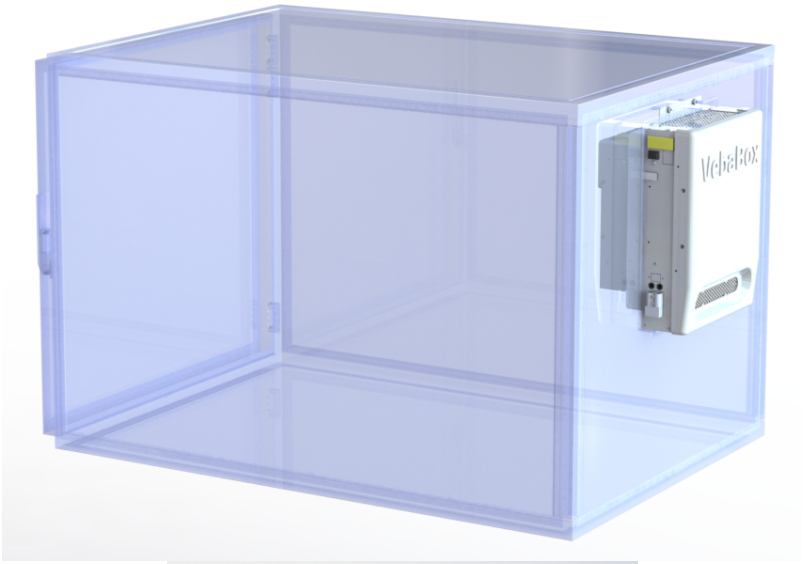
User Manual VebaBox equipped with or TUC2001





VebaBox Cold Chain Innovators
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VebaBox
Cold Chain Innovators

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1 Introduction

Dear Customer,

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Thank you for choosing VebaBox. This custom-made product is designed for storage and transport of goods sensitive to temperature fluctuations and assures stable temperature of your goods at desired level. Read the following manual carefully prior to using your product.



CAUTION:
This manual is published for informational purposes only. VebaBox company makes no warranties, expressed or implied, with respect to the information and descriptions contained in this manual. Such information and descriptions should not be regarded as all-inclusive or covering all contingencies but with intention for better understanding of our product. In the event you have any questions or require further information, please contact your local VebaBox authorized representative.
The procedures described herein should only be undertaken by suitably qualified personnel. Failure to implement these procedures correctly may cause damage to the VebaBox unit or other property or personal injury.
The VebaBox company and its affiliates shall not be liable in contract or tort (including negligence and/or strict liability) or otherwise, to any person or entity for any personal injury, property damage or any other direct, indirect, special or consequential damage or liability whatsoever, arising out of or resulting from any actions by any person that are contrary to this manual or any of the information, recommendations or descriptions contained herein or the failure of any person to implement the procedures described herein correctly or to follow caution and safety decals located on the VebaBox unit!

2 Safety Precautions

VebaBox is a specialized custom-made product that contains electric and cooling circuits, installation, use and maintenance of which are subordinated to special directives and regulations for protection of human health and global environment.
This is why the VebaBox company as legal owner of the product design and manufacturer declares and warns that only appointed qualified distributors and technical services are authorized to install and to service the VebaBox products.

During normal product usage the users should be aware of the following dangers.



CAUTION: Danger of fatal injury from electric shocks! When using the VebaBox, if the VebaBox is powered by 110-230V AC, ensure that the power supply has a power circuit breaker! Check that the voltage specification on the plug label is the same as that of the power supply.

Only connect the VebaBox as follows:

- with the 12V VebaBox power supply installation set installed by an authorized VebaBox specialist to the electric circuit of the car and/or to the battery.
- or, with the 110-230 V connection cable included with the VebaBox to the 110-230V AC supply.

If the cable is damaged, it must be replaced to prevent possible electrical hazards.
Disconnect the connection cable before cleaning and maintenance, after use and before changing a fuse.



CAUTION: Danger of injuries! Batteries contain aggressive and caustic acids. Avoid battery fluid coming into contact with your body. If your skin does come into contact with battery fluid, wash the part of your body in question thoroughly with water. Disconnect the VebaBox and other electric devices from the battery before you connect the battery to a quick charging device. Overvoltage can damage the electronics of the VebaBox.



CAUTION: The VebaBox is not intended for use by children and teenagers or invalid persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.
Do not operate the VebaBox if it is visibly damaged. The VebaBox may only be repaired by qualified personnel. Inadequate repairs can cause considerable hazards. If your VebaBox should need repairing, please contact your local distributor.
Do not open the refrigerant circuit under any circumstances!

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The VebaBox is not suitable for transporting caustic substances or substances containing solvents.
Food and pharma products should be stored in their original packaging and/or packed into suitable containers only.



CAUTION: Use tools with insulated handles that during operation and maintenance of VebaBox are in proper condition only.



CAUTION: Danger of fatal injury due to electric shocks! Do not touch exposed cables with your bare hands. This especially applies when operating the VebaBox from an AC power supply.
Before starting the VebaBox ,make sure that the power supply line and the plug are dry. Do not place any electrical devices connected to a live electric power source inside the cooling container.
Set up the VebaBox in a dry location where it is protected against splashing water. Protect the VebaBox and the cable against rain and moisture. Do not place it near open flames or other heat sources (heaters, direct sunlight, gas ovens etc.).



CAUTION: Danger of overheating! Always make sure there is sufficient ventilation so that heat generated during normal operation can dissipate.
Ensure that the ventilation slots are not covered.
Leave at least 100 mm free from the top and around the VebaBox to ensure adequate ventilation.
Never immerse the VebaBox in water. Do not fill the inner container with ice or fluid.



WARNING: Always wear goggles or safety glasses when working with or around the refrigeration system or battery. Refrigerant or battery acid can cause permanent damage if it comes in contact with your eyes.



WARNING: Control circuits (except of 110 – 230V AC power supply input) used in the VebaBox are low voltage. This voltage potential is not considered life threatening, but the large amount of current available can cause severe burns if shorted to ground.



WARNING: Do not wear jewelry, watches, or rings. These items can shortcut electrical circuits and cause severe burns to the wearer.



<u>IMPORTANT:</u>
VebaBox cannot be held liable for claims for damage resulting from the following:

- Misuse, improper installation, abnormal servicing, storage of hazardous chemicals, use of corrosive substances, transit damage, recharging of cooling system, accident, fire, improper repair, tampering or abuse.
- Incorrect voltages or faults with regard to power supply which falls outside of the VebaBox operating parameters.

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3 First Aid

3.1 First Aid–Refrigerant

Eyes: After contact with liquid, immediately flush eyes with large amounts of water. Get prompt medical attention.
Skin: Flush touched areas with large quantities of lukewarm water. Do not apply heat. Wrap burns with dry, sterile, bulky dressing to protect from infection or injury. Get prompt medical attention.
Inhalation: Move affected person to fresh air and restore breathing if necessary. Stay with victim until arrival of emergency medical personnel.

3.2 First Aid – Refrigerant Oil

Eyes: Immediately flush eyes with large quantities of water for at least 15 minutes while holding the eyelids open. Get prompt medical attention.
Skin: Remove contaminated clothing. Wash thoroughly with soap and water. Get medical attention if irritation persists.
Inhalation: Move the victim to fresh air and restore breathing if necessary. Stay with the victim until arrival of emergency personnel.
Ingestion: Do not induce vomiting. Immediately contact local poison control center or physician

3.3 First Aid – Electric shock

First: Immediately disconnect the electric power source in the safest way (switch off the car engine, or emergency switch or disconnect / cut off the live circuit with a suitable insulated tool).
Second: When you are sure that the power is off remove the victims from the dangerous area and put them in anti-shock position
Third: Call your local medical emergency aid and act according to their instructions until the medical aid specialist comes to take over and provide further aid.

3.4 First Aid–Burns from heat

First: Immediately remove the victims from the source of heat in the safest way.
Second: When you are sure that the heat source is eliminated put the victims in anti-shock position.
Third: Call your local medical emergency aid and act according to their instructions until the medical aid specialist comes to take over and provide further aid.

4 General safety rules during use of product

WARNING: Failure to comply with safety regulations may result in death or serious injury and/or damage to the product or its surroundings. Read this manual carefully and keep it with the product at all times.

- Pay attention to the weight of the product and make sure that you, or the devices used, can carry the weight.
- The product must not be placed on sloping surfaces.
- Load in VebaBox has to be placed securely. Sidewalls must not be exposed to permanent pressure. VebaBox sidewalls are not designed to carry permanent loads.
- Please read the operating instructions carefully before connecting the product.
- Never insert objects into the ventilation openings or fans.
- Do not obstruct air circulation by covering the grilles with objects.
- Do not damage any parts of the cooling system containing refrigerants by punching, perforating, crushing, bending or otherwise. Risk of serious frostbites from evaporating refrigerant.
- Follow your local regulations for hazardous substances as refrigerants: risk of fire or explosion.
- Never touch the heat exchanger with bare hands. Risk of finger cuts on sharp ribs.
- Floor might be slippery.

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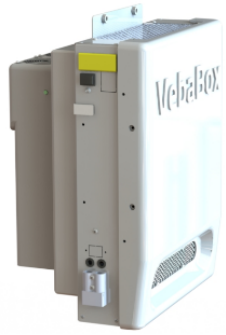
5 Application

The basic function of VebaBox is to maintain the goods inside it at a regulated, stable and adjustable temperature while the box is submitted to fluctuating ambient temperatures in the range between -20°C and 50°C or -4°F and 122°F for TUC2001.

CAUTION: The VebaBox is not constructed for cooling goods down. This means, that goods should be preconditioned to the required temperature before being put into the box.

CAUTION: When loading the box, allow clearance around air intake and outlet of the unit. Goods should be stacked to allow at least a 10 cm gap directly below the ceiling of the box. Do not place goods directly under the heat exchanger – risk of dripping water.

The VebaBox TUC2001 is intended to be installed in the closed superstructures of any type of cargo vans equipped with an alternator power source of 12V / 100A DC minimum. The unit is available both for installation on one side panel of the box (TUC201B) or installation on top of the box (TUC201T).





6 Product assembly specifications

The product assembly consists of

a) Basic parts
   1. VebaBox body
   2. Thermal unit TUC2001
   3. Power supply cable set
   4. Mechanical fixing set

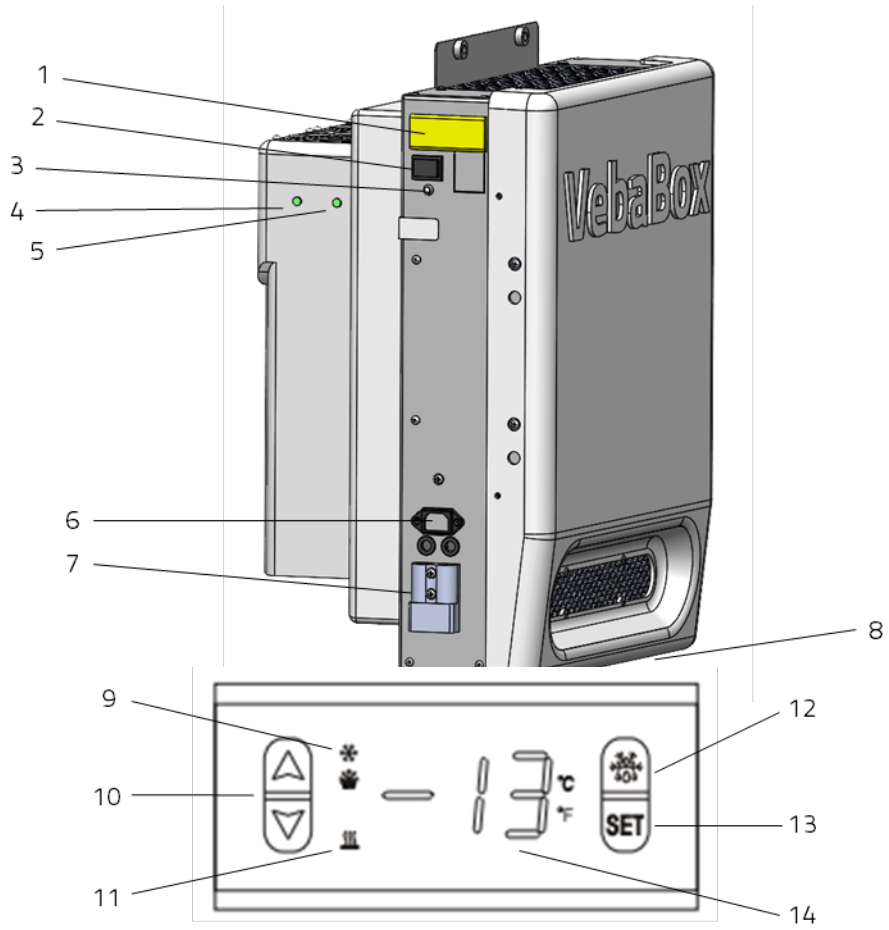
b) Accessories (optional)
   1. Remote controller
   2. LED lighting inside the VebaBox
   3. Power pack

7 Operation

The thermal unit detects the temperature in the VebaBox by means of a temperature sensor. If the temperature exceeds the set values, the cooling unit is switched 'on' and controlled space is then cooled or heated. When the temperature has reached the set temperature, the thermal unit switches 'off' automatically. The internal fans will rotate independent of temperature for optimal air circulation, so that the temperature in the VebaBox remains stable.

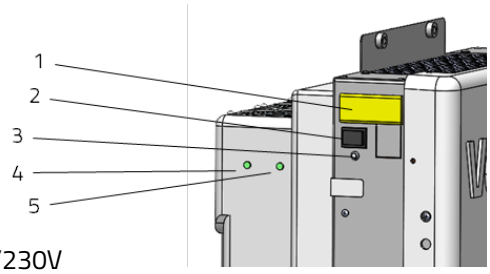
7.1 Controls

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1: Temperature controller display
2: I/O Switch
3: High pressure warning/door open
4: Door switch connection
5: LED light connection
6: 110/230 Volt connection
7: 12 Volt connection
8: Remote control connection
9: Cooling active symbol
10: Selecting buttons
11: Heating active symbol
12: Defrost active symbol
13: SET button
14: Temperature display

7.1.1 Switch 'on' the thermal unit



To switch 'on' the unit, use the power switch (2). Note that if the remote control is installed, the power switch on the thermal unit needs to be always switched 'off'. Use the power switch on the remote control in this case to turn on the thermal unit.

Note: the thermal unit will operate only when car engine is running, unless a Power Pack has been installed or you use 110/230V AC external power supply.

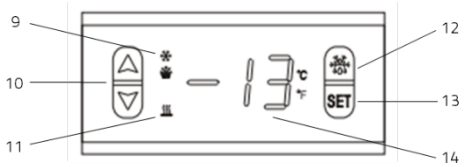
7.1.2 Temperature setting

During normal operation display shows the actual internal temperature. To change the SET temperature:

- Press the SET button (13), the set temperature value starts to blink.
- Use selecting buttons (arrows 10) to change the set temperature.
- Press the SET button (13) again to confirm the temperature and return to the current temperature display. (If no button is pressed within 6 seconds, the current temperature is automatically displayed).

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7.1.3 Indicators



The unit has one of 4 possible operational states:

- Cooling active – indicated by symbol (9).
- Heating active – indicated by symbol (11).
- On temperature (in pre-set tolerance band) – neither symbol 9 or 11 is lit.
- Delay of operation mode change – blinking of symbol 9 or 11 indicates that unit is changing its mode (cooling to heating or vice versa) and is waiting for preset time delay (3 minutes by default).

7.1.4 Alarm

Alarm function is available on temperature controller. By default, this will signal any deviation of more than 3°C from the set temperature. Alarm sound can be muted by pressing any button (alarm will be still signalized by the display blinking).

7.1.5 Defrost

Defrost function is available in the controller, although in normal use conditions defrost is not necessary. Defrost button is therefore not to be used in TUC2001. Automatic defrost is also prohibited by default.

7.2 Remote control

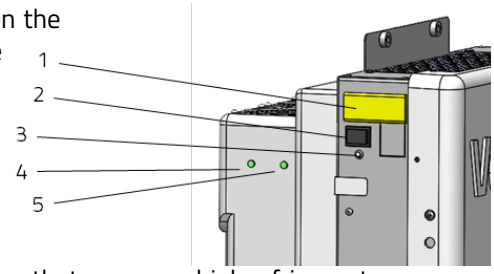
Thermal unit installation can contain remote dashboard control. If installed, some specific conditions apply:

- Remote display has priority in control of temperature. If connected, the display on the thermal unit cannot be used for setting of temperature and is not taking part in temperature regulation.
- The same rules as described in section “controls” apply to the remote display (including setting of temperature in the box).
- Do not use power switch on thermal unit. This switch should be in position “0” all the time. Use switch ‘on’ remote control to operate the unit.

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7.3 Door switch

The unit contains an input for door switch. For a proper function the door switch needs to be connected. If the door is opened, the compressor and internal fans are switched 'off' to prevent excessive air exchange. Same time the interior light is switched 'on'. Red indicator light (3) is signalizing that the door is open.



7.4 High pressure warning

The thermal unit is protected against extreme conditions that can cause high refrigerant pressures, such as extremely high ambient temperatures or dirty/blocked heat exchangers. The triggering of this protection is indicated by a red control light (3).
If you notice the protection has been triggered, ensure proper ventilation of thermal unit in the car (check the roof fan function). If the problem is not solved by setting the thermal unit to proper ambient temperatures (-20°C to +50°C or -4°F and 122°F), the heat exchanger can be dirty or blocked – please contact your local dealer for service.

8 Cleaning and maintenance

WARNING: Never allow water or other liquids to enter the thermal unit and electronics.

- Switch 'off' the product and disconnect all power cables.
- The VebaBox is not designed for automatic defrosting (not necessary for normal operation). If excessive frost builds up, shut off the unit and wait until the ice melts. Do not remove the ice by mechanical means.
- Clean the product with a damp cloth, using a detergent if necessary. NOTE: do not use abrasive or corrosive agents as these may damage the surface.
- Carefully dry all remaining damp parts with a dry cloth.
- The door seals must be greased every three months to prevent the doors from jamming or cracking. This can be done with, for example, medical vaseline.
- Repairs and maintenance must be carried out by qualified personnel. It is recommended to check the unit and clean the internal heat exchangers at least once a year.

9 Packaging material and safe disposal of products

The packaging protects the product from transport damage. Store the original packaging parts for possible future transport of the thermal unit.

Old electrical and electronic products usually contain valuable materials. However, they also contain harmful substances that have been necessary for the products to function properly and safely. The disposal of such products or impropriate handling of these substances can be harmful to health and the environment. Dispose of the product in a municipal collection depot for electrical and electronic equipment. The discarded product must be stored out of reach of children. Please note that the cooling unit contains refrigerants which must be disposed of in accordance with local legislation and directives.

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10 Troubleshooting

Problem	Analyze	Solution
The cooling unit does not work.	The power plug is not connected properly.	Connect the plug and check 12V or 110V/230V jack.
	No input voltage of 12V.	Make sure the car engine is running. Check the fuse.
	Remote control not connected properly.	Check the connection plug of remote control.
	On/off switch in the correct position.	Switch on/off button. Hint: if you have a remote control, the main switch on the unit should be in position "0"
The cooling unit does not switch 'off'.	On/off switch in the correct position.	Check if main switch is 'off' (also on remote control).
The cooling/heating unit is working but does not cool or heat properly.	The doors are not closed properly.	Close the doors. Check sealing for damage or wear.
	There is a heat source in the box.	Use only preconditioned goods.
	Temperature set correctly.	Set temperature.
	The evaporator is frozen.	Allow the evaporator to defrost by turning the unit off and allowing the temperature in the box to rise above freezing point.
	Refrigerant leak.	Call VebaBox service.
Red control light indicator is on, unit is working but not cooling.	Box door is opened.	Close the door and make sure connector is plugged to unit.
	The air passages are clogged or dirty.	Remove the obstruction, dust or dirt. Contact distributor for regular maintenance.
	The ambient temperature is more than 50°C / 122°F.	Ensure an ambient temperature < 50°C (122°F) by a roof fan.
The cooling/heating is working but fan is stopped.	Defective wire connection / fan defective.	Call VebaBox service.
Display error code.	Display shows symbols LL or HH.	Defective temperature sensor, call VebaBox service.

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