

**victron energie**

**USER MANUAL  
GEBRUIKSAANWIJZING**

**WhisperAir**



**CE**

Copyrights © 1999, 2000 Victron Energie B.V.  
All Rights Reserved

This publication or parts thereof, may not be reproduced in any form, by any method, for any purpose.

VICTRON ENERGIE B.V. MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDING THESE VICTRON ENERGIE PRODUCTS AND MAKES SUCH VICTRON ENERGIE PRODUCTS AVAILABLE SOLELY ON AN "AS - IS" BASIS.

IN NO EVENT SHALL VICTRON ENERGIE B.V. BE LIABLE TO ANYONE FOR SPECIAL, COLLATERAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF PURCHASE OR USE OF THESE VICTRON ENERGIE PRODUCTS. THE SOLE AND EXCLUSIVE LIABILITY TO VICTRON ENERGIE B.V., REGARDLESS OF THE FORM OF ACTION, SHALL NOT EXCEED THE PURCHASE PRICE OF THE VICTRON ENERGIE PRODUCTS DESCRIBED HEREIN.

For conditions of use and permission to use this manual for publication in other than the English language, contact Victron Energie B.V.

Victron Energie B.V. reserves the right to revise and improve its products as it sees fit. This publication describes the state of this product at the time of its publication and may not reflect the product at all times in the future.

<u>SECTIONS</u>	<u>page</u>
English	4
Nederlands	15

# 1 Introduction

## 1.1 Preface

You have made the right choice by purchasing the WhisperAir. This Air-conditioning system is superior with its very low energy use, easy assembly, variable power provision possibilities and an environment-friendly cooling agent (R134A). The type WhisperAir 2000, available in 12 Volt and 24 Volt version, has the capacity to cool a space of maximum 25m<sup>3</sup>.

## 1.2 Contents

1.	Introduction .....	4
1.1	Preface .....	4
1.2	Contents .....	4
2.	Safety regulations / General restrictions .....	5
3.	Installation.....	5
3.1	Installation diagram .....	5
3.2	Assembly.....	6
3.3	Assembly of the WhisperAir.....	6
3.4	Condensation drainage.....	6
3.5	Connecting to the power supply .....	7
3.6	Functional diagram.....	8
3.7	Printed circuit board .....	9
4.	Operation and maintenance.....	10
4.1	Restrictions of use .....	10
4.2	Energy consumption and battery capacity .....	10
4.3	Energy saving.....	10
4.4	Possibilities of minimum energy provision.....	10
4.5	The service panel.....	11
5.	Solving problems and faults.....	12
5.1	The WhisperAir does not cool sufficiently .....	12
5.2	The WhisperAir does not work .....	12
5.3	The WhisperAir continually turns itself on and off.....	12
5.4	The WhisperAir does not cool, even though the ventilator is running .....	12

**The delivered box should contain the following parts:**

- 1 WhisperAir
- 1 Service panel
- 1 Bag of safety fuses (in the WhisperAir)
- 1 Connecting hose Ø 80
- 1 User Manual
- 1 Thermostat operating instructions

**The WhisperAir is filled with the cooling agent R134A (650 grams).**

## 2. Safety regulations / General restrictions

The incorrect assembly or use of this equipment may lead to potentially dangerous situations, where there is a possibility that persons or property may be damaged. Therefore, read this manual thoroughly before operating this equipment.

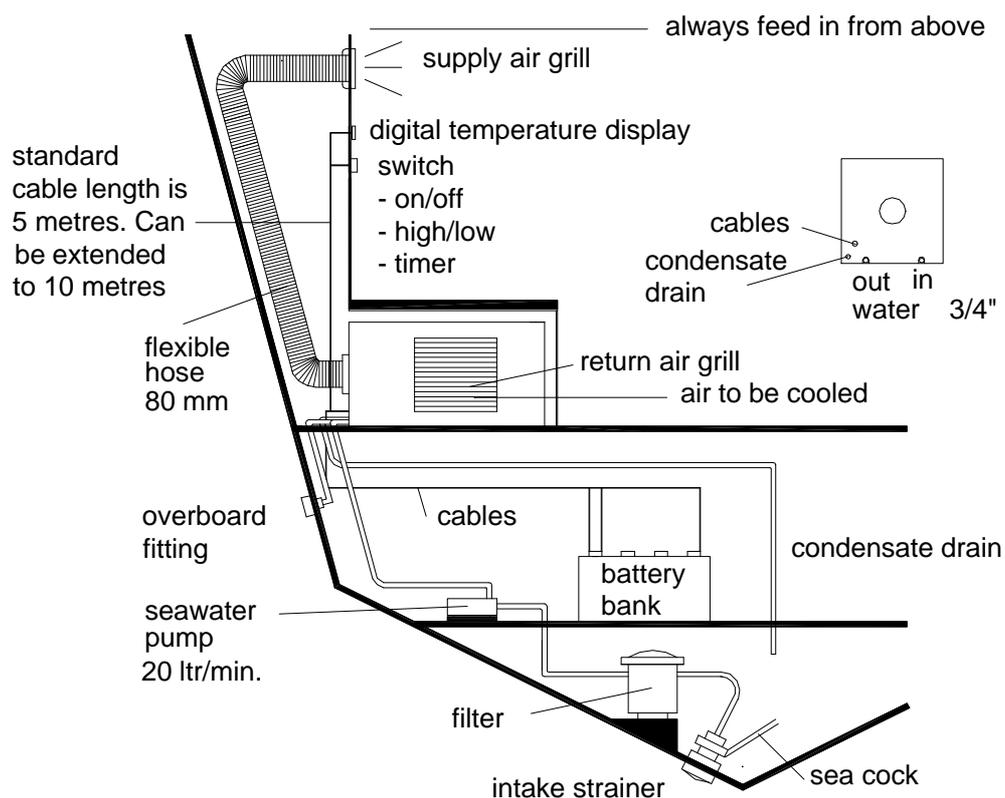
We have supplied you with this operating manual with its named installation examples "as they are". We reserve the right to make changes without giving prior notice.

Follow the instructions relating to assembly in this manual. The chance that potentially dangerous situations will occur is considerably increased when you ignore them.

Always switch the onboard power off before working on the equipment.

## 3. Installation

### 3.1 Installation diagram

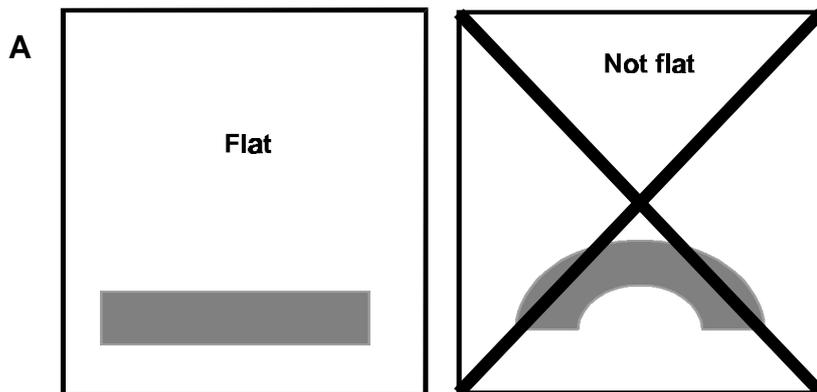


### 3.2 Assembly

Suitable places for locating the WhisperAir:

- Under a bench
- In a cupboard
- In the engine room (pay special attention to the intake of (diesel) fumes from the engine room).

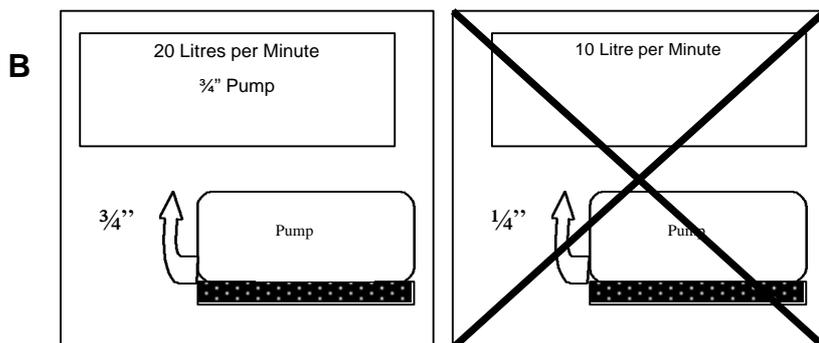
### 3.3 Assembly of the WhisperAir



The WhisperAir must be mounted horizontally on a flat surface.

**ATTENTION:**

The WhisperAir must be supplied with air derived from the space where the air is to be cooled. The cold air outlet should be positioned as high as possible for the even distribution of air. This may be split for the purpose of cooling several spaces.



The water pump must have a capacity of at least 20 litres per minute and be fitted with a hose of 3/4". The number of litres passing through the air-conditioning unit must be at least 10 litres per minute. Moreover, (sea)water with a temperature of maximum 35°C is required. The AirWhisper will not be able to lose the extra heat and will turn itself off if the (sea)water is warmer than this temperature.

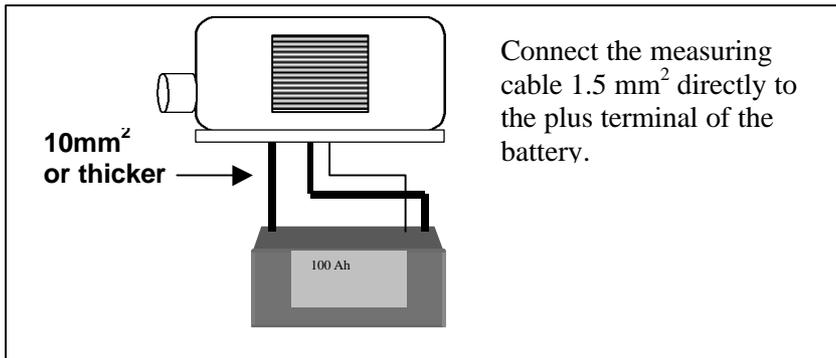
Particulars for assembly in the engine room: install an air-intake hose connector of the room to be cooled to the engine room.

### 3.4 Condensation drainage

Condensation in the equipment will form during cooling, and this must be drained off into the bilge. Make sure the passage has an opening of at least 400 cm<sup>2</sup> before placing an extra grill in front of the intake. Do not use any filter material!

Ø screw thread outside dimension condensation drainage is 14mm.

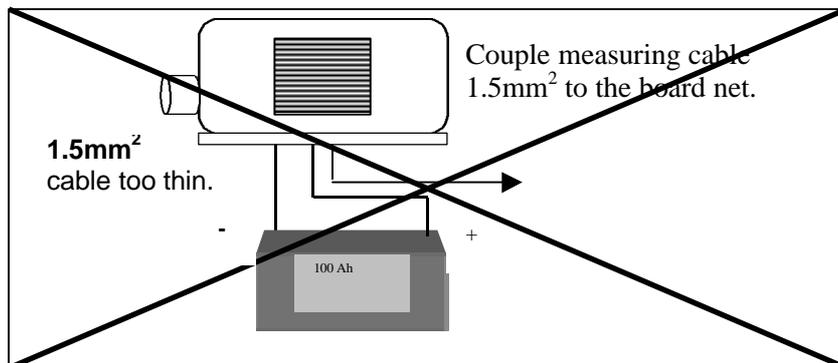
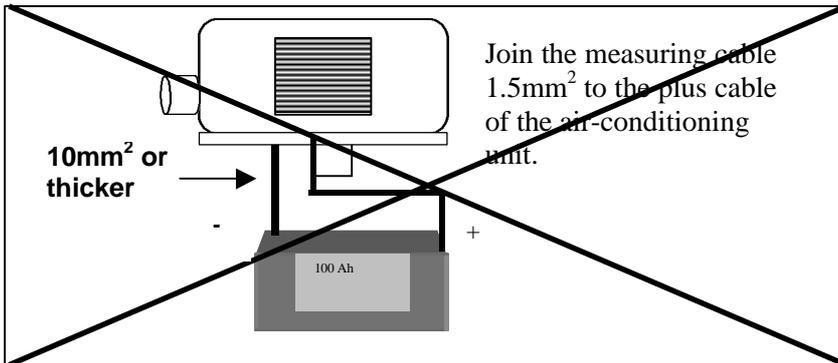
### 3.5 Connecting to the power supply



**12 Volt** 1 x 10 mm<sup>2</sup> - battery  
 1 x 10 mm<sup>2</sup> + battery  
 1 x 1.5 mm<sup>2</sup> + battery

**24 Volt** 1 x 10 mm<sup>2</sup> - battery  
 1 x 10 mm<sup>2</sup> + battery  
 1 x 1.5 mm<sup>2</sup> + battery

For connecting the WhisperAir to the battery, see section 3.7.

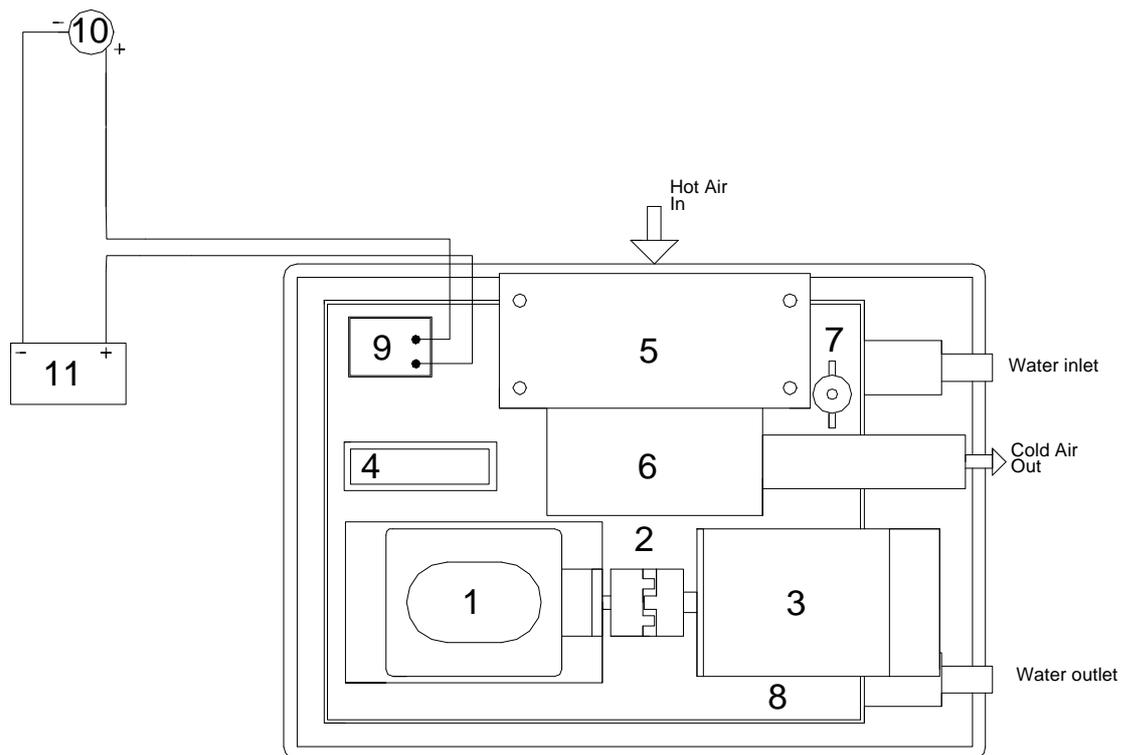


The correct connection of the measuring cables is very important. If they are incorrectly connected, the battery guard will activate too early and the WhisperAir will switch itself off.

### 3.6 Functional diagram

1	Compressor
2	Connectors
3	Motor 12 or 24 Volt
4	Printplate
5	Evaporator
6	Fan
7	Thermo-electric Valve
8	Condensor
9	Relais pump
10	Pump
11	Battery

Attention:  
Pump and battery are not delivered with the airco.





## 4. Operation and maintenance

You have purchased the WhisperAir, an air-conditioning system that is easy to operate with the minimum of maintenance. Nevertheless, we have listed a number of points of particular interest to guarantee a problem-free operation.

### 4.1 Restrictions of use

The WhisperAir is suitable for an isolated space of maximum 25m<sup>3</sup>. Its cooling effect may be reduced considerably when used in larger spaces.

### 4.2 Energy consumption and battery capacity

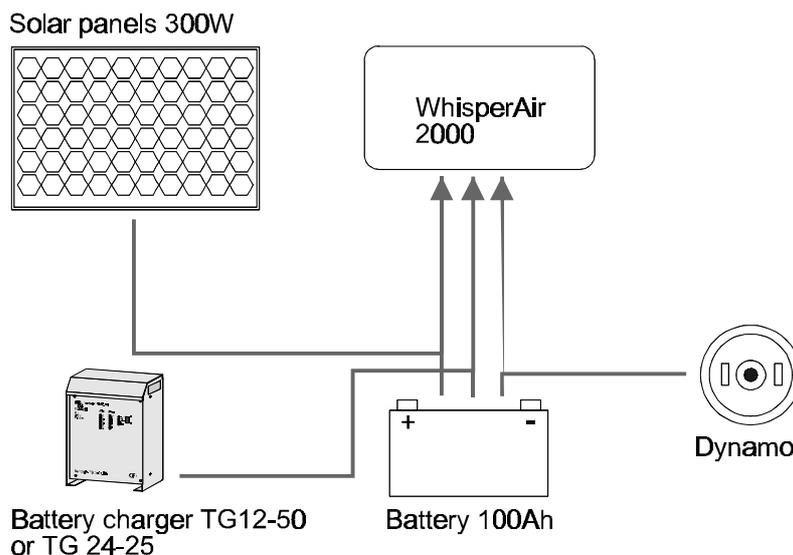
The WhisperAir 2000 uses approximately 30 A at 12 Volts, 15 A at 24 Volts. We therefore recommend a battery capacity of at least 100 Ah.

### 4.3 Energy saving

The WhisperAir uses very little electricity, when compared with a normal 230-Volt air-conditioning system. Nevertheless, you can make its energy use even more efficient by performing the following simple measures:

- Exclude excessive sunshine. Less sunshine means a lower inside temperature so the WhisperAir subsequently uses less energy. Cover your windows and close the windows and shutters whenever possible.
- Better insulate your boat/yacht. The simplest measure is to close windows and doors. The air-conditioning should be the only air-intake in the boat/yacht.

### 4.4 Possibilities of minimum energy provision



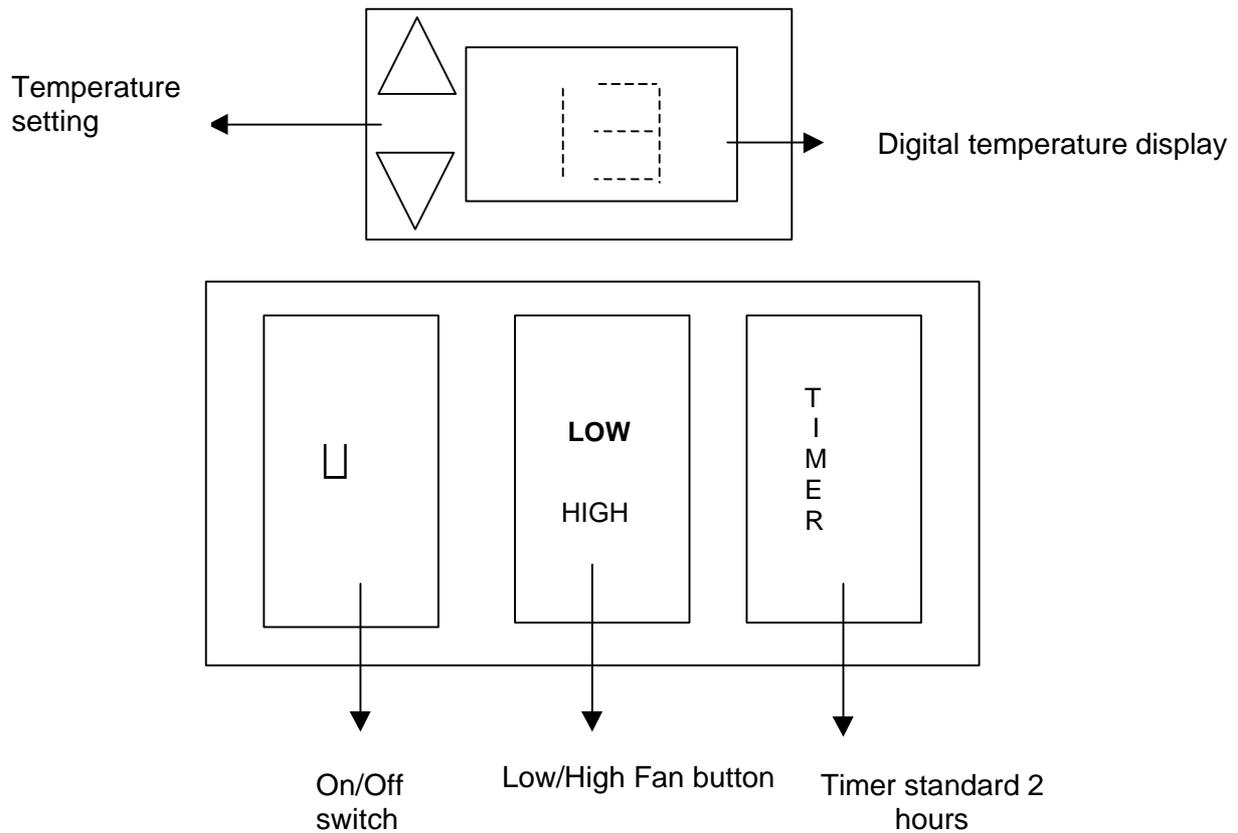
While sailing on the engine it is possible to simply charge and maintain the battery using the dynamo. The capacity of the dynamo should be a minimum of 60A. However, the solar unit will provide at least 300 Watts or a 50A for 12 Volt or 25A for 24 Volt battery charger may be used to recharge the battery, should you wish to remain stationary for a longer period.

## 4.5 The service panel

You can operate the WhisperAir by using the service panel.

Settings: on/off  
fan high/low  
timer (Is set at a standard of 2 hours. The unit automatically turns itself off after 2 hours. It is reset with the on/off switch)

You can set the required temperature using the thermostat, and you may also alter the switch interval, e.g. +/- 1°C or +/- 2°C.



When you turn the timer on, the WhisperAir will turn itself off after two hours. The WhisperAir turns itself off earlier if the required temperature is reached.

## 5. Solving problems and faults

### 5.1 The WhisperAir does not cool sufficiently

- Too much sunshine. Cover the windows and close the windows and shutters.
- The space is badly isolated. Close windows and shutters.
- Too many people on the boat may give the impression that the WhisperAir does not cool sufficiently. This is because each person gives off 100 Watts as body heat.
- The space is larger than 25m<sup>3</sup>. The WhisperAir is too small for this kind of application.

### 5.2 The WhisperAir does not work

- The safety fuse on the printed circuit board is broken: Use spare safety fuse.
- The low charge safety has been activated: this is automatically reset when the battery charge is higher than 12.6 Volts. For 24 Volt, this is 25.2 Volts. When you remove the hood you should see two red illuminated LEDs on the printed circuit board in the air-conditioning unit.

### 5.3 The WhisperAir continually turns itself on and off

- The battery is flat. You are probably using a battery charger that is too small. Turn the air-conditioning unit off for a few hours so that the battery can be recharged.
- The cables between the battery and the WhisperAir are too thin. The red LEDs in the air-conditioning unit also continually go on and off.

### 5.4 The WhisperAir does not cool, even though the ventilator is running

- The safety fuses for the electric motor are broken (40A/12V, 20A/24V). Extra fuses can be found next to the printed circuit board.
- The motor has overheated because there is too little cooling water. It will turn itself on again after approximately two hours.
- Too little freon (cooling agent). The difference in temperature between the air at the intake grill taken from the room and the cooled air that is returned to the room must be approximately 15 °C when the ventilator is set at 'high'. When it is less than this, consult your supplier. A professional air-conditioning mechanic can easily top up the system.

Attention:

- The above-mentioned values are indicative and depend strongly on the personal desires/requirements of the boat owner.
- These values can be halved if there are a lot of windows.

Incorrect: The WhisperAir takes in air from the engine room.

Warranty

The WhisperAir has a warranty of 12 months starting of the date of purchase.

# Problem enquiry BS (Boat System)

The purpose of this problem question list is to provide customers with technical help. The most frequently occurring questions/problems and solutions are given below.

## 1. The WhisperAir stalls and switches off.

- Start the motor. If the air-conditioning unit runs, the battery charge is too low. If the motor is turned off again, the air-conditioning unit switches off automatically. The red LEDs are illuminated. Put the battery on charge overnight.
- How is the measuring cable connected? Are there 3 wires running to the battery (2 to the plus terminal and 1 to the minus terminal)? When this is not the case, are the wires connected or joined elsewhere? The measuring cable measures the charge of the battery. When this is connected elsewhere, the air-conditioning unit turns off much sooner because of a drop in voltage.
- Too little cooling water supplied.

## 2. The WhisperAir is not working.

- Safety fuses. Check the 1A safety fuse on the printed circuit board. When this is broken; replace it with the extra 1A safety fuse provided.
- No voltage. Detach and reattach the measuring cable. Red LEDs light up for approximately 10 seconds. The battery charge is too low if they remain illuminated.
- The charge is too low (Start motor/dynamo).
- Is the measuring cable correctly connected? The measuring cable (1.5mm<sup>2</sup>) must be connected directly to the plus terminal of the battery.

## 3. The air-conditioning unit continuously turns itself on and off.

Is the measuring cable (3 wires) connected directly to the plus terminal of the battery?

- When the measuring cable is coupled to the board net, it cannot directly measure the voltage of the battery. There is always a degree of voltage loss between the cables. The measuring cable must thus connect the WhisperAir directly to the plus terminal of the battery.

What is the thickness of the cable with which the WhisperAir is connected?

- The cable thickness for the connection of the WhisperAir must be at least 10mm<sup>2</sup>. The measuring cable does not need to be any thicker than 1.5mm<sup>2</sup>. When you use thinner cables, the resistance in the wires may be too large. Consequently, the air-conditioning unit switches itself off earlier.

Is the battery to which the WhisperAir is connected new?

- New batteries are always just 30% full. So, first recharge the battery. If the battery voltage is higher than 12.6 Volts, the WhisperAir will automatically reset and turn itself on. For a 24-Volt installation, this is 25.2 Volts.
- Battery charge too low + too small battery charger -> first thoroughly charge battery. A battery charger of at least 12V/50A or 24V/25A is recommended.

## 4. The air-conditioning unit is running but does not cool sufficiently.

How big is the boat?

- The capacity of the WhisperAir is too small if the space to be cooled is larger than 25m<sup>2</sup>.
- The capacity of the WhisperAir is too small if the glass surface area present is too large.

Is the motor/compressor running?

- Check whether the motor/compressor is running. When it is not running, the 40A safety fuse on the printed circuit board is broken. Replace the fuse. You will find an extra fuse in the bag supplied with the air-conditioning unit.
- Place the temperature meter by the outlet and intake grill. The temperature difference can be a maximum of 15 degrees Celsius depending on the outside temperature. The humidifier temperature is set at 5 °C. The temperature at the outlet grill can therefore never be less than 7 °C. With a temperature of 25 °C or higher, one must measure the maximum temperature difference. With an outside temperature of 16 °C, the temperature cannot be lower than 7 degrees Celsius.

There will be no pressure in the machine if there is a leak. The WhisperAir will run gently, but will not cool the air. When there is no oil in the motor/compressor plate, there is a leak elsewhere. The leak can very easily be found using a special UV-lamp. When this is the case, you should contact your distributor. It can then be repaired by an appropriate service station.

The compressor's seal is broken. The entire motor plate is covered in (green) oil.

### **5. There is oil under the compressor**

There is always some oil under the compressor and the motor. If the entire motor plate is covered in (green) oil, the compressor's seal is broken. This O-ring must be replaced.

### **6. The WhisperAir vibrates**

If the compressor vibrates, there is a shortage of cooling water.

8. The TEV (Thermo-electric Valve) is closed too much. When the outside temperature is too low, the air-conditioning unit may vibrate. This is only detected when the outside temperature drops. Open the TEV slightly.  
(= 1/2 a turn anticlockwise)

Safety fuse overview:

12 Volt:           1A – printed circuit board  
                      1x 5A - ventilator  
                      40A - motor

24 Volt:           1A – printed circuit board  
                      1x 3A - ventilator  
                      20A - motor