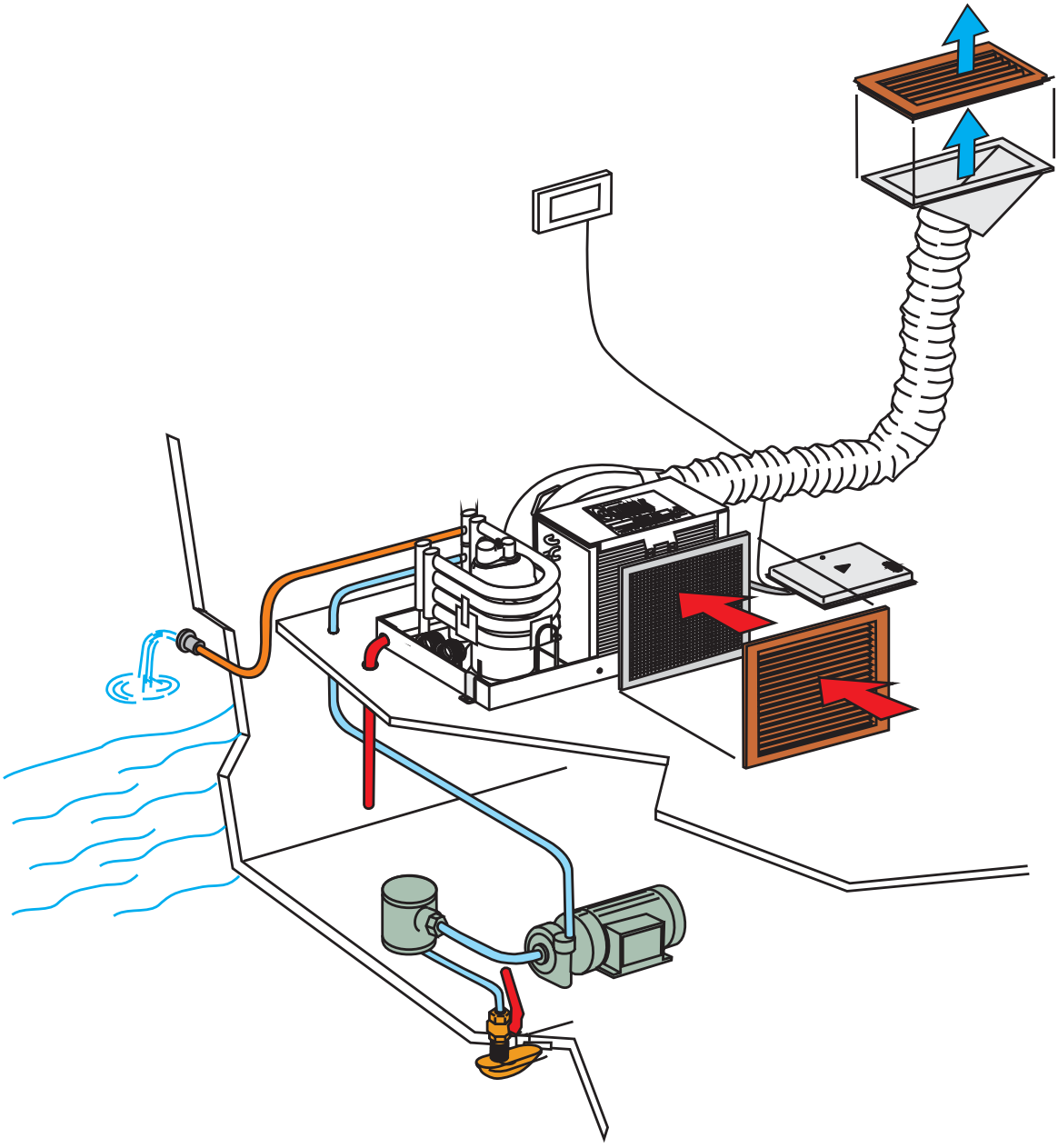
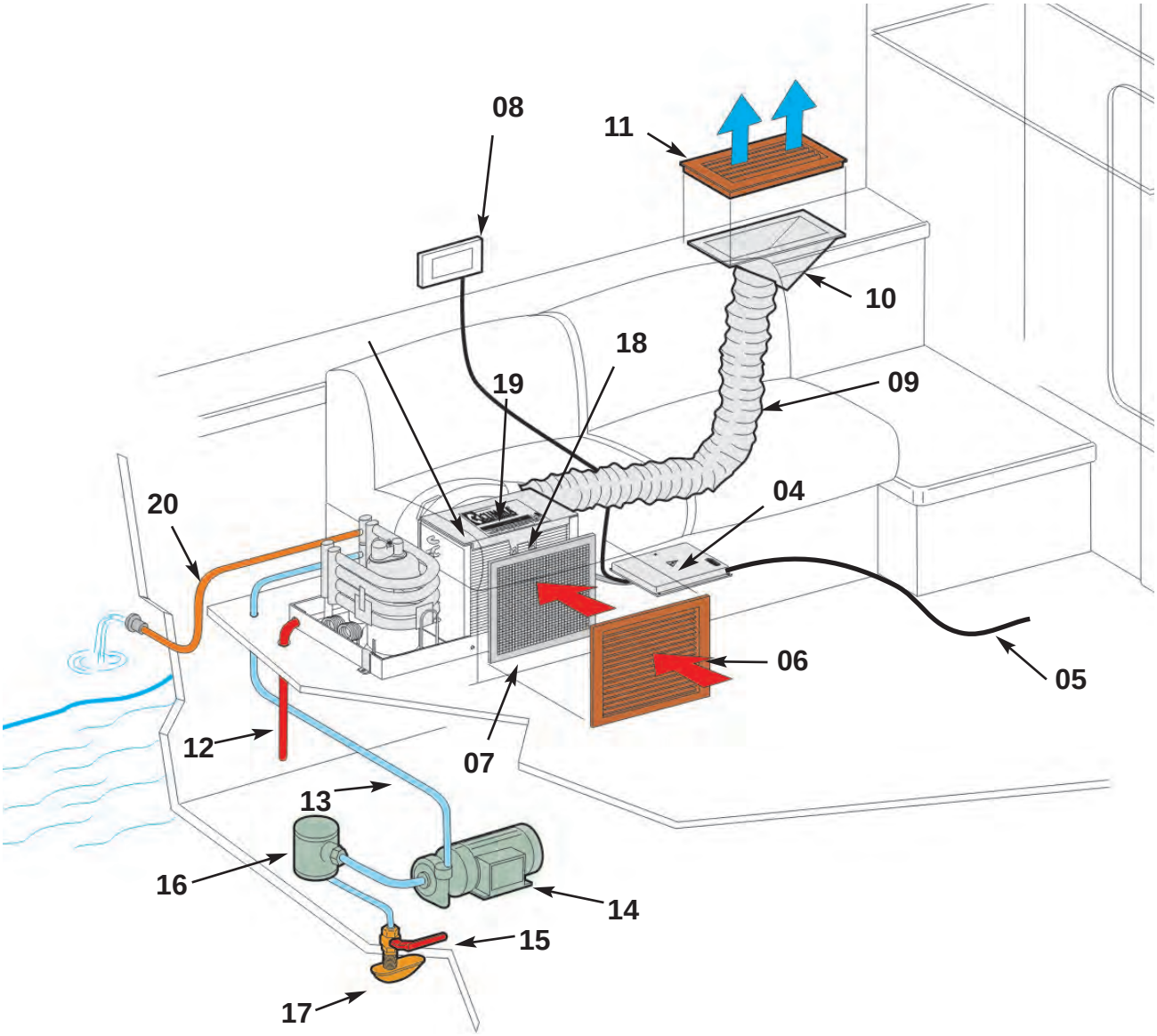
CLIMMA®
MARINE AIR CONDITIONING

INSTALLATION MANUAL
Climma Compact Units



Cod. A52040NA

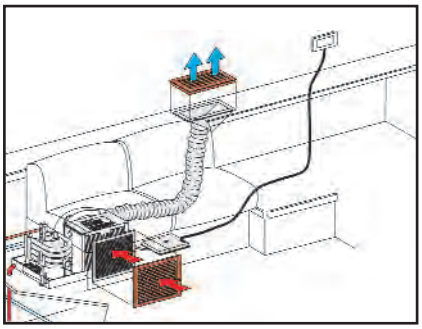
2.1 Installation diagram of the Compact air-conditioner



04) Electrical box
05) Electrical supply
06) Return air grille
07) Air filter
08) Remote control panel
09) Flexible duct
10)Transition
11) Discharge grille
12) Condensation drain hose
13) Sea water inlet hose
14) Sea water pump
15) Sea water ball valve (shown closed)
16) Sea water strainer
17) Scoop thru-hull intake
18) Air intake
19) Air-conditioner unit
20) Sea water discharge

3.1 - FUNCTION OF AN AIR-CONDITIONER

During the cooling cycle, the refrigerant circuit takes heat from the ambient air and transfers it to the sea water. Whilst doing so, it will also dehumidify and filter the air.
In the reverse-cycle mode the opposite takes place, and heat is removed from the sea water and transfered to the air in the cabin



Typical one-outlet installation

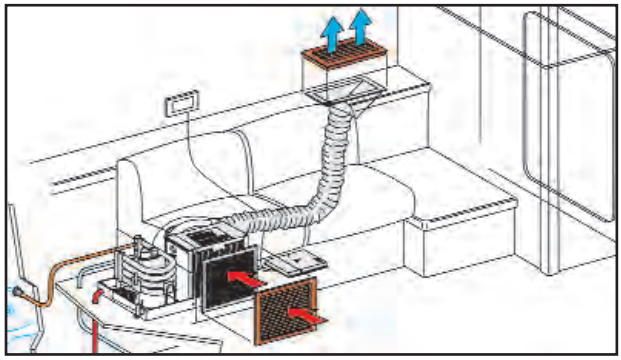
3.2 - ARRANGEMENT - General notes

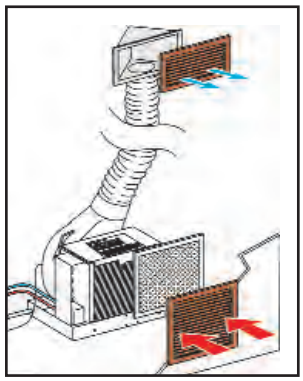
Choosing the unit position, it is necessary to consider the following elements:

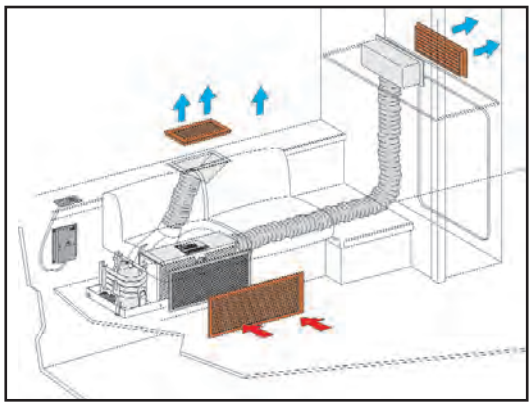
1 - the accessibility to the air filter for cleaning;
2 - the necessary space for the fastening of the securing clips;
3 - the connection of the condensation drains;
4 - the connection of the duct to the duct ring on the unit;
5 - the connection of the sea water circuit pipes;
6 - the intended location of the electrical box.

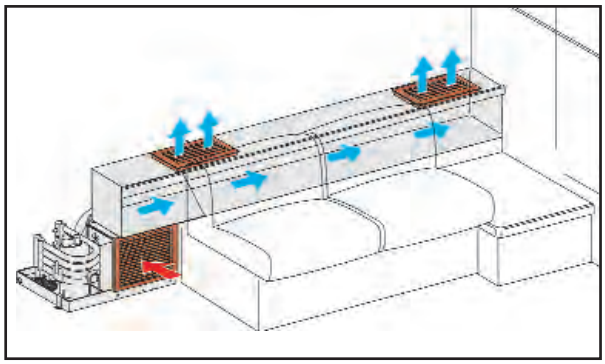
3.3 - Unit Location

A.- The unit must be located in the area to be conditioned. Typical locations are under a setee or bunk. A Compact unit must never be located in an engine space.









B.- The conditioned air must be ducted to one or more grills through ducts of suitable size, either insulated or non-insulated.

C - The return air grille should be located so that there is unobstructed air space between it and the air intake on the unit, as in picture 1.6.

D - Alternatively, the unit may be reversed, as in picture 2.6.

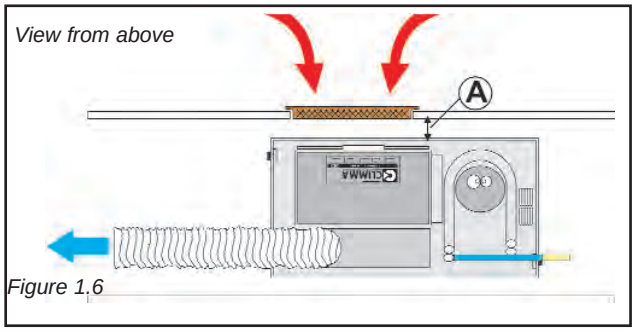
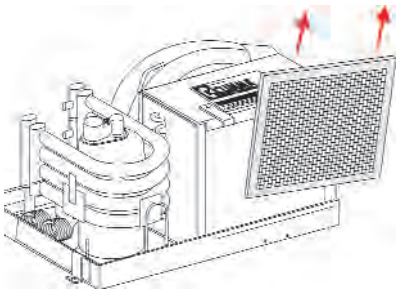


Figure 1.6



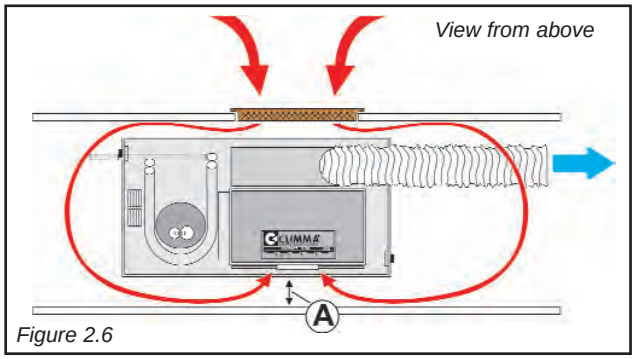


Figure 2.6

3.4 - FASTENING

The Compact unit should be secured by the clips.

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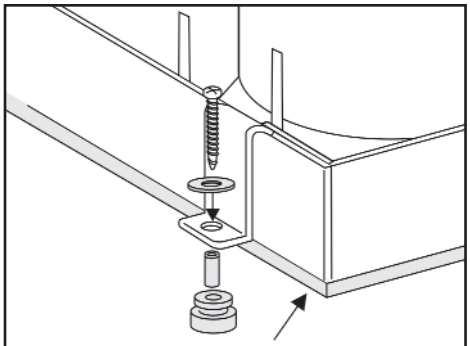
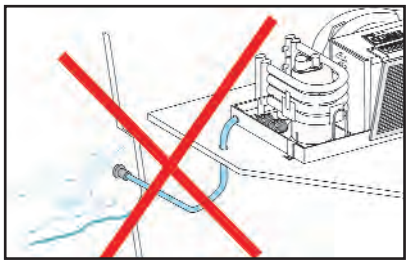


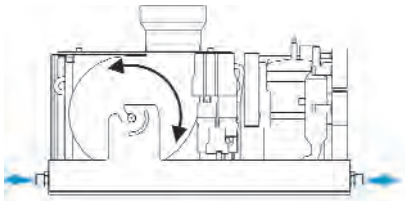
Figure 1.8

3.5 - CONDENSATE DRAIN

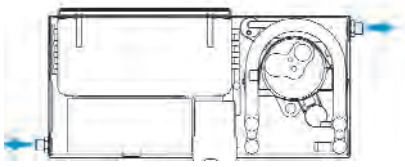
The Climma Compact unit will extract a significant quantity of moisture from the air, and this must be disposed of by means of a gravity condensate drain. This drain can either be to the bilge or to a sump with float-switch and pump.



DO NOT lead condensate drain directly overboard. This can lead to the ingress of potentially lethal fumes from exhaust emissions, etc.
Refer to the safety regulations relevant to your geographical area.

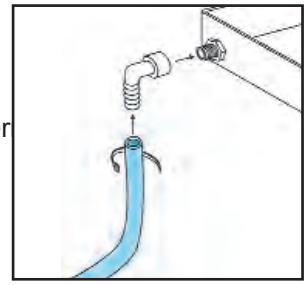


Dis 2.8

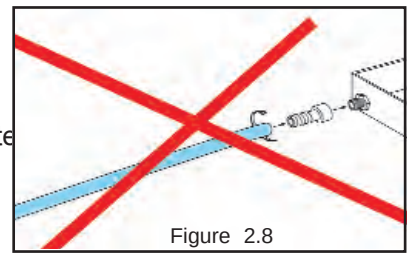


Each unit is equipped with two outlets, as you can see in the picture above.Either one or both drains may be used.

The condensate drain fittings provided are for 5/8" ID hose.
Do not use smaller diameter hose.
.



Condensate drains should ideally make a vertical orientation as soon as possible after the pan fitting.
If both drains are to be used, they should be joined together at a point lower than the drain pan.
Do not make more than one "U" trap in the condensate drain as this can lead to a pneumatic lock that will prevent the drain from functioning.



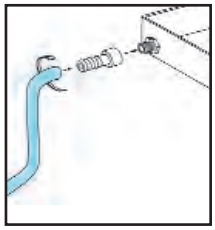
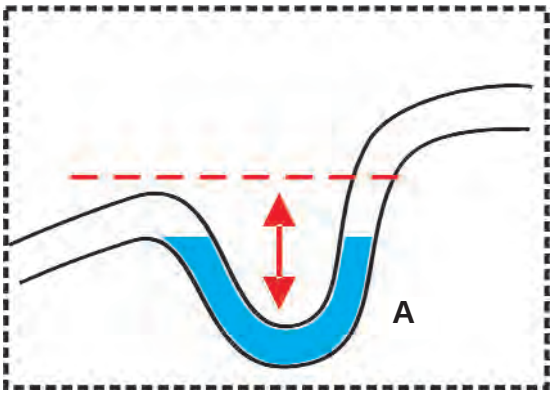


Figure 2.8

3.6 - CONDENSATE DRAIN

When the blower is operating, the area surrounding the Compact unit becomes a low pressure area. A trap in the drain (Fig. A) will prevent odours from being sucked up and entering the ducting system.



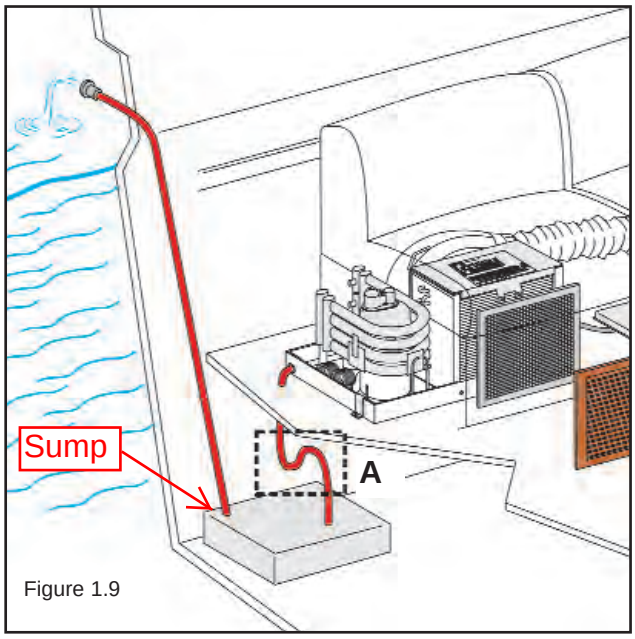
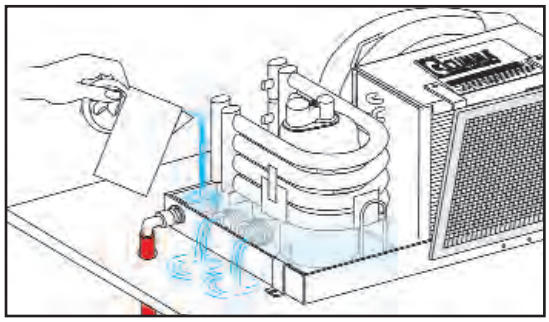
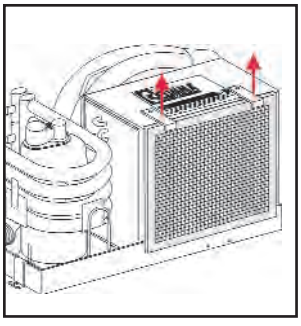


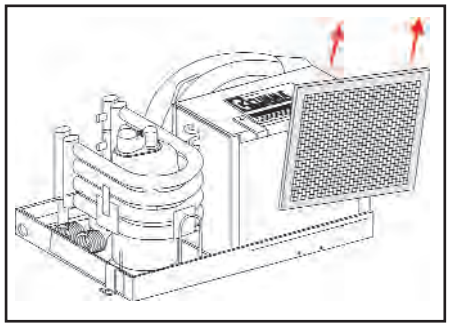
Figure 1.9

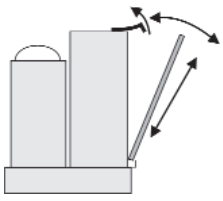
Check the efficiency of the condensate drain by pouring some water into the pan.



3.7 - AIR FILTER



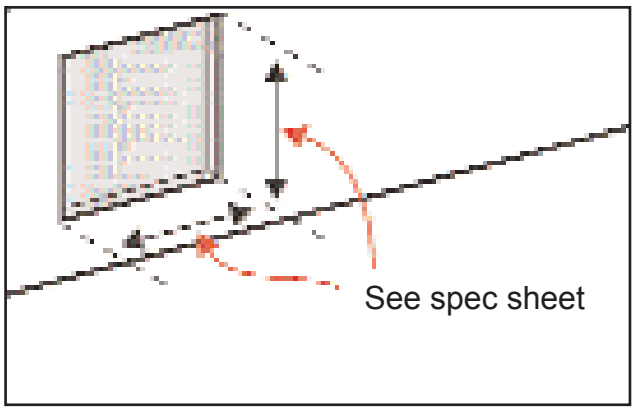


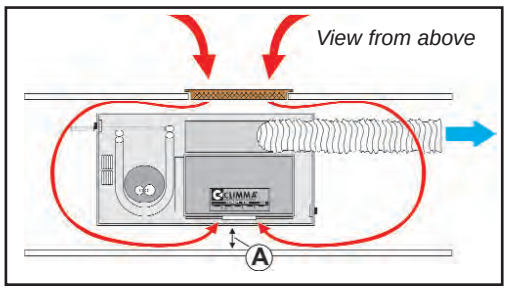


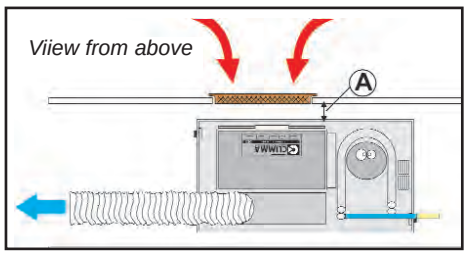
The Air Filter is mounted on the Compact unit in front of the air intake, and is essential for trapping dust and lint that would otherwise clog the fins on the air intake. The Air Filter should be checked and cleaned periodically, more often with high-usage units and on vessels with an abundance of carpets and rugs and with pets on board.

3.8- AIR CIRCULATION SYSTEM (see examples on page 11)

3.8.A - Return Air



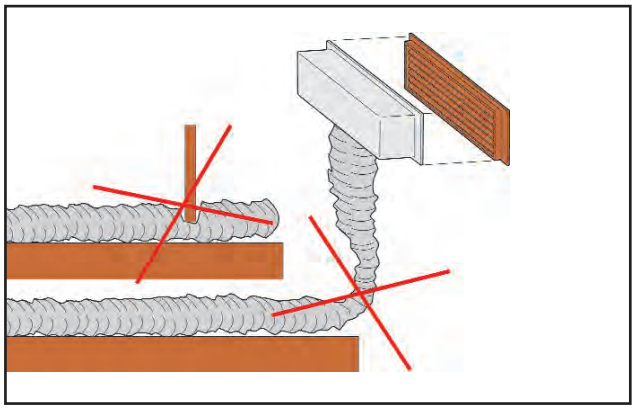




The cabin air returns to the Compact unit through a return air grille of appropriate dimensions.
(Minimum return air grille sizing for Compact units is shown on the Compact spec sheet).

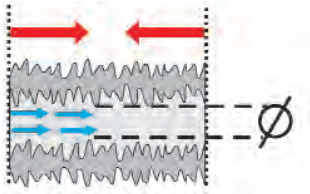
3.9 - Ducting

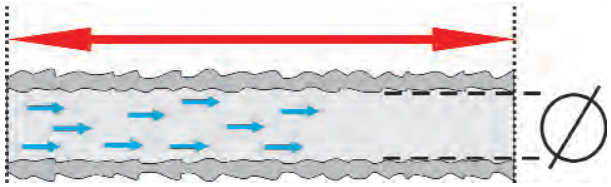
When using flexible duct, ensure that the duct maintains its diameter and is not crushed when passing through bulkheads and around tight corners.



3.10 - Air ducts

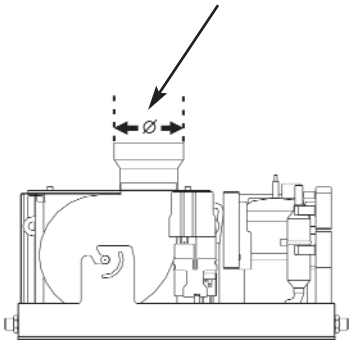
Stretch flexible ducts so that the maximum internal diameter is maintained. Cut duct to correct length, and do not 'concertina' duct which will reduce the internal diameter.

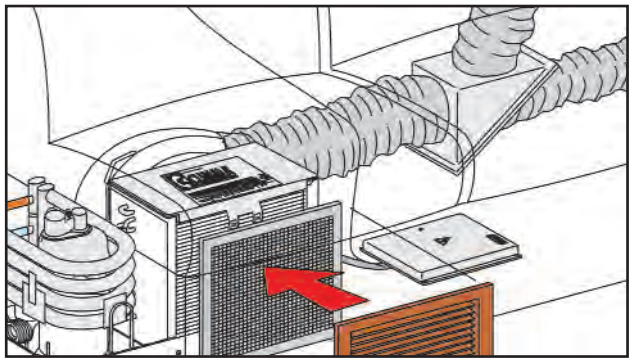




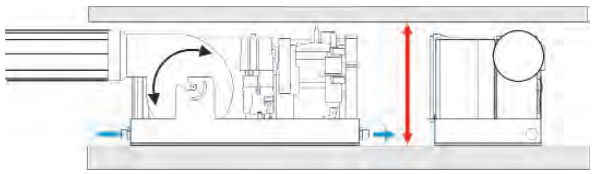
3.11 - Duct Connections

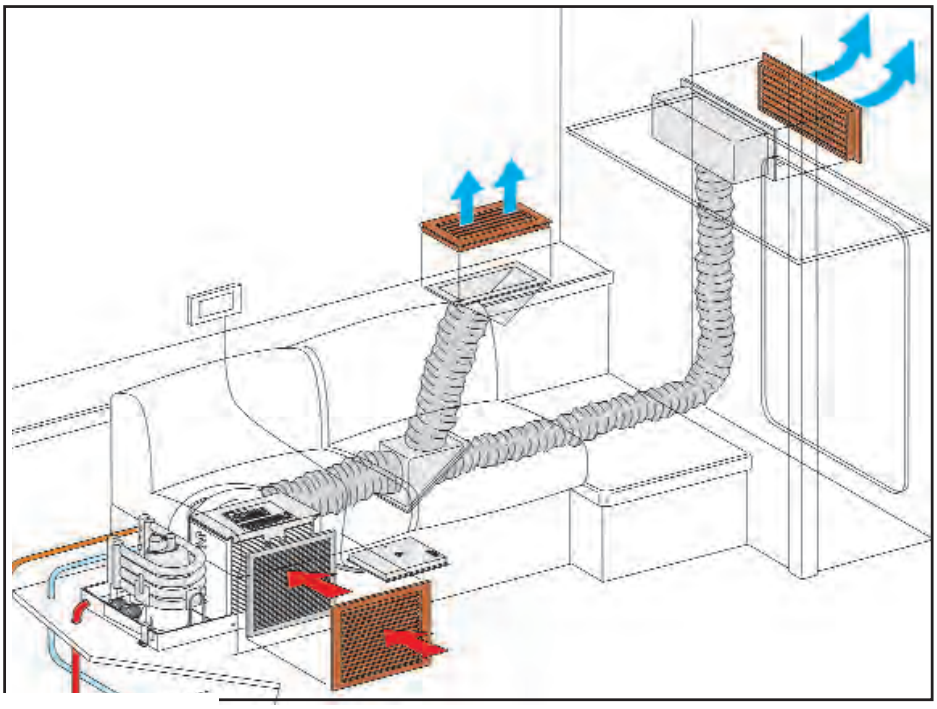
The collar on the blower discharge corresponds to the minimum size of duct allowable.
Do not attempt to connect a duct of smaller diameter than the duct collar on the Compact unit.





The blower can be rotated 90° for installations with limited height.





Example of a Compact installation using a "T" or "Y" to split the duct to two or more discharge grilles. The main grille must be of minimum area for size of unit (see Compact spec sheet) and non-closeable. Secondary grilles can be closeable.

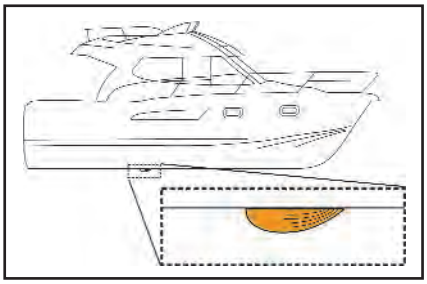
4 SEA WATER CIRCUIT

NOTE: The restrictions here do not apply to DC or AC diaphragm pumps. These can be mounted above the waterline and share an inlet.

4.1 - SEA WATER PUMP

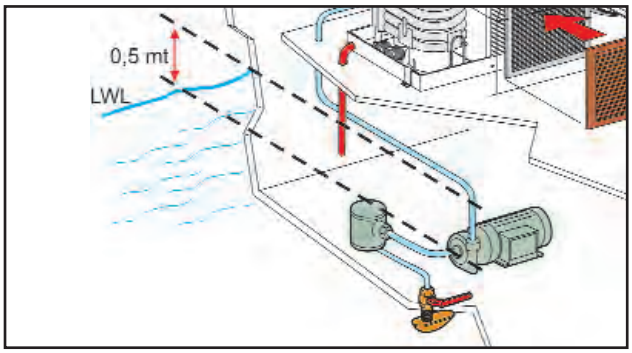
The sea water pump must be of the correct size for the Compact unit. Most installations require a centrifugal pump, and close attention to the installation requirements must be made to ensure trouble-free operation.

Centrifugal pumps are not self-priming and MUST be mounted with the discharge below the waterline, with a rising hose run through the strainer and on to the pump, and with a scoop intake strainer facing towards the bow of the vessel.



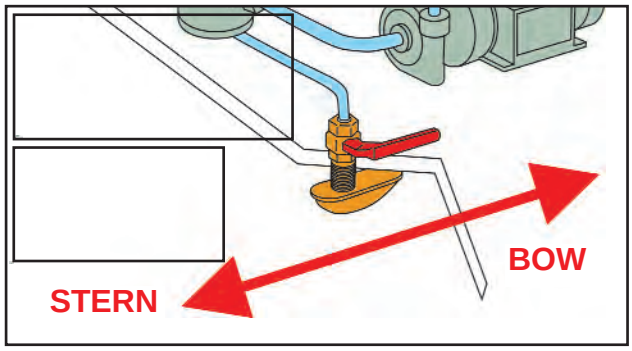
4.2 - LOCATION

4.2 - A



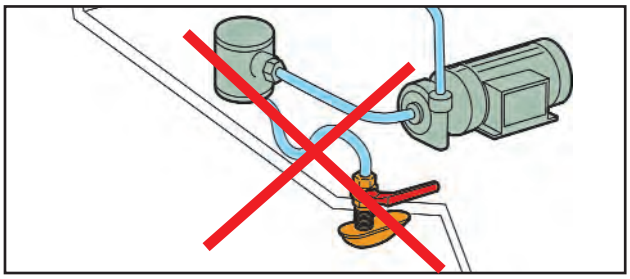
Install the sea water pump so that its outlet is vertical, and as far below the water line as possible.

4.2 - B



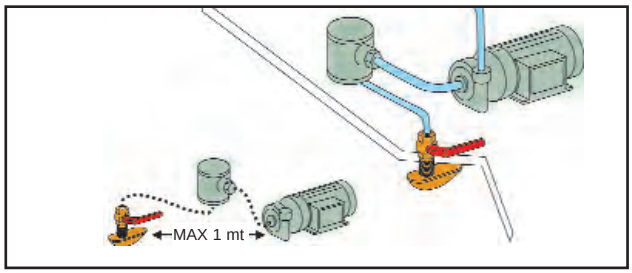
Scoop intake strainer must point towards the bow.

4.2 - C



The hose must make a continual rise from the ball valve, through the strainer, and into the pump inlet. All items in the pump circuit must be as far below the water line as possible. Use wire-reinforced hose for this section, and secure hoses using double stainless steel hose clamps of high quality.

4.2 - D

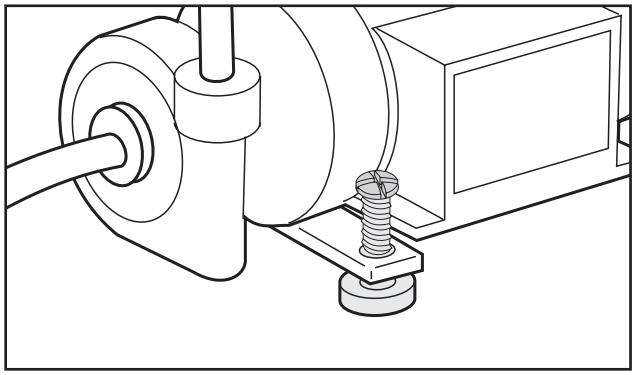


The hose runs from the ball valve to the inlet of the pump, via the strainer should be as short as possible.

4.3 - SECURING

Secure the pump using screws or bolts. Use anti-vibration dampers if provided with pump.

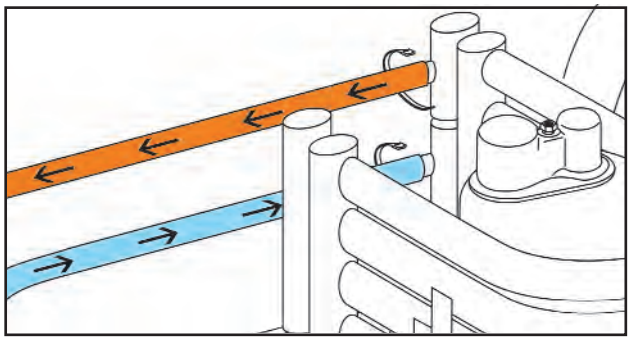
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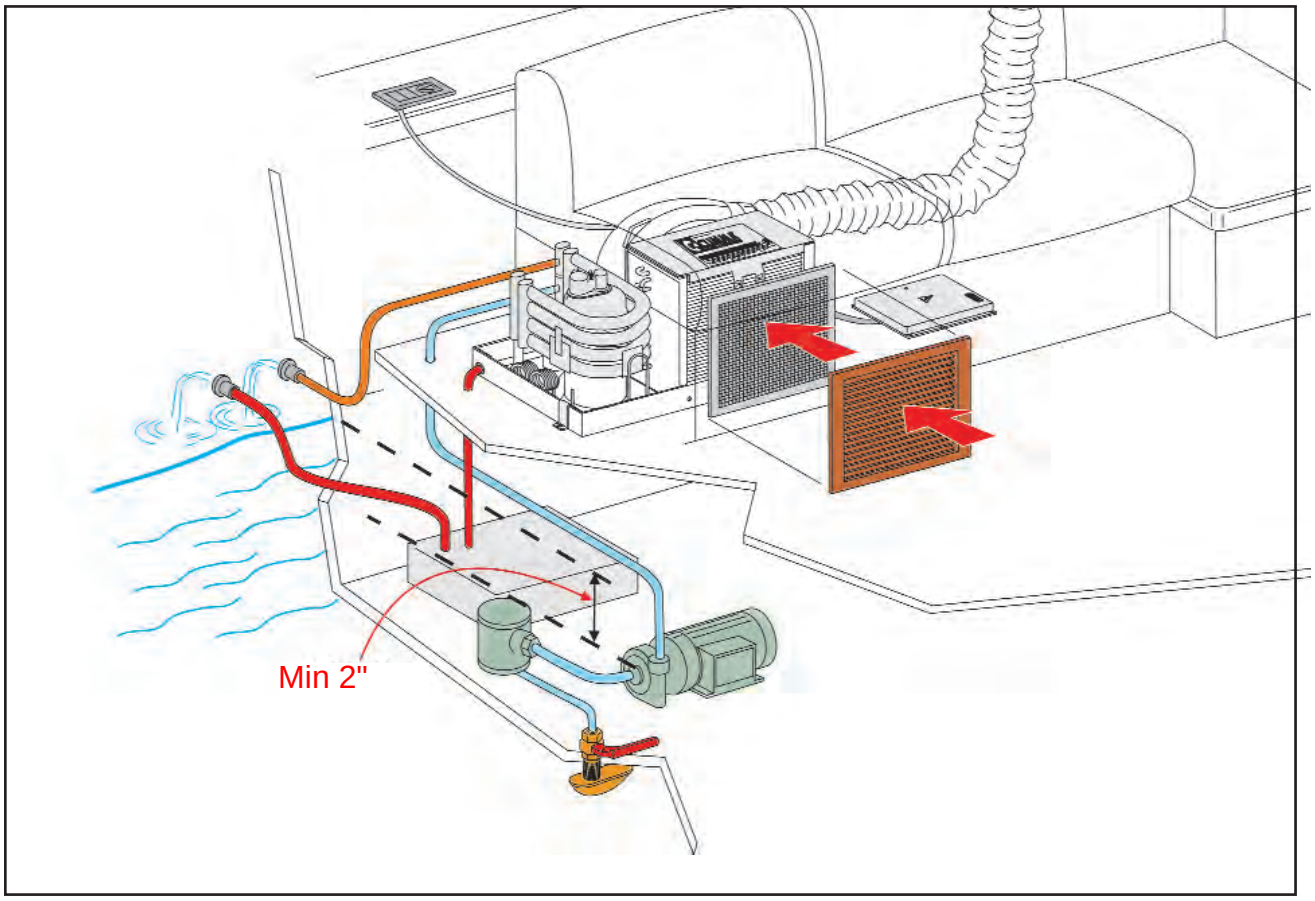
4.4- SEA WATER CIRCUIT

The water intake and discharge ports on the Compact unit
are marked with arrows. Correct water flow direction is important.
for efficient performance of the Compact unit.

Connections may differ from those shown



.



WARNING

AVOID THE RISK OF THE ELECTROCUTION !!!

Only qualified persons should attempt installation, troubleshooting, and repair.
Ensure that power to the system is disconnected before removing covers to electrical boxes.

IMPORTANT NOTE

To avoid possible electrical shocks that may cause injury or death, the Compact unit must be properly connected to a safety ground, as follows:

1- Use a correctly sized 3-conductor electrical cable with ground wire section and isolation.
2- Use only marine grade cable with multi-strand tinned conductors. Do not use residential wire with solid conductors
3- The ground wire must be correctly connected to the ground terminal of the panel.
4- Check that the ground connection between the electrical box and the air-conditioner has not suffered from damage during transport.
5- Check that the ground connection of the water pump is securely and properly connected in the electrical box.
6- Check the ground continuity with a multi-meter before switching off the air-conditioner.

5 ELECTRICAL CIRCUIT

5.1 - Vega II, Vega III, and FX II Controls

All electrical connections are made inside the Power Module box. See control Manuals for specific details.

5.2 - SUPPLY

Check that the available supply corresponds to the label on the unit, on the box and on the electrical pump.

Power should be supplied from a breaker of the correct rating. See spec sheet for details.

All electrical wiring must be marine grade, of the correct gage, and with multi-strand tinned conductors.
All connections on the terminal strips must be made with correctly sized wire and/or connectors.

- IMPORTANT NOTES

6.1 - INSTALLATION IN THE ENGINE COMPARTMENT
Climma Compact air conditioners must not be installed in engine compartments under any circumstances. It is permissible to locate a Compact unit in an area outside the conditioned space and the return air ducted in to the unit. Close attention must be made to ensure adequate insulation of ducting.

6.2 - TROUBLESHOOTING
Only qualified personell can should attempt troubleshooting, with respect to the relvant the safety regulations.

6.3 - MULTIPLE INSTALLATION
On multiple-unit installations, compressor start delays must be spaced at least 5 seconds apart, with the largest unit having the shortest delay.

7 - MAINTENANCE

For the efficient functioning of the air-conditioner, observe the following checks and maintenance.

" Check sea water filter weekly.
" Check air filter monthly.
" Check and clean condensation drain every four months.
" Clean condensation pan annually.
" Check sea water intake whenever boat is hauled.

7.1 - CONDENSATE DRAIN
During the cooling cycle air-conditioners produce condensate water, more so in humid weather. Check periodically that there are no leaks or obstructions on the condensate outlet and that the condensate water drains properly. Pour some water in the condensation tray and check to see that it flows freely. If the condensate drains to the bilge, it is better to let it flow towards a limited space and let it drain continually to avoid stagnation that can cause unpleasant smells

7.2 - AIR FILTER
The filter on the air inlet must be periodically cleaned and/or replaced.
.

8 TROUBLESHOOTING AND REPAIR

8.1 - IDENTIFICATION OF THE PRODUCT

Each product is identified by information shown on a small yellow label. The important details are; Model Name (ex.Compact 12) Part Number (ex. MC12RCI), and Serial Number (ex. 123456 - 123).

8.2 - TROUBLESHOOTING

Before calling for assistance, check the system. The following problems are the most common, and are typically easily solved. If, after having checked the system, there is still a problem, call the nearest CLIMMA Assistance Centre. In North America call Veco NA at 301-352-6962 or consult the web page: www.veco-na.com

8.3 - THE UNIT DOESN'T WORK

Is the breaker tripped?
Reset the breaker on the panel.
Is the supply voltage too low?
Check the voltage value between "L1" and "L2" in the Electrical Box

8.4 - THE BLOWER DOESN'T OPERATE

Is the air-conditioner switched on?
Switch on the unit by means of the control panel.
Are there any display LED's showing on the control?
Check power supply to Electrical Box

8.5 - THE COOLING IS NOT SUFFICIENT

Have you selected the correct operational mode?
Select on the panel the cooling mode (COOL) or AUTO
Have you set the thermostat correctly?
Check that the set-point is correct.

Is the fan speed too low?
Increase the fan speed or select the AUTO fan speed mode.
Is the air circulation insufficient?
Check that there are no obstructions on the outlet or inlet grills and that the filter is clean.

Is the air filter dirty?
Clean or replace it.

Is the compressor running only for short periods?
The high pressure switch may be operating. Check water circulation, sea water strainer and pump. Consult the Manual for the control.

The compressor isn't operating?
The high pressure switch has operated. Check the sea water circuit, switch the system off and then on again.
Consult the Manual for the control for more details.

8.6 - "HP" Alarm appears on the Display

IN COOL MODE:
This indicates that the high pressure switch has operated more than three times due to insufficient water flow. The system requires a re-start to operate again.

IN HEAT MODE.
This indicates that either there is insufficient air flow or that the freeze-stat has operated (if installed). Check air flow and/or increase fan speed. Check water flow.

Is the air circulation insufficient?
Check that there are no obstructions on the outlet and inlet grills and that the air filter is clean.

Is the air filter dirty?
Clean or replace it.

8.7 - "HP" ALARM PROBLEMS in SPRING and Fall

Reverse Cycle "Heat Pump" units work best in waters above 45 deg F, but at higher water temperatures there is a danger that the pressures within the system exceed the safety setting and the "HP" alarm is activated. Some controls do not show the "HP" alarm on the display in heat mode, and the only indication of an error is that the compressor is not functioning.
Increase the fan speed to prevent "HP" failures in HEAT mode
Is the air circulation insufficient?
Check that there are no obstructions on the outlet and inlet grills and that the air filter is cleaned.

8.8 - THE SEA WATER PUMP IS NOT PUMPING

Has the breaker tripped? (Pump Relay installations only)
After the necessary checks, reset the breaker.

Is the pump air-bound and in need of priming?
If air enters the pump head of a centrifugal (March) pump it will stop the pumping action. The air will need to be purged from the pump by removing the discharge hose.