed to rainfall and/or sprays of water.



WARNING! Install the refrigerator away from gas or LPG cylinders.



WARNING! The product must be installed in an area accessible for any maintenance. The housing space of live parts and of the condensing unit/compressor must only be opened voluntarily and not directly accessible.



WARNING! The compressor/condensation unit installation area must be made with a material resistant to the needle-flame test required by standard EN 60335--1 or else be more than 5 cm from electrical and/or electronic components.



WARNING! If there is a battery charger, it must be connected to the battery and never directly to the refrigerator.



WARNING! The appliance must be protected against indirect contact in accordance with the "Heavy Current Regulations".



WARNING! In case of power connection from AC mains, to avoid the risk of serious personal injury, ensure that it is equipped with cut-off devices (switches) which permit total disconnection of the unit current and protective devices which automatically intervene in the event of malfunction.



WARNING! Never touch any damaged or non-insulated electrical cables while the electrical power supply is enabled. This observation is particularly true when the unit is connected to 115Volt or 230Volt mains voltage.

# User Manual

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## 4.1 Installation

Isotherm refrigerators have been designed and constructed exclusively for recessed installation and installation that is in compliance with standard dimensions. The refrigerator must always be in a horizontal position, with the compressor's rubber feet at the bottom. The compressor is capable of functioning at angles of up to 30°. The compressor unit may become damaged if the angle is higher. Also remote operation compressors must be installed with its rubber feet downward.

Inox drawer refrigerators and freezers with stainless steel and Glass door are equipped with a three or four side mounting flange for flush installation of the furniture (except model DR105).



The INOX models come equipped with a stainless steel door, without replaceable panels.



GLASS models are equipped with a front, coloured glass panel which can be replaced with various colours (Optional).

When it is not possible to use the mounting flange, secure the refrigerator in such a way so that it will not tip/slide forward when the drawer is opened or in the case of sudden vehicle movement. The unit should be anchored by at least 2 fastening points, in accordance with the provisions of the EN 60335-2-24 standard.

## 4.2 Installation Custom models



Custom models with doors equipped for front panelling by the customer (not supplied by Indel Webasto Marine Srl) are equipped with 2 side mounting brackets for installation.

Follow the instructions below for correct installation:

- Verify installation tolerances for panel application.
- Provide a door locking system to prevent accidental opening. Closure is not included with supply.
- The refrigerator will be equipped with a mounting kit inside (Fig.5).
- Fasten the three brackets included in the kit on the panel (Fig.6), according to the distances indicated in the diagrams (Fig.7-8-9).
- Affix the Custom panel to the refrigerator door and centre it horizontally and vertically using the adjustments on the brackets (Fig.10-11).
- Insert the refrigerator in the compartment, positioning it so that the door panel is flush with the rest of the unit and tighten the two side mounting brackets (Fig. 12).
- Cover the fastening points with the two plastic plaques provided in the mounting kit.

## 4.3 Ventilation

It is extremely important for the compressor/condensing unit located behind the refrigerator to be well ventilated so that the fresh air can enter at the bottom and pass behind the refrigerator, with the hot air being allowed to escape from the top or sides (Fig.1).

The illustrations (Fig.2-3) show an example of how the refrigerator housing should be set.

## 4.4 Ice Maker (DR160 COMBO model only)

In the DR160 COMBO model, a modular unit for ice production (Modular Icemaker Kit) is present. It is situated in the product's freezer compartment.

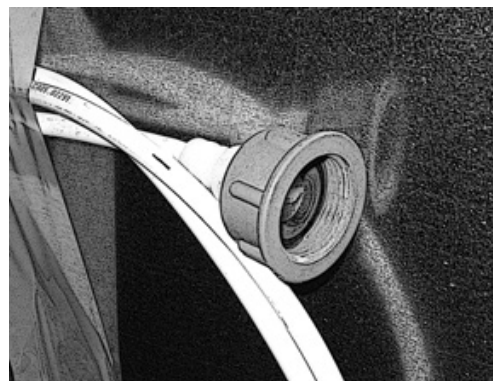
### Ice production water network connection:



**This appliance must be supplied only with cold water approved for human consumption (drinking water).**

The water supply tube of the unit is located on the back. When the unit is packaged, the tube is fastened with tape to the rear wall of the unit. See Image

The unit can be directly connected to the water supply on board. Its pressure must be contained between 1bar and 10bar.





## 4.5 Electrical Connections

- In order connect the unit to the vehicle's electrical system, proceed as follows:
- Before turning on the appliance, check to make sure that the voltage of the electrical system and/or battery complies with that which is indicated on the unit's data plate.
- Connect the refrigerator directly to the battery or to the relative main switch and make sure that the system is equipped with an electric device that's capable of protecting the circuit against possible overcurrents.

If the power supply voltage is different from 12/24Vdc, install a  $\Delta I$  0.03A differential circuit breaker. Avoid connecting the unit via the vehicle's control panel as this could result in voltage drops.

- Insert a fuse upstream from the refrigerator (see the table below). Connect the red wire to the electrical system's positive terminal, and connect the black wire the negative terminal. Use a pressed lug terminal that's suitable for the cable's size.
- A separate switch that simultaneously disconnects the power cables must be installed upstream from the refrigerator. Check to make sure that the installed switch supports the corresponding load indicated in the table below.

Models	12Vdc	24Vdc
DR49, DR55F, DR65, DR85, DR130, DR105, DR190, DR160FRIGO	15A	7.5A
DR160 FRIGO/FREEZER, DR160 FREEZER, DR160 COMBO	30A	15A



**WARNING!** If there is a battery charger, it must be connected to the battery and never directly to the refrigerator.

All wiring diagrams can be found at the end of the manual

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## 4.6 Size of the electrical cables

Always use cables of a suitable cross-section. The minimum cross-sections are listed in the table below:

Cross-section in mm <sup>2</sup>	AWG section	Max 12 V cable length m/ft	Max 24V cable length m/ft
2.5	13	2.5/8	5/16
4	11	4/13	8/26
6	9	6/19	12/39
10	7	10/33	20/66

For DR160 FRIDGE/FREEZER & FREEZER

Cross-section in mm <sup>2</sup>	AWG section	Max 12 V cable length m/ft	Max 24V cable length m/ft
6	9	6/19	12/39
10	7	10/33	20/66

## 4.7 Internal lighting



**Warning!** The refrigerator is equipped with high luminous intensity LED lighting. Avoid direct exposure to the light beam with eyes.

Replacement of the LED lighting unit must only be carried out by qualified personnel or by Service Centres for models DR49, DR55F, DR65, DR85 & DR130.

In order to replace the LED light bulb in models DR160 & DR190, slide the lighting unit's glass down using the appropriate lever. Replace the light bulb and to return the lighting unit to its original state (Fig. 4).

Only use original Indel Webasto Marine Srl spare parts.

## 5 Technical data (standard configurations)

Operating voltage: 12 or 24 VDC

Average consumption measured with an internal temperature of +5°C and an external temperature of 25°C.

The average consumption is greatly influenced by the refrigerator's usage mode and the type of ventilation.

Refrigerant: R134a (the system's capacity is indicated on the refrigerator's data plate).

The refrigerators meet the requirements of the EMC directive and bear the CE marking.

Model	Instantaneous consumption 12/24Vdc (Amperes)	Instantaneous consumption 12/24Vdc (Watt)	Average consumption at 25°C (Watt/24h)
DR 49	6.0/3.0	72	400
DR 55 FREEZER	7.0/3.5	85	740
DR 65	6.0/3.0	72	470
DR 65 NO FROST	6.0/3.0	72	320
DR85	6.0/3.0	72	370
DR130	6.0/3.0	72	429
DR 105	6.0/3.0	72	480
DR 160 FRIDGE	7.0/3.5	85	530
DR 160 FREEZER	10.0/5.0	120	1100
DR 160 FRIDGE	10.0/5.0	120	1100
DR 160 COMBO	10.0/5.0	120	1100
DR190	7.0/3.5	85	700

## 6 Troubleshooting

All work on electrical parts or electrical connections and the refrigerant circuit must be carried out by qualified and authorised personnel.

**Warning:** Disconnect electrical power before performing any operations on electrical parts or on electrical connections.

Defect	Possible cause	Intervention
The refrigerator does not cool, the compressor will not start.	No electrical power. Battery in poor conditions. Faulty thermostat. Defective electronic control unit.	Check to make sure that the electronic control unit is receiving sufficient power and voltage; check the fuse. Verify that the internal lighting is working and that the compressor is receiving power. Check the cables, lugs and connectors. Verify that the battery is charging properly. Check the thermostat: Bridge T - C with a separate cable. If the compressor will not start, its electronics are probably defective. Replace. If the compressor starts up with the bridge, the thermostat is defective. Replace the thermostat.
The compressor only performs brief attempts at starting up.	There is insufficient voltage or else a drop in voltage during the attempt to start. The protection device is activated. The Batteries are drained.	Check the cables and connections; remove any traces of oxidation or corrosion. Charge the batteries, start the motor or connect the battery charger.
The compressor functions but doesn't cool.	Loss of refrigerant through the evaporator or the tubing. Tubing clogged.	Carry out a leak check and repair any leaks, drain and refill the proper amount of R134a refrigerant. (This operation must be carried out by a qualified technician.)
The compressor runs for a long time but doesn't cool properly (reduced efficiency).	Insufficient ventilation, the condensation unit is overheating. The fan is not working properly. There is too much frost on the evaporator. The door does not close properly and lets in warm, moist air. The condenser is blocked by dust.	Increase the ventilation. Replace the fan. Defrost the unit. Correct the position of the door and check the gasket. Clean the condensing unit.