I **Istruzioni per l'installazione e l'uso**
Compact Classic - Unità Refrigerante Ventilata

EN **Installation and usage instructions**
Compact Classic - Ventilated Cooling Unit

DE **Installations- und Wartungsanleitung**
Compact Classic - Belüftete Kühleinheit

FR **Instructions pour l'installation et l'utilisation**
Compact Classic - Unité Réfrigérante Ventilée

ES **Instrucciones para la instalación y el uso**
Compact Classic - Unidad de Refrigeración Ventilada

NL **Aanwijzingen voor gebruik en installatie**
Compact Classic - Geventileerde koelunit

FI **Asennus- ja käyttöohjeet**
Compact Classic - Ilmankiertotoiminnon sisältävä jäähdytysyksikkö

SV **Installations- och bruksanvisning**
Compact Classic - Ventilerad kylenhet

RU **Инструкция по установке и эксплуатации**
Compact Classic - Вентилируемый холодильный агрегат

Rev. 1

Identification of product characteristics

Before reading this manual or before contacting the Indel Webasto Marine service centre, it is necessary to clearly identify the characteristics of the purchased product.

Gr.	Model	R/E	T	V	Nr.	G	Pers.
☐	☐☐☐☐	☐	☐	☐	☐	☐	☐☐☐

Gr. Unit
R/E Cooling/evaporator
T Temperature control
V Voltage
Nr. Number reported
G Type of joints used
Pers. Customer personalisations

T - Temperature control

Code	Refrigerator	Freezer	Temperature control
A	STD 5°C	-6°C	FRIDGE/FREEZER refrigerator thermostat Tmin = -6°C
B	STD 5°C	-12°C	FRIDGE/FREEZER combined thermostat Tmin = -12°C
C		-18°C	Freezer thermostat

V - Voltage

Code	Voltage	Unit	Power supply
1	12/24	All	
2	12/24 + 110 V	BD80	Power pack kit AC/DC
3	12/24 + 230 V	BD80	Power pack kit AC/DC
4	12/24 + 110/230 V	Up to BD50	Power pack kit AC/DC
7	12/24 + 110/230 V	Up to BD50	Secop kit AC/DC

G - Type of joints used

Code	Description
0	Joints F-SBD00034AA M-SBD00035AA
X	Joints F-SBD00034AB M-SBD00035AB

Most FRIDGE version Compact Cooling Units can be converted into freezer versions if necessary.

The following factors must be taken into consideration to perform this conversion:

- **The total volume that the unit can cool in the FREEZER version is equivalent to 1/3 of the volume indicated for the FRIDGE version.**
- **Insulation thickness must be increased (see the table of insulation to be included).**
- **The thermostat should be replaced with a thermostat kit suitable for the conversion (contact your local Dealer for assistance).**

Warning:

- **The purpose and function of the Isotherm Compact cooling unit when used as freezer, is only to keep completely frozen food products frozen while they are stored in a sealed and properly insulated space. The Isotherm Compact will not freeze unfrozen or partially frozen food products. Should any unfrozen or partially frozen food product be stored in the freezer this is considered to be a misuse and could result in possible unintended thawing of the food product which may lead to safety issues, sickness or injury if ingested. Storage of unfrozen or partially frozen food products in the Isotherm Freezer may also affect the quality of other frozen food products stored within the freezer.**
- **Exposure to temperatures exceeding the temperature range of the climatic class for which the freezer and its insulation is made, power supply interruptions and or frequent opening of the freezer, may also affect the effectiveness of the Isotherm Compact cooling unit and the quality of the contents of the freezer. The user should always check the quality of the food products prior to ingestion.**
- **Misuse or use of the Isotherm Compact cooling unit in any way contrary to this manual gives rise to no cause of action against the manufacturer and or supplier.**

Summary

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

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 S.r.l. cannot guarantee that the information within covers every possible event associated with installation of the product. Contact our technicians 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 Product description

The COMPACT CLASSIC cooling unit has been designed for installation in sailing or motor boats, to meet the specific requirements of the marine environment in terms of performance and reliability. All necessary components are supplied for COMPACT CLASS installation: the cooling unit lets you turn any properly insulated compartment on the boat into a functional, high-energy performance refrigerator. In some cases it can even be configured as a freezer.

The COMPACT CLASS system is divided into two main sections to simplify installation: the condenser unit (compressor unit) and the evaporator connected by means of a quick coupling hose.

Refrigerant runs through the circuit, passing through the external condenser unit (compressor unit) and the evaporator located inside the compartment to be cooled (useful part of the cycle). When installing the unit, it is important that the compartment that will house the compressor be well ventilated, allowing air to circulate as it enters from the lower part and exits from the upper part, permitting aeration and therefore correct machine cooling, preventing dangerous overheating. The unit is provided pre-filled with refrigerant and is ready for use upon supply. The compressor is supplied watertight and leak-proof.

Once assembled, the COMPACT CLASS system offers low power consumption with minimal noise. Marine refrigerators made with COMPACT CLASS are capable of functioning at angles of up to 30°. Greater angles can cause permanent damage to the compressor.

To reduce electrical consumption and maintain internal compartment temperature, it is important that the compartment to be used as a refrigerator be suitably insulted with polyurethane foam or similar material, with a thickness contained in the following tables related to the possible operation configurations (compartment volumes and operating environment temperature). The configurations indicated in the table consider the following conditions for outdoor temperature and insulation:

Operating temperature conditions:

- **SN**= operation at environment temperature from 10°C to 32°C
- **ST**= operation at environment temperature from 16°C to 38°C
- **T**= operation at environment temperature from 18°C to 43°C

Thermal insulation characteristics:

- Polyurethane foaming insulation with specific weight 35-40 kg/m^3 and with thermal conductivity ≤ 0.030 W/mK

Table 1: Summary of Volumes/Insulations

INSULATION REFRIGERATOR LITRES	T=30mm	30 < T <= 50 mm	50 < T <= 80 mm	80 < T <= 100 mm	100 < T <= 120 mm	120 < T <= 150 mm
V <= 50	SN - ST - T					
50 < V <= 80	SN - ST	T				
80 < V <= 100	SN	ST - T				
100 < V <= 150		SN -ST	T			
150 < V <= 200		SN	ST - T			
200 < V <= 260		SN	ST	T		
260 < V <= 400			SN - ST	T	T	
400 < V <= 425				SN - ST	T	
425 < V <= 600				SN	ST	T

Table 2: Summary of Volumes/Insulations

INSULATION -12°C FREEZER LITRES	T = 30mm	30 < T <= 50 mm	50 < T <= 80 mm	80 < T <= 100 mm	100 < T <= 120 mm	120 < T <= 150 mm
V <= 20	SN - ST- T					
20 < V <= 25	SN - ST	T				
25 < V <= 40	SN	ST - T				
40 < V <= 55		SN - ST - T				
55 < V <= 65		SN - ST	T			
65 < V <= 85		SN	ST - T			
85 < V <= 130			SN - ST	T	T	
130 < V <= 140				SN - ST	T	
140 < V <= 200				SN	ST	T

Table 3: Summary of Volumes/Insulations

INSULATION -18°C FREEZER LITRES	T = 30mm	30 < T <= 50 mm	50 < T <= 80 mm	80 < T <= 100 mm	100 < T <= 120 mm	120 < T <= 150 mm	150 < T <= 200 mm
V <= 20	SN	ST - T					
20 < V <= 25	SN	ST - T					
25 < V <= 40		SN - ST - T					
40 < V <= 55		SN	ST -T				
55 < V <= 65		SN	ST-T				
65 < V <= 85			SN - ST	T			
85 < V <= 130			SN	ST	T		
130 < V <= 140				SN	ST	T	
140 < V <= 200					SN	ST - T	T

The following tables contain the configurations of the compressor and evaporator available for air-cooled models.

Table 4: Summary of configurations

Model	Compressor	Evaporator	Dimensions	Refrigerator volume in L	Freezer volume in L
GE80	BD35	Flat	350X250	80	26
GE150	BD35	Flat	386X361	150	50
2001	BD35	Oval	240X85X210	125	41
2301	BD35	Oval	320X100X230	150	50
2501	BD50	Oval	380X140X270	200	66
2005	BD35	Flat	350X130	60	20
2007	BD35	L	250+110X350	100	33
2010	BD35	L	400+170X210	125	41
2012	BD50	Flat	815X210	170	56
2016	BD50	Flat	1200X190	200	66
2017	BD50	Flat	1000X270	260	86
2013	BD50	Flat	1370X300	400	133

The refrigerator units are suitable for use with 12 Vdc or 24Vdc DC voltage systems. It can be connected to 115VAC - 230VAC electrical mains using accessories, described later in this manual.

2 Symbols used in the manual

Table 5: Summary of signs

Obligation to read instructions The presence of this symbol mandates reading of instructions before putting the unit into operation.	
Obligation to disconnect The presence of this symbol mandates immediate disconnection of the unit from the mains in case of failures.	
Obligation to wear gloves The presence of this symbol mandates each operator wear suitable protective gloves.	
Obligation to wear shoes The presence of this symbol mandates each operator wear shoes designed to decrease the risk of injury	
General hazard The presence of this symbol mandates special attention by the operator.	
Shock Hazard The presence of this symbol tells personnel involved that the described operation may present a risk of electric shock.	
General prohibition The presence of this symbol represents a prohibition applicable to various situations.	

3 General instructions

WARNING!  Do not start the product before reading this instruction manual.

WARNING!  Through the appropriate coding, identify whether the product is a freezer or a refrigerator after reading reference parts.

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 S.r.l. will void all warranties and may void the declaration of conformity to applicable directives.

WARNING! - Any use of the COMPACT CLASSIC differing from that described in this manual is prohibited.

WARNING! - Indel Webasto Marine S.r.l. 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.

WARNING! – Do not place live animals inside the refrigerator.

WARNING! – Never open the cooling circuit for any reason.

WARNING! - This product is not intended to be used by children, people with physical, sensory, mental disabilities or by people with no knowledge or experience of how to use it, who must be supervised by individuals who have read the usage

instructions and can assume full responsibility for their safety; never allow children to play with the appliance.


WARNING! - The appliance must be protected against indirect contact in accordance with the "Heavy current regulations".


WARNING! - The COMPACT CLASSIC must never be used as a support.


WARNING! - Do not use the unit in a manner different from that foreseen.


WARNING! - The COMPACT CLASSIC has been designed with a product lock protection in the event of low battery voltage. The compressor can operate up to an angle of 30°, while greater angles can cause permanent damage to the compressor. In the event of a compressor block, follow the instructions in this manual and/or contact specialised technicians or Indel Webasto Marine S.r.l. service centres.


WARNING! - Do not store explosives or flammable aerosols inside the unit or near the refrigerator unit. Aerosols containing such substances can be identified by the flame symbol or other indications shown upon the product’s label.


WARNING! - The product must be installed in an area accessible for any maintenance. The installation area must however be protected by removable panels or guards and not directly accessible.


WARNING! - HEALTH HAZARD!

Check that the cooling capacity of the unit complies with the requirements of the food or medicines you wish to cool/conserve.

4 Identification label

The identifying data of the COMPACT CLASSIC are contained on the label placed at the top of the compressor.

Exact citing of the model,serial number and year of manufacture facilitate rapid and precise response in the event of need for technical support from trained Indel Webasto Marine S.r.l. service network technicians. Below is an example of a label.

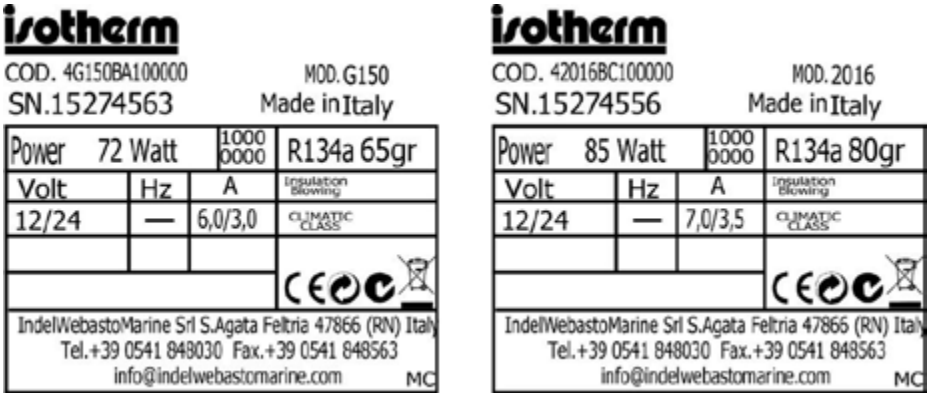


Figure 1: Example of an identification plate (Fridge unit to the left / Freezer unit to the right)

WARNING! - Do not remove affixed labels, as these must be stored secured fastened, maintained intact and in good condition for readability.

To avoid having to go read data each time on the identification label, we recommend taking note of the most important data in the below table:

Model code:
Serial Number S/N:
Quantity Gas R134a:

5 General safety requirements

The following safety rules concern the care to be given by the user for proper use of the product:


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 115 V or 230 V mains voltage.


WARNING! - Disconnect the appliance from the mains power supply immediately in the event of any malfunction. Contact qualified personnel or the Service Centre.


It is **FORBIDDEN** to tamper with or modify the unit's refrigerant circuit and electrical circuit.


WARNING! - Install the unit in a dry place that's sheltered against water spray.


WARNING! - Do not install the unit near heat sources, such as stoves, boilers, radiators etc.


WARNING! - Any repairs to be performed upon the unit's refrigerant circuit should be entrusted to qualified personnel.


WARNING! - The R134a refrigerant contained within the appliance is non-flammable in normal conditions. Never dispose of R134a refrigerant in the environment. Contact a qualified certified technician for handling fluorinated gases in the event of damage to the refrigerant circuit.


WARNING! - Never open the refrigerant circuit except for the normal connection/disconnection of couplings.

 **WARNING!** - Eliminate all sources of fire and/or sparks within the unit's vicinity; in the event of refrigerant leakage, remove the unit's electrical plug and ventilate the room thoroughly.

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

 **WARNING!** - If powered with 115-230 V~ mains voltage, the COMPACT CLASSIC must be connected downstream of a power supply system 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!** - When connecting the system to the main supply (115 V / 230 V), verify that the power supply system is equipped with a differential circuit breaker for current leakage.

 **WARNING!** - The electrical plug must be accessible after installation. The appliance must always be enclosed and not accessible without the use of a tool. The compressor/condensation unit installation area must be made with a material resistant to the needle-flame test required by standard EN 603335---1 or else be more than 5 cm from electrical and/or electronic components.

 **WARNING!** - Ensure that the compressor is sufficiently ventilated.

 **WARNING!** - Appliances should not be considered toys! Store and use the product out of reach of children.

6 Environment

This product complies with the Directive 2012/19/EU WEEE 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/company from whom the product was purchased.

The packaging, which has been designed to protect the unit and its components during transport, is manufactured from recyclable material. The packaging bears the recycling symbols and must be disposed of at an appropriate collection centre.

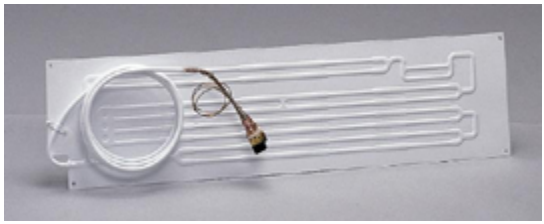
The symbol CE indicates that the product complies with all European Union provisions provided for its use.

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

7 Installation instructions

The COMPACT CLASS system is divided into two sections to simplify installation: **the condensation unit (compressor unit) and the evaporator (Figure 2)**. The connection between said sections is made through a hose equipped with quick couplings, easy to connect and disconnect without incurring loss of refrigerant. Pay particular attention to hose bending during assembly: it is malleable and very delicate; for its proper bending, fold it with a radius no less than 15 cm.

Condensation unit



Evaporator

Figure 2: Compact Classic System - Main units

7.1 Condensation unit / Compressor unit

WARNING! - The condensation unit must be installed horizontally with feet always downward and can run for short periods up to an angle of 30 °, while greater angles can cause permanent damage to the compressor.

Although the system can operate up to a temperature of 55°C, we recommend placing it in the coolest place available, both for energy consumption and for qualitative yield of the unit. Ventilation is required through exhaust vents of 1 dm2 in the lower and upper parts of the installation space. A kit with the hose to further improve ventilation by forcing the entry of fresh air is available as an optional accessory (Ref. SBE00004AA). Below is an image showing correct condensation unit/ compressor unit ventilation (Figure 3).

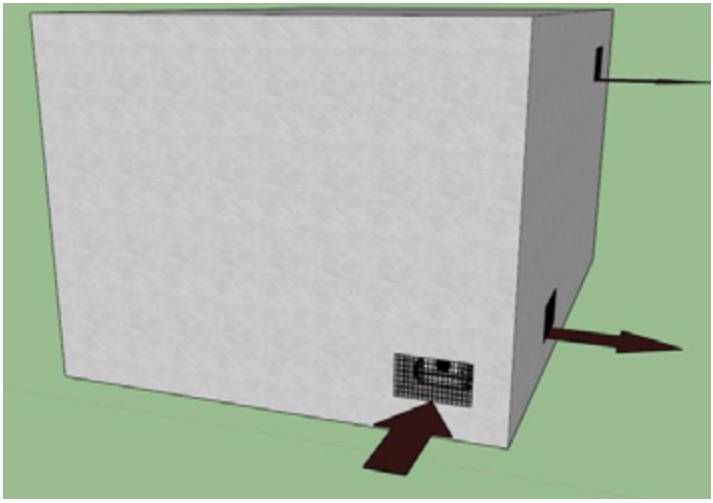


Figure 3: Air input and output in the unit housing room.

The compressor can be housed in a cabinet or in a similar compartment. We do not advise installing the compressor near the boat sleeping area. Use the provided click-on bracket (Ref. SGE 00012 AA) to secure the unit on a bulkhead.

Installation on Vertical bulkhead Installation on horizontal bulkhead

Figure 4: Detail of compressor housing on the vertical and horizontal bulkhead with bracket

Indel Webasto Marine recommends installing the condensation unit using the click-on bracket included in supply. As shown in the previous images (Figure 4), the click-on bracket can be used for installations both on vertical bulkheads and on horizontal planes.

Once the Click-on has been secured to the bulkhead (or on the horizontal plane), proceed with securing the compressor unit on the bracket as in Figure 5.

Figure 5: Detail of compressor unit - bracket attachment

The compressor must be installed as closely as possible to the evaporator. Evaporator hose length is about 2 m and a sufficient space for connection and tightening of quick couplings must also be foreseen.

WARNING! - The unit must not be installed so that it has to be manipulated by anyone. The housing space must only be opened voluntarily.

WARNING! - During installation, provide a minimum distance from flammable parts. This distance should not be less than 5 cm.

7.2 Evaporator

Some COMPACT CLASSIC models have "O" shaped corner evaporators, other models instead have flat evaporators. Flat evaporators can be folded/bent to adapt to go into a compartment. **Specific areas** in which these can be bent exist for this purpose. See the final part of this paragraph to find out which are the bending zones for each model and how to proceed.

Evaporator installation does not require bending.

The instructions below should be followed when installing an evaporator not requiring bending inside a compartment to convert it into a fridge or freezer:

1. Carefully plan the evaporator position: the location on the side of the compartment where you can install the internal unit and make a hole in which to pass quick couplings.
2. The evaporator must be installed so that it covers as wide an area as possible of the vertical wall. For freezer version installation, position so as to reach 2 or more sides where possible. The evaporator must be installed as high as possible inside the compartment to be cooled to optimise yield and temperature distribution inside the compartment.
3. It is very important that the short part of the hose attached to the evaporator via a jumper remain directed towards the wall.
   Be sure to leave enough space for this hose because it should not be removed in any case from its mounting to alter the length.
4. Both the suction hose and the small capillary hose should be rolled up carefully before installing the evaporator, keeping the protective covers on connections as long as the connection is not going to be made. Starting from the inside of the compartment to be cooled, lay the hose with its two connections through the hole made previously on the bulkhead until reaching the compressor, making sure not to choke or crush the hose. The excess part of the hose must be carefully wound in a spiral (Ø = 30 cm) before being fastened to thus prevent resulting vibration or noise. These actions must be completed **before** removing quick coupling protections.
5. Mark the position of the mounting holes using the screws and spacers provided. Do not use screws that are longer than necessary as they could completely pierce wall insulation.
6. Install the evaporator screwing the screws and spacers into the previously made holes.

Installation of evaporators to be bent

1. Carefully plan the position of the evaporator. Begin by identifying the position on the side of the compartment where you can make a hole in which to pass the quick couplings.
2. The evaporator must be installed so that it covers as wide an area as possible of the vertical walls. For freezer version installation, it is advisable to reach 2 or more sides where possible. The evaporator must be installed as high as possible inside the compartment to be cooled to optimise yield and temperature distribution inside the compartment.
3. It is very important that the short part of the hose attached to the evaporator via a jumper remain directed towards the wall.
   Be sure to leave enough space for this hose because it should not be removed in any case from its mounting to alter the length.
4. The measurement for bending the evaporator must be made directly inside the compartment where it will be installed. As a first step, start from the side of the evaporator where the gas input/output hoses are present and measure the length in order to make the first bend: with this measurement, keeping mind the space for inserting the hose in the provided hole (consider a space from 40mm to 80mm, proportional to the height of the evaporator, from the edge of the wall to the edge of the evaporator, to facilitate insertion of the latter in the compartment), the range of evaporator bending and any spacers to fasten the evaporator to the wall. Below is an example of the measurement calculation to perform bends on the evaporator (Figure 6): the evaporator is represented in black on the inside, considering a vertical section of the positioning compartment.

   IMPORTANT: Always check that the detected bending point is included in the bending zones indicated in the drawings contained in the manual.

   The bending zones are indicated based on the models at the end of this manual under "Bending Zones."

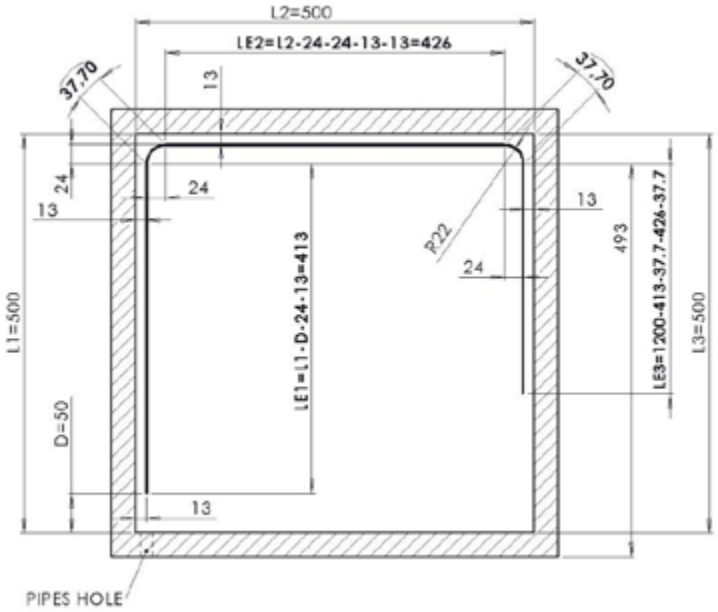


Figure 6: Example of distances to maintain to create folds on the evaporator

5. Both the suction hose and the small capillary hose should be rolled up carefully before installing the evaporator, keeping the protective covers on connections as long as the connection is not going to be made. Starting from the inside of the compartment to be cooled, lay the hose with its two connections through the hole made previously on the bulkhead until reaching the compressor, making sure not to crush or choke the hose. The excess hose must be carefully wound in a spiral (Ø = 30 cm) before being fastened to thus prevent resulting vibration or noise. These actions must be completed before removing quick coupling protections. The hole on the unit wall must be sealed with polyurethane foam or with insulating material.
6. Assemble the bending tool (SGH00008AA) on a work bench and fasten it with two screws so that it remains stationary during bending operations.

Figure 7: Wooden accessory provided for bending evaporators.

To bend, use the wooden accessory (Figure 7) provided in units with evaporators that can be bent. If you do not possess the latter, **only** use a **wooden** tool with a length of 44 mm.

WARNING: The use of different material other than wood as support for bending evaporators can cause damage to the interior piping of the evaporator, adversely affecting operation. Indel Webasto declines any responsibility for damage due to use of different material other than wood to bend the evaporator circuit.

Draw a line along the entire length of the crimping tool to highlight the start point of the bend. Then start to bend the evaporator from the side closest to the hoses, gently pushing downward.

7. Mark the position of the mounting holes using the screws and spacers provided. Do not use screws that are longer than necessary as they could completely pierce wall insulation.
8. Install the evaporator after it has been suitably bent and secured with the screws and spacers provided.

7.3 Thermostat

The thermostat can be installed both inside and outside the refrigerated compartment. In both cases, check that the thin hose provided with the sensor is long enough (at least 70 mm) in order to connect the end of the evaporator using a special clip or clamp with screws provided with supply. For large sized flat evaporators, the fastening of a clip support on the top edge instead of the bottom can result in a difference of temperature of even 5°C: mounting of a clip support on the top edge results in lower compartment temperature at the same thermostat setting. Connect the thermostat cables to the electronic unit, to the C, P and T tabs (as indicated in the wiring diagram in this manual in the Electrical Connections chapter). Models with large sized evaporators have a resistance on the cable connection in correspondence with the T tab to set compressor speed (see wiring diagram).

7.4 Thermostat-controlled temperature regulation

Unit temperature is regulated by the thermostat (Figure 8), which also includes a power function if turned counter clockwise to the end position. To stop unit operation, overcome the slight resistance of the knob up to its STOP position. Thermostat knob gradation depends on the scale and on the unit of measure used. To adjust temperature, proceed generally as follows: turning the knob clockwise, the internal temperature goes down and vice versa. Keep refrigerator temperature at 5 - 6°C. The outside temperature could affect the inside of the compartment in which the unit is installed, so it may be difficult to maintain proper internal temperature.

Figure 8: Example of a thermostat used in the Compact Classic with setting scale of 1 (hottest) to 7 (coldest)

7.5 Quick couplings

Connect the evaporator hoses to the condenser unit hoses via quick coupling: first connect the pair of capillary hose joints by rotating only the nut present on the female joint. Connect the second pair of joints remembering to rotate only the nut on the female joint. Do not dispose of the protective covers. If you need to re-position the system, connections can be reopened without leakage of refrigerant. In this case, immediately screw on protective covers to prevent dust from depositing on joints. Units can be provided with two types of "X" or "O" quick couplings, shown in the following figures.

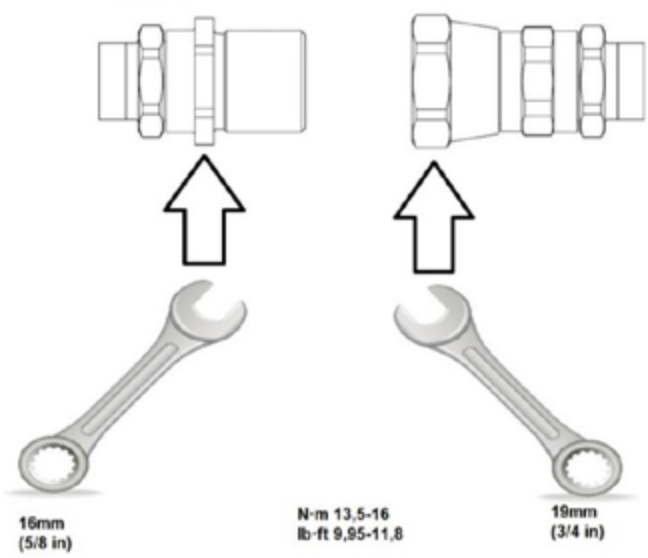


Figure 9: "X" quick coupling type

"X" joint connection:

1. Remove covers.
2. Check that the gasket seal on the male joint is lubricated with system fluid.
3. Move the female joint and tighten the rotating nut on the male joint.
4. Tighten the union of the two parts to the appropriate torque listed using appropriately sized spanners (in the hexagonal body of the joint and the unit nut) until the two sides are connected to the bottom or until you feel definite resistance.

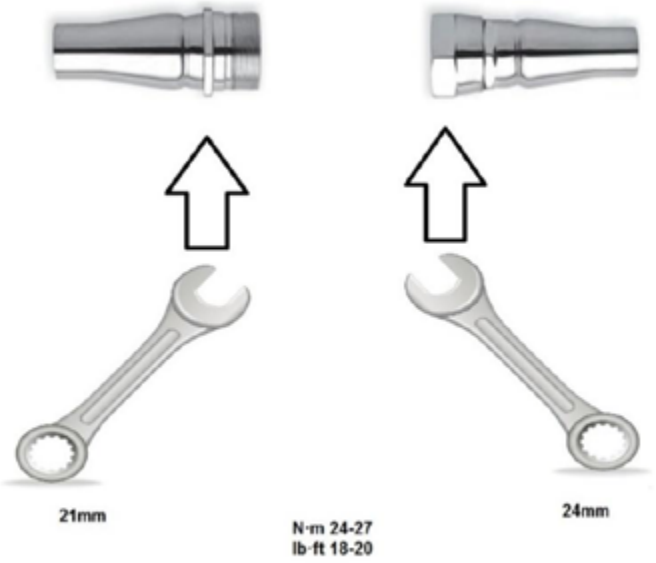


Figure 10: "O" quick coupling type

"O" joint connection:

1. Remove covers.
2. Check that the gasket seal on the male joint is lubricated with system fluid.
3. Move the female joint and tighten the rotating nut on the male joint.
4. Insert half the joints by hand to ensure correspondence with threading, using appropriately sized spanners (in the hexagonal body of the joint and the unit nut) until the two sides are connected to the bottom or until you feel definite resistance.
5. Use a marker or a pen to mark the line in the direction of the length from the joint nut to the division, adding another 1/6 or 1/4 of a turn. Line misalignment will act to indicate the degree of tightening. The final turn has the purpose of ensuring that the metal edge enters into the brass housing of the two joint components, forming a leak-proof connection. Tightening torque values must be complied with.

7.6 Start-up

Test the operation of the unit by turning the thermostat knob in a clockwise direction. The compressor must start up within 30 seconds, after which you will hear a slight hum. The fan will also start up a few minutes after the evaporator starts to freeze. You can adjust the temperature considering that the lowest temperature can be obtained by rotating the knob clockwise and the highest temperature, conversely, by bringing the knob to the position closest to that of the circuit breaker. To stop unit operation, fully rotate the same knob in a counter clockwise direction. The thermostat opposes some resistance which must be countered.

7.7 Electrical mains power supply

Connection to the electrical mains can be made for Compact Classic operation. When using a battery charger, always connect it to the battery and never to the refrigerator's electronic unit. An even better solution is installing a "Power Pack" transformer, an optional accessory, which switches automatically from battery power to electrical power when the latter is connected.

When using a AC/DC (115/230 Vac and 12-24 Vdc) control unit, make sure that:

- the connection is double insulated as in the figure

Figure 11: Detail of double insulated connection

- the earthing cable is longer than the other cables to ensure it will the last to disconnect if pulled.
- the earthing cable is connected via a screw on the metal structure/s of the compressor as indicated in the figure in the suitable allocation 

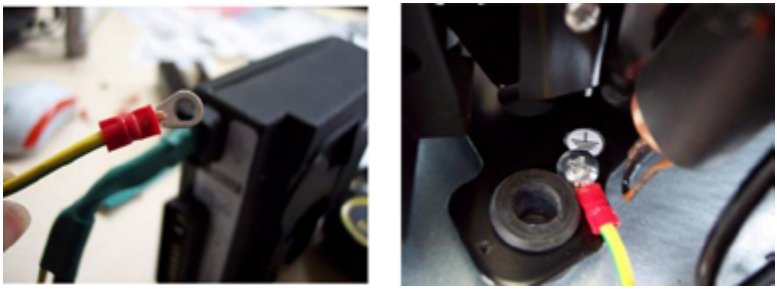


Figure 12: Detail of earthing cable connection on the metal part of the compressor

- after installation, the cable is secured with a double fastening restraint system as in the figure

Figure 13: Detail of cable double fastening

- the cable/s does not interfere with moving parts, does not interfere with roughness and that parts that may be sharp do not have a path where there could be a danger of becoming damaged

8 Electrical Connections

The electronic unit is a double supply voltage device: this means that the same unit can be used in both 12 Vdc and 24 Vdc systems. Maximum supply voltage is 17 Vdc for a 12 Vdc system and 31.5 Vdc for a 24 Vdc system. Maximum environmental temperature is 55°C. The electronic unit has a built-in protection which stops compressor operation if its temperature is too high.

The electronic unit must always be directly connected to the battery or to the main switch in compliance with + and - polarity and is protected against reversed polarity connection. A fuse must be installed in the cable + as close as possible to the battery. Pay special attention to the size of power cables. In the case of a 12 Vdc system (see diagram), use a fuse sized for a current of at least 15 A. With 24 Vdc systems instead 7.5 A. If using a main switch, it must be sized so as to support a current of at least 20 A. For cable sizing, in addition to referring to CEI 20-40 “Handbook of electrical cables with operating voltage up to 450/750 V", you can make use of Table 3 or Table 4, intending the distance between the battery or distribution panel and the electrical unit as length.

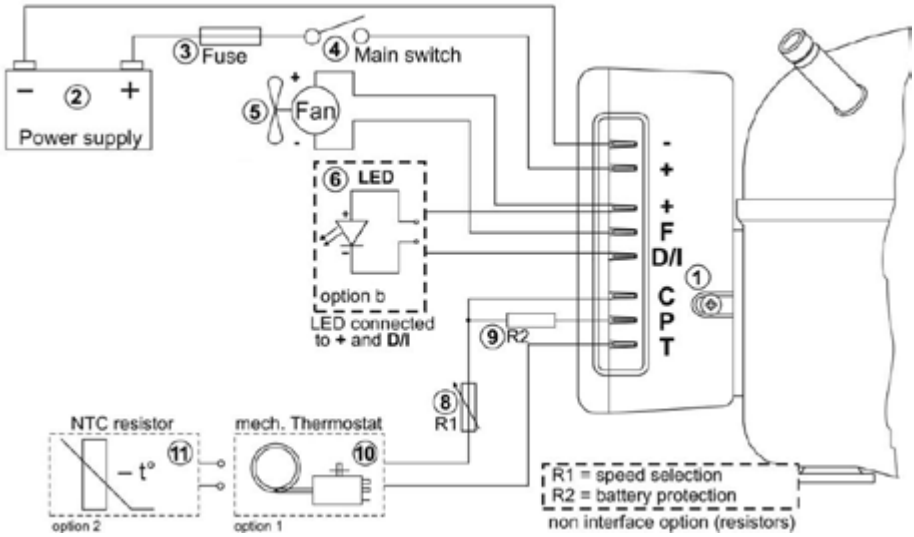
In order connect the unit to the boat’s electrical system, proceed as follows:

- 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.
- All electrical devices such as cables, connectors, alternators, regulators and batteries should be maintained in accordance with regulatory guidelines.
- The same battery, having a capacity of at least 90 Ah, must permit the accumulation of an appropriate amount of energy during motor operation.
- Always use cables with sufficient section (see recommendations in the corresponding table).
- Always use copper or tinned multi-conductor wire, suitable for marine environments.
- Connect the unit 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.
- Verify that the size of the main electrical system is enough to power all the units connected to it.
- Avoid using any switches, plugs or junction boxes that are not strictly necessary.

When the power cable is damaged, it must be replaced by the manufacturer or else by a qualified Service Centre.

Disconnect the appliance from the mains power supply immediately if you happen to encounter any damaged electrical cables.

Wiring Diagram 12Vdc - 24Vdc



1. Electronic Control System Secop 12Vdc-24Vdc
2. Battery
3. Fuse BD35F/BD50F 15A (12V) – 7,5A (24V) BD80F 30A (12V) – 15A (24V)
4. Switch
5. Electric fan
6. LED diode
8. Motor speed setting resistance (table reference)
9. Battery protection resistance (table reference)
10. Mechanical thermostat
11. Electronic thermostat (if present)

Table 2: Compressor speed setting based on fuse in use

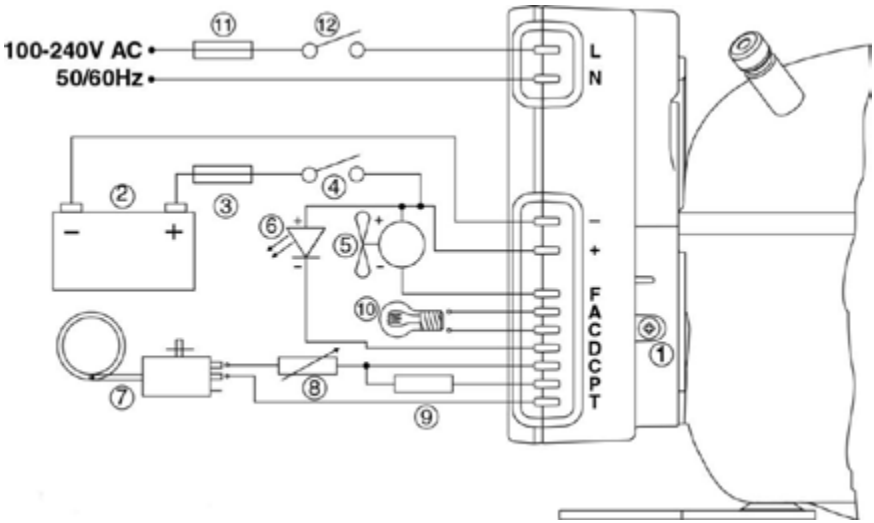
BD35F/BD50F

Electronic unit	Resistor (8) Ω	Motor speed rpm	Contr.circ. current mA
BLUE	0	2,000	5
WHITE	277	2,500	4
BLACK	692	3,000	3
RED	1523	3,500	2

BD80F

Electronic unit	Resistor (8) Ω (calculated)	Motor speed rpm	Contr.circ. current mA
BLUE	0	AEO	6
	203	2,500	5
	451	3,100	4
	867	3,800	3
	1700	4,400	2

Wiring Diagram 12Vdc-24Vdc - 115Vac/230Vac



1. Electronic Control Unit Secop 12Vdc-24Vdc 115/230Vac 50/60Hz
2. Battery
3. Fuse BD35F/BD50F 15A (12V) – 7,5A (24V) BD80F 30A (12V) – 15A (24)
4. Switch
5. Electric fan
6. LED diode
7. Mechanical thermostat
8. Motor speed setting resistance (table reference)

9. Battery protection resistance (table reference)
10. Lamp Max 3Watt
11. Fuse 4A
12. Main switch (6A)

8.1 Size of the electrical cables

Always use suitably sized cables with minimum sections as indicated in the table.

Table 3: Cable sections for compressor Secop model BD35F and BD50F

Size		Max length* 12V DC operation		Max length* 24V DC operation	
AWG	Cross section				
Gauge	mm²	ft.	m	ft.	m
12	2.5	8	2.5	16	5
12	4	13	4	26	8
10	6	19.5	6	39	12
8	10	32.8	10	65.6	20

*Length between battery and electronic unit

Table 4: Cable sections for compressor Secop BD80F

Size		Max length* 12V DC operation		Max length* 24V DC operation	
AWG	Cross section				
Gauge	mm²	ft.	m	ft.	m
10	6	8	2.5	16	5

*Length between battery and electronic unit

WARNING! After installation, check to make sure that all the unit's live parts, as well as its condensing unit/compressor, can only be accessed by removing the panels or other protection systems.

WARNING! Before connecting a quick battery charger, disconnect the unit from the battery. Over-voltage can cause unit damage.

8.2 Low voltage protection (battery saving)

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. In the case of no-battery solar applications, insertion of a 220 kΩ resistance is recommended. Standard battery protection is configured on the control unit with a resistance with value 0.

If the circuit between pin C and pin P is open, see Table 5.

Table 5: Battery protection data that can be configured by means of resistance R2 indicated in the wiring diagram.

Resistor (9) kΩ	12V cut-out V	12V cut-in V	12V max. Voltage	24V cut-out V	24V cut-in V	24V max. Voltage
0	9.6	10.9	17.0	21.3	22.7	31.5
1.6	9.7	11.0	17.0	21.5	22.9	31.5
2.4	9.9	11.1	17.0	21.8	23.2	31.5
3.6	10.0	11.3	17.0	22.0	23.4	31.5
4.7	10.1	11.4	17.0	22.3	23.7	31.5
6.2	10.2	11.5	17.0	22.5	23.9	31.5
8.2	10.4	11.7	17.0	22.8	24.2	31.5
11	10.5	11.8	17.0	23.0	24.5	31.5
14	10.6	11.9	17.0	23.3	24.7	31.5
18	10.8	12.0	17.0	23.6	25.0	31.5
24	10.9	12.2	17.0	23.8	25.2	31.5
33	11.0	12.3	17.0	24.1	25.5	31.5
47	11.1	12.4	17.0	24.3	25.7	31.5
82	11.3	12.5	17.0	24.6	26.0	31.5
220	9.6	10.9				31.5

Table 6: Standard battery protection setting omitting resistance R2 indicated in the wiring diagram.

12V cut-out V	12V cut-in V	24V cut-out V	24V cut - in V
10.4	11.7	22.8	24.2

8.3 LED

A 10 mA LED connected as per the electronic diagram can be used al in order to report errors in the electronic unit: the LED flashes a number of times equal to the error code. Each flash lasts 1/4 of a second. A series of flashes is followed by a period of shut-down, at the end of which the signalling cycle re-starts and repeats every 4 seconds.

It is possible to determine the type of error in the electronic unit based on the number of flashes, as shown in the table.

Table 7: Type of electronic unit error based on the number of LED unit flashes

# of flashes	Type of error
6	**Thermostat malfunction** If the NTC thermistor is in short circuit or disconnected
5	**Thermal deactivation by the electronic unit** If the cooling system is overloaded or the environmental temperature is too high, the electronic unit overheats
4	**Minimum rotation speed** If the cooling system is overloaded, the motor cannot maintain minimum rotation speed around 1850 rpm
3	**Motor start-up** The rotor is blocked or excessive differential pressure is present in the cooling system (> 5 bar)
2	**Deactivation due to fan overcurrent** The fan loads the electronic unit with a current exceeding 0.5 A
1	**Deactivation due to battery protection** Power voltage is outside the permissible range

9 Periodic inspections and maintenance

The COMPACT CLASSIC is equipped with a cooling circuit which does not require maintenance or refrigerant refilling: normally there is no need to perform maintenance work and equipment as it is installed can remain all winter in the boat.

The compressor is specifically designed for nautical applications guaranteeing maximum performance and durability. To maintain efficiency, seasonal maintenance is limited to the cleaning of the condensing unit. 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. Operations must be carried out with the system cut off from voltage.

When shutting off the unit for extended periods of time, first proceed with defrosting, since the evaporator could operate at temperatures well below freezing and therefore ice and frost may 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 unit should always be defrosted when the layer of frost reaches a thickness of 3-4 mm or more.

To proceed with Defrosting:

- Turn off the unit 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 compartment. Do not use sharp objects to remove ice and frost from the evaporator, as this could damage it and result in leaks.
- Switch the unit back on only after having defrosted the evaporator and carefully cleaned and dried the compartment. A towel can be placed at the base of the compartment during the defrosting procedure in order to facilitate water collection.

10 Troubleshooting

Below are the possible causes of failure or malfunction with an explanation of measures to be taken. In the event of defects not contained in the table or in the event of faults that cannot be resolved following the contained instructions, contact Indel Webasto Marine S.r.l. directly.

Table 8: Fault-cause-measure summary table

Fault	Possible cause	Measure
Nothing happens when the power is switched on.	Incorrect polarity. No electrical current. The battery is drained. Voltage drop due to cables that are too thin. Thermostat fault Electronic unit fault	Correctly position + and - connections. Check that mains power is connected. Check fuses. Inspect the charging circuit. Check possible voltage drops. Replace cables if necessary. Connect to bridge C and T on the electronic unit. If the compressor starts up, the thermostat is faulty. Change the electronic unit.
The compressor only performs brief start attempts at start-up.	Power problems, voltage too low or voltage drop during start-up attempts. The Batteries are drained.	Check cables and connections, possible presence of verdigris. Charge the batteries, start the motor or connect the battery charger.
The compressor functions but does not cool.	Loss of refrigerant. Quick coupling joints not tightened enough. Hoses or evaporator leaking.	Insect and tighten. Contact an expert in refrigeration systems for a general check or a specific refrigerant check.
The compressor runs for a long time but without generating enough cold.	Inadequate ventilation and/or insufficient insulation of the compressor.	Improve ventilation and/or isolation of the cooling compartment.
The compressor runs too long, generating too much cold in the cooling compartment.	The end of the thermostat sensor is not mechanically connected to the evaporator. The thermostat has a fault for which it does not turn off.	Check assembly of the sensor end and replace it. Re-position the thermostat.
Fuses are blown.	Fuses are sized incorrectly. Electronic unit fault	Check fuses 15 A – 12 V / 7.5 A – 24 V Change the electronic unit.

11 Standard product technical data

Below are the technical specifications of compressors supplied with the COMPACT CLASSIC.

Table 9: Technical specifications of compressors supplied

Technical data	Compressor BD35	Compressor BD50	Compressor BD80
Consumption 12/24 Vdc [W]	72	85	120
Current absorption 12 Vdc [A]	6	7	10
Current absorption 24 Vdc [A]	3	3.5	5
Fuse 12 Vdc [A]	15	15	30
Fuse 24 Vdc [A]	7.5	7.5	15
AC/DC version consumption [W]	85	110	150
Current absorption 115 Vac [A]	1	1.5	1.9
Current absorption 230 Vac [A]	0.5	0.7	0.9
Fuse 115/230 Vac [A]	4	4	4

Note: For actual consumption always refer to the data plate affixed to the product.

12 Recommendations for use

Below are suggestions and/or recommendations for proper use of the Compact Classic:

- Hot food or drink should be left to cool before being placed inside the compartment.
- Do not leave the door/ covers open longer than necessary.
- Avoid lowering the temperature inside if necessary.
- Remove dust or any impurities from the condenser at regular intervals.

13 Warranty

The Indel Webasto Marine warranty complies with EU Directive 1999/44/EC.

Validity period

The warranty for Isotherm refrigerants is valid for 2 years with regard to the cost of labour for repair or replacement, but only if carried out by IWM network, and therefore authorised, service centres.

The validity period starts from:

a) The date of sale indicated on the product invoice or sales receipt

b) The date of the invoice or registration document of the first sale of the boat or vehicle in which it is installed, if installed by the manufacturer of the vehicle.

c) In the absence of one of the above documents, the week of production indicated in the S/N (serial number)

Replacement of a product or component does not change the validity period.

The warranty covers

- Replacement or repair of the product or of one or more components acknowledged to be faulty due to manufacturing defects.
- Breakage or malfunction of components under warranty validity despite proven proper installation and proper use.
- Labour and transport according to the operating methods described below.
- Costs for shipping the replacement product (not including charges for customs clearance)

The warranty does not cover defects, damage or malfunctions caused by:

- negligence, neglect or improper use
- incorrect installation or incautious handling
- insufficient ventilation
- incorrect electrical connection
- undersized wiring
- improper maintenance or maintenance performed by unauthorised personnel
- failure to follow the instructions contained in this manual
- transport damage

- o Charges for customs clearance
- o Items subject to wear, fuses etc.
- o Professional use
- o Damage caused by weathering
- o Products installed elsewhere than in boats

Essential information for determining whether the case is covered by the warranty:

- Product code (indicated on the product label)
- S/N (serial number) (indicated on the product label)
- Invoice or sales receipt (or possibly registration document, see above in Validity period section)
- Detailed description of the defect (Attach photos if possible)
- Description of installation with particular attention to ventilation and wiring (Attach photos if possible)

(If it is determined that the case is not covered under warranty, the customer must pay all expenses for repairs, replacements, labour, travel of persons and transport. IWM is not required to bear any expense.)

14 Accessories for the Compact Classic

This paragraph lists accessories to make the cooling unit more flexible and adaptable to customer needs:

- Code SEG00030GA:

  AC/DC Control unit, mod. 101N0500 – Allows connection of the product directly to electrical mains from 115V to 230V 50/60Hz. Both types of power (Vdc and Vac) can be connected simultaneously; in this case the control unit will give priority to alternating current. If the alternating current power supply fails, the control unit automatically switches to DC voltage. The control unit will restart after one minute from switching between the two voltages. If alternating current is re-established there will be no delay in operation.
  Note: The AC/DC control unit is not compatible with versions equipped with a ASU, SEC, DIGITAL DISPLAY system and Secop BD80F compressor.

- Code SEH00004HA:

  Power Pack external power supply - Allows connection of the product directly to electrical mains from 115V to 230V 50/60Hz. The diode integrated Power Pack system gives priority to 24Vdc DC voltage coming from the same.
  Note: Compatible with Secop BD35F and BD50F compressors.

- Code SED00035GA:

  Power Pack external power supply - Allows connection of the product directly to 230V 50/60Hz electrical mains. The diode integrated Power Pack system gives priority to 24Vdc DC voltage coming from the same.
  Note: Compatible with BD80F Secop compressors.

- Code SED00035PA:

  Power Pack external power supply - Allows connection of the product directly to 115V 50/60Hz electrical mains. The diode integrated Power Pack system gives priority to 24Vdc DC voltage coming from the same.
  Note: Compatible with BD80F Secop compressors.

- Code SBE00004AA:

  Forced Ventilation Kit - Allows improved ventilation (forced by means of the fan already present on the unit, from the outside to the inside) of the cooling unit for more effective heat dispersion.

- Code SED00033AA

  Smart Energy Control Kit – The SEC (Smart Energy Control) is an accessory applied

to a standard control unit. In a continuous manner, a processor processes the air temperature within the cooling compartment and modulates the number of revolutions of the compressor by reducing them in proportion to the set/detected temperature difference. Furthermore, when the system detects a surplus of energy (motor on, electrical mains connected), the SEC processor works in order to accumulate cooling energy in drinks and food, reducing the temperature inside the compartment as much as possible without freezing them, re-using this energy when the energy surplus is no longer. The SEC can be used in a fridge or freezer system, bearing in mind that in the cooling power of the freezer configuration must be at least 30% more than needed (therefore verify that the volume of the compartment to be cooled is at least 30% lower than the maximum volume that the unit is able to cool).
Note: Only compatible with Secop control unit mod. 101N0210 – 101N0212.

15 Evaporator bending zones based on models and measurements

Below are images of evaporator bending zones supplied by Indel Webasto Marine.