

Installation and Maintenance Manual

Fancoil Series EVA - FC - FCV



Cod.C001 Rev. 20120711



1 PACKAGING

The CLIMMA air-conditioning unit is fastened to a wood plane and crated. Pay attention at opening.





Don't raise it getting hold of fans and pipes, that can suffer damage.

On the unit there is a label that describes its technical specifications.



Check that the technical specifications, the electrical supply, etc.... on the label correspond to the technical specifications of the boat.

Label Example.





2.1 FANCOIL EVA INSTALLATION DIAGRAM



- 12) Sea water pipes
- 13) Electrical heater (mod.EH)
- 14) Water valve

VECO S.p.A.



2.2 CENTRALIZED AIR-CONDITIONING SYSTEM - INSTALLATION SCHEMATICS



- 03) FAN COIL FC model
- 04) FAN COIL FCV model
- 05) Fresh water pipes
- 06) Electrical box 07) Condensation drainpipe
- 08) Fresh water valve
- 09) Sea water valve
- 10) Sea water intake valve

- 12) Sea water intake
- 13) Sea water drainpipes
- 14) Expansion tank
- 15) Fancoil collectors





3.1 - FUNCTIONING OF THE AIR-CONDITIONERS

During the cooling cycle, the refrigerant circuit transfer the heat from the ambient air to the sea water.

It is possible to select the functioning cycle, the desired temperature and the fan speed from a remote control panel that can be installed in the air-conditioned room.

For detailed information about the control panel, please refer directly to the remote control panel manual.



Versione FANCOIL EV.

3.2 - POSITIONING

While choosing the unit position, it's important to consider the following elements:

- 1 the accessibility to the air filter for cleaning operations
- 2 the necessary space to fast of the provided clamps
- 3 the connection for the condensation drainpipes
- 4 there are two possible orientations of the air discharge. Choose the best for connecting the air ducts
- 5 the passing of the sea water circuit pipes
- 6 the passing of the electrical connection wires and the easy access to the electrical box

Place the pipe-tightening clamps of the water system so that once the unit is arranged, it is still possible to tight the screws. We suggest to use all stainless steel components.

3.3 - PLACING

A.- The unit has been designed to take the ambient air directly away, therefore it must be installed in the room that has to be conditioned.







B.- The conditioned air (from the fan) must be piped towards one or more grills through flexible pipes or through isolated ducts of suitable section in the boat structure.





C. The exchanger system takes away the ambient air. The side with the filter mustn't be in line with the aspiration grill, as in the picture 1.6. It can also be in a different position (see the picture 3.6).

The second solution (picture 3.8) is the best one thanks to the best sound isolation of the system.

The important thing for the air is to find the shortest and most linear path, still leaving some space for the filter maintenance (A).



D. The air-conditioner is connected to the electrical box through cables of 2 m lenght. So there must be an accessible space (next to the compressor unit for SPLIT models) to install the electrical box.

E. The thermostat bulb and the aspiration filter must be mounted on the air-refrigerating gas exchanger. This side must be accessible for the filter maintenance.

F.- The maximum distance between the control panel and the electrical box is 3 m both for the thermostat capillary and for the connection cable.









Dis. 3-10







3.4 - THERMOSTAT BULB

The thermostat bulb must be fastened to the air exchanger using special latches.

The bulb must kept separated from the air exchanger because it must be influenced only by the sucked up air, but not by the refrigerating circuit. It's also possible to install the bulb in the room instead of placing it on the air exchanger, so that it is more sensitive to the ambient temperature. To fasten the bulb to the wall, you can use a special plaque given.



Dis. 3-12

3.5 - FANCOIL FIXING - EVA MODEL

The fixing has to be done using the clamps given with the fancoil. It's suggested to use anti-vibrant when the installation is in a cabin. It's also important not to push hard on the connection cable of the electrical box.



EVA fancoils are arranged to have anti-vibrations installed, using apposite components that can be screwed to the stainless steel basin (see picture 3-13).

3.6 - FANCOIL FIXING - FC MODEL

Fancoil FC model has to be fixed on the ground.







3.7 - FANCOIL FIXING - FCC MODEL

Fixing can be done using the holes that are there In the facoil structure itself (see picture 3.16 - 3.17).



3.8 - CONDENSATION OUTLET

The air-conditioning determines the generation of the condensation water due to the humidity of the conditioned air. This condensation water must be discharged in the bilge or in a special tank and then by means of a self-priming pump in the sea.







Each unit is endowed with two condensate water outlets, as you can see in the picture above.



The direct bulkwark outlet is not the best solution, since it can suck up unpleasant smells due to the exhaust emissions of its own or of other engines. Please refer to the safety regulations of the different countries.

The water condensation outlet pipe must be linked to the rubberholders of 19 mm on the condensation collection basin.



If for any reason the condensation discharge pipe has to be long, it is better to use the special "L" connection. Installation as in the picture 3.23 must be avoided. In this situation the condensation water can stop and flow back to the collection basin because of the boat rocking.







While the air-conditioner is working, it sucks up and causes a light vacuum in the room. The condensation outlet pipe can suck up from the pilge or the special tank unpleasant smells that can spread in the cabin. To avoid this possibility, it is possible to create a siphon (A) as you can see in the picture 3.26 to stop the air.



3.9 - AIR FILTER



The air-conditioner sucks up the ambient air through an air-refrigerating gas exchanger endowed with many aluminum tongues. These tongues would soon become obstructed because of powder and filth. That's why you can mount the air filter directly on the exchanger (as you can see in picture 3.28).

The filter must be easily taken off to clean or replace it. For taking off instruction, please follow the picture related to your model.









3.9- AIR CIRCULATION SYSTEM

3.9.A - ASPIRATION

The ambient air is sucked up through one or more grills of suitable dimensions. The minimum dimensions are 350 X 292 (To canalize the air flow back, call a technical assistance).







3.9.B - AIR CIRCULATION

The efficiency of the system depends on the air volume. This is why it is important to avoid narrow passages in the air circulation system, keeping the original diameter dimensions and using short pipes.



3.9.C - AIR DUCTS

The isolated ducts must not be bent so that the air can circulate currently. Cut out the unused length



3.9.D - FANCOIL EV 4

The fan must be linked by means of a duct to the air distribution system, that can be constituted of one or more grills and corresponding plenums.

The main duct diameter must not be inferior to the diameter of the fan fittings.











Dis 3-39





3.11 - ELECTRICAL BOX

It contains the following electrical connections:

- to the grid;
- to the compressor-fan-checks group;
- to the control panel;
- to the sea water electrical pump;
- to the external temperature probe.

3.11.A - PLACING



You can install the electrical box in any position.

You must install the electrical box near the air-conditioning unit, to which it is connected by means of a 2 m cable. It must be easily accessible for the maintenance or repair.

The electrical box has to be fixed to the wall by 4 screws Using the provided holes.

3.12- MECHANICAL CONTROL PANEL

Using the control panel, you can set and control the following functions:

SUMMER AIR-CONDITIONING: push the "COOL" button with the ice star.

WINTER HEATING: push the "HEAT" button with the orange sun. To switch off, put the switch in the central position. B. - Setting-regulation of the temperature by means of the thermostat (TEMP). The thermostat has got a 3 m capillary with a bulb. The bulb must perceive the sucked up air (it must not come into contact with the exchanger tongues; it is in fact the battery where the refrigerant spreads: the tongues cool down, so that if the bulb comes into contact with them, it will perceive a temperature value that is lower than the ambient temperature). C. - Regulation of the fan speed: by means of the button with the fan it is possible to regulate the four fan speeds. Push the button to select the fan speed: upwards arrow means speed increase and downwards arrow means speed decrease. Switching on the fan for the first time, it will run in MED speed. Then it will run according to the last selected speed.





Dis 3-41



3.12.A- PLACING

You must choose the correct position to connect the panel to the board by means of a 3 m cable (included) and to install the thermostat bulb on the unit exchanger. If necessary, you can install the bulb not directly on the exchanger but in the room, choosing the right position to control the temperature. To fasten the bulb on the wall, you can use the suitable plaque.



3.12.B- INTERCHANGEABLE PLAQUE

The standard plaque (included) is black.

3.12.C - FASTENING

The panel has been designed for a casing fastening. You must drill into it as indicated on the right.

IMPORTANT NOTE: In the panel there is only low voltage. After having installed it, the back must not be accessible. An optional protection cover (code: M69330) is available. If the panel back is accessible, it may suffer damages.

3.13- DIGITAL CONTROL PANEL VEGA MKII



For the technical specifications and for the installation directions, please refer to the VEGA MKII manual (code: A52000).





4 ELECTRICAL CIRCUIT

AVOID THE RISK OF THE ELECTROCUTION !!!

Only qualified staff can execute the troubleshooting and the repair. Keep isolated from the ground during the execution of the electrical operations, wearing dry clothes, rubber shoes, rubber carpets, etc.... Don't check wires under voltage if none can bring help.

IMPORTANT NOTE

To avoid possible electrical shocks, that can cause harm or death to people, execute the grounding of the air-conditioning system, as indicated:

1- Use a suitable electrical cable with ground wire section and isolation to give the charge from the switch on the control board of the boat to the electrical box of the system. The ground wire must be correctly connected to the ground terminal of the panel.

2- Check that the ground connection between the electrical box and the air-conditioner hasn't suffer any damage during the transport.

3- Check that the connection of the water pump to the suitable terminal of the electrical box includes also the ground connection.

4- Check the ground continuity before switching off the air-conditioner.

4.1 – ELECTRICAL BOX

Climma fancoils are available in 3 configurations:

•EV – available with EH option (Electrical Heating)

•FC •FCV

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4.2 – POWER SUPPLY

Check that the available supply corresponds to the label on the unit, on the box and on the electrical pump. The electrical box of the air-conditioner must be connected to mains supply thru a suitable circuit breaker.





5 ELECTRICAL BOX

5.1 - ELECTRICAL BOX SETTINGS

The electrical box connected is supplied already set. Only replacement material has to be set, or when the board is changed.





Detail of the setting device.



5.2 - PCB FUSE

A power fuse is included in the board. For the value, make reference to the value.



Dis 5-7

Detail of the power fuse and of its casing (detail 3 of picture 5.1).





5 ELECTRICAL BOX

5.3 – WARNING LIGHTS

The PCB is equipped with several warning lights. The schematic here under shows their meaning.



Α	LD2: Change Over Status LD2 On = Change Over detects cool Fresh Water Cooling operation can start. LD2 Off = Change Over detects warm Fresh Water Heating operation can start.
В	WATER VALVE neon led
С	FANneon led
D	HEATER neon led

Queste spie sono direttamente alimentate in tensione di rete, in parallelo alle diverse uscite. Si accendono quando effettivamente la scheda alimenta l'uscita.

The drawing shows the location of the running indicating lights

1C 2C 3C 4C 5C 6C

1c	RS 485 Modbus
2c	Change Over
3c	ALM
4c	RJ45, 8 Pins, ConnectorRemote Panel VEGA MKII
5c	RJ12, 6 Pins Connector To second powerboar (SLAVE)
6c	RJ12 6 Pins Connector Alternative Room Probe



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5.4 – PCB CONNECTIONS



5 ELECTRICAL BOX

5.4 - PCB CONNECTIONS



1c	RS 485 Modbus
2c	Change Over
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6 AIR INLET MEASUREMENT

In order to measure inlet air, please follow the below steps:

- 1.- Measure air inlet grill, excluding the frame, to get the net surface in m²;
- 2.- Measure air flow speed in different positions of the grill;
- 3.- Sum together all the different measured speeds and divide them by the number of measurements to get the mean speed (measurement can be in m/s or in other formats, depending on the instrument)
- 4.- If necessary, convert the mean speed in m/s, and appy the following formula to get the air flow of your system:

Q = SXVX3600	Q Q
Q = m3/h of air that can be conditioned by your system	Vx3600
S = grill surface in m2 (excluding the frame)	0
V = air speed in m/s	V =

The air flow value in m3/h obtained with the previous formula has to be compared with the technical specification provided for the product. Air flow values that vary more that 15/20% are not considered acceptable.

It is also suggested to measure the outlet grills' air flow in order to compare the measurements with the inlet grill one.

When you need air conditioning for two or more spaces, it is important to calculate the air flow to input in the area. This value can be calculated only knowing the amount of sensible heat of each single space.

If this information is not available, we suggest the following.

Divide the air flow value obtained before (Q) by the total m3 of the space to be air-conditioned. This will give you a ratio between the air flow that your system can handle and the volume of the air-conditioned space. Multiply this ratio by the volumes of each single area to get the air-conditioned flow value.

	Air flow volume (m ³ /h)	700
Example:	Saloon volume to be conditioned mc VC	25
	Cabin volume to be conditioned mc VC	15
	Total volume to be conditioned mc VC	40
	Ratio VT/VC	17,5
	Air m^2 in the saloon = 25x17,5	438
	Air m^2 in the cabin = 15x17,5	263
	Total mc/h	700

7 USAGE INS	TRUCTIONS
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7.1 – FAULT DETECTION

Fault detection must be always carried out by qualified technician and by following safety rules.

7.2 - MAINTENANCE

To get the best performances from your air conditioning system, it is important to do the suggested maintenance described below. Periods can vary based on the installation area of the boat, based on pollution and based on the system usage.

- Clean the air filter monthly
- · Clean the condensate drain pipe every 4 months
- Clean the condensate pan every year
- Substitute the remote control battery every year (only for model VEGA MK2)

Following tasks must be executed with the system off and only by authorized technicians. Do not check eletrical wires if there nobody else with you, who can assist you in case of emergency. Check sea water piping and fresh water piping every year. Please refer also to the system Installation Manual.

7.3 - CONDENSATE WATER AND DRAINS

While working, fancoils produce condensate drain, especially when humidity is high. It has to be checked periodically that there are no leaks on the condensate water drains and that the condensate water drains regularly. For this checks, put some water in the condensate drain and check that it gets drained quickly.

If the condensate water is drained in the bilge, it is advised to drain it in a specific separate area, since it can generate bad smells.

7.4 - AIR FILTER

The system requires to clean and periodically change the air filter before heat exchanger (B). This filter is required to clean the air before it goes into the heat exchanger of the fan coil.

There is no specific rule for the system maintenance; it depends on the running hours of the system and from the air pollution. We advise to clean the air filter every 30 days maximum.

If the air filter is not completely clean system can stop working or loose efficiency. In cool mode (CO) the system efficiency can decrease significantly, while in the recerce cycle mode (RC), it can cause an high pressure lock and the system will stop working. In the electrical heater models (EH) the system will stop working due to a security sensor,

7.5 - LOW TEMPERATURE EXPOSURE

If the boat faces sub-zero temperatures, it is required to empty the fan coil and the piping system from all the residual water. In order to do this, please follow the instructions on the CWS system usage and maintenance.





9 FAULT DETECTION AND FIXING

9.1 - PRODUCT IDENTIFICATION

Each product is uniquely identified by a label. Please refer to the product description, code, serial number every time you discuss with our Support Centre.

9.2 - FAULT DETECTION

Before contacting our Support Centre, please follow below suggestions that are ment to solve the most common problems. If the problem continues, please contact the closest Veco Support Center. Please refer to our web site www.climma.it | www.veco.net to get the closest one or call the Veco Support Center at +39.0362.35321

9.3 - SYSTEM IS NOT WORKING

Has the circuit breaker tripped out? Reset it on the yachts panel.

Is the power supply voltage too low? Check the voltage value between "L" and "N" on the clamp "MAIN POWER" of the electrical box.

9.4 - FAN IS NOT WORKING

Is the air conditioning system on? Turn on the air conditioning unit using the control panel.

Has the fuse burned up? After checking, substitute fuse F1 with a new one with the same size and technical characteristics.

9.5 - COOLING IS NOT ENOUGH (Version EH,CO,RC)

Has the correct mode been set? Select on the panel the correct option: cooling (COOL) or AUTO, (only for the digital panel).

Has the thermostat been set correctly? Set the temperature on the lowest values.

Is the fan speed to slow? Increase the fan speed and, for the digital panel version, select AUTO mode.

Is air circulation not enough? Check that there are no blocks on the air grills (inlet and outlet) and that the air filter is clean.

Is the air filter not clean? Clean or substitute the air filter.

Does the compressor work only for short periods? The high pressure sensor is probably stopping the compressor. Check that the water flows correctly, that the air filter is clean and that the water pump is working.

Compressor is not working? After three stops, the high pressure sensor completely stops the compressor. Check the sea water circuit to see if water is not flowing correctly. Shut down and restart the control panel. If the problem still occurs, contact a Veco Support Center.

9.6- HEATING IS NOT ENOUGH (Only EH Version)

Has the correct mode been set? Select from the panel: heating mode (HEAT) or AUTO (only for the digital panel).

Has the thermostat been set correctly? Set the temperature on the highest values.

Is the fan speed to high? Slow down fan speed or select AUTO mode (only for digital panel version).

Is air circulation not enough? Check that there are no blocks on the air grills (inlet and outlet) and that the air filter is clean.

Is the air filter not clean? Clean or substitute the air filter.

Does the heat work only for short periods? The resistance protection probably stopped it from working. Check that the air flows works correctly and that there are no obstructions, check the fan speed and the air filter. If the problem still occurs, contact a Veco Support Center.

9.7- HEATING IS NOT SUFFICIENT (Only RC Version)

Has the correct mode been set? Select from the panel: heating mode (HEAT) or AUTO (only for the digital panel).

Has the thermostat been set correctly? Set the temperature on the highest values.

Is the fan speed to high? Slow down fan speed or select AUTO mode (only for digital panel version).

Is air circulation not enough? Check that there are no blocks on the air grills (inlet and outlet) and that the air filter is clean.

Is the air filter not clean? Clean or substitute the air filter.

Does the compressor work only for short periods? The high pressure sensor is probably stopping the compressor. Check that the water flows correctly, that the air filter is clean and that the water pump is working.

Is the air filter not clean? Clean or substitute the air filter.

Compressor is not working? After three stops, the high pressure sensor completely stops the compressor. Check the sea water circuit to see if water is not flowing correctly. Shut down and restart the control panel. If the problem still occurs, contact a Veco Support Center.

9.8 - SEA WATER PUMP IS NOT WORKING

Has the fuse burned up? After checking, substitute fuse F1 with a new one with the same size and technical characteristics.

Has the high pressure sensor stopped the compressor from working?

Check the cooling circuit and clean the filter on the sea water intake. If the problem still occurs, contact a Veco Support Center.

