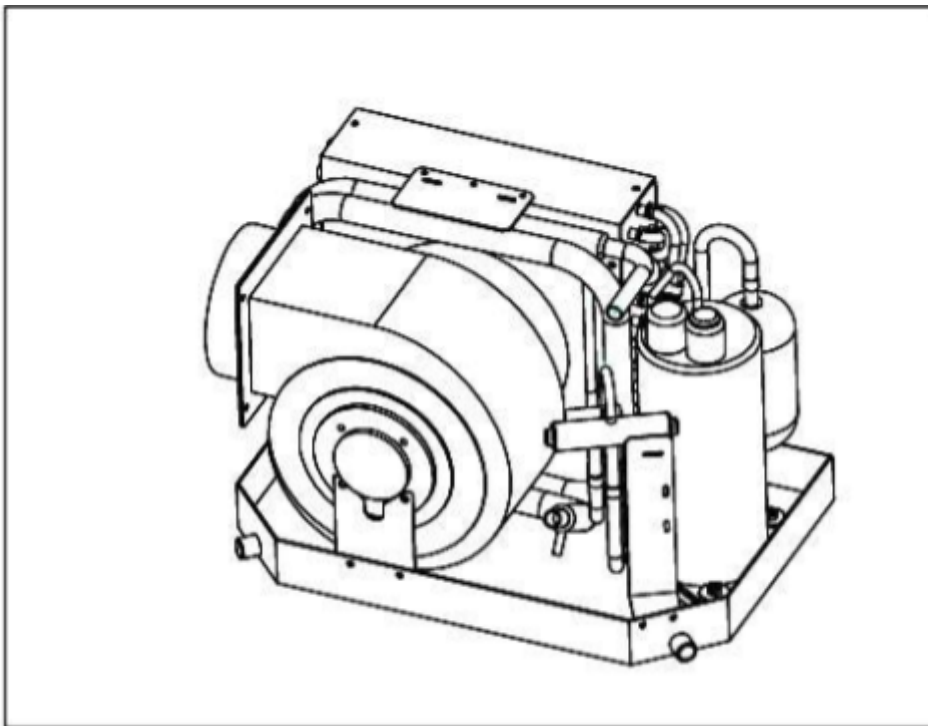




ECO-Breeze Series



USER / INSTALLATION MANUAL

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Thank You!

We truly appreciate your confidence and support in the Marine Breeze product. Thank you for the opportunity to work together.

The below contents will act as a guide to support your installation, operation and Frequently asked questions.

We strive to update our products and information based on your feedback. We appreciate your time and attention to all the great things about Marine Breeze and any areas you feel need to be commented on for improvement.

Please reach out to us at MarineBreeze.net

MARINE SELF-CONTAINED DX AC SYSTEMS INSTALLATION

SAFETY PRECAUTIONS

Very Important Safety Considerations: Never install your air conditioner in the bilge or engine room areas. Ensure that the selected location is sealed from direct access to bilge and/or engine room vapors. Do not terminate condensate drain line within three feet of any outlet of engine or generator exhaust systems, nor in a compartment housing an engine or generator, nor in a bilge, unless the drain is connected properly to a sealed condensate or shower sump pump.

During installation, each unit must be electrically grounded to prevent damage. Use a grounding wire to connect the unit frame to the appropriate neutral ground.

Safety Warning – The a/c unit should never be placed such that it can circulate carbon monoxide, fuel vapors or other noxious fumes into the boat's living spaces. Do not install or operate a self-contained unit in the engine room or near an internal combustion engine. Failure to follow this precaution could result in serious injury or death.

Ignition Protection Warning - Self-contained units do not meet federal requirements for ignition protection. Do not install in spaces containing gasoline engines, tanks, LPG/CPG cylinders, regulators, valves or fuel line fittings. Failure to comply may result in injury or death.

Installation and servicing of this system can be hazardous due to system pressure and electrical components. When working on this equipment, always observe precautions described in the literature, tags and labels attached to the unit. Follow all safety codes. Wear safety glasses and work gloves and place a fire extinguisher close to the work area.

Prior To Installation

Read these instructions completely and then plan all connections which must be made to the a/c unit including ducting, condensate drain line, seawater inlet and outlet hoses, electrical power connection, location of control, and seawater pump placement, to assure easy access for routing and future servicing.

Installation Overview

See Figure 1 for an overview of a typical Turbo a/c system installation.

Blower Rotation

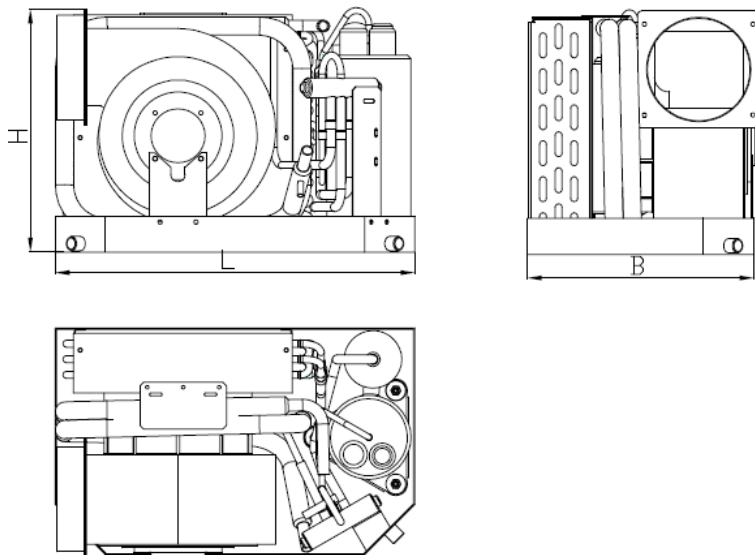
Rotate the blower to the direction which allows the most direct airflow discharge through the ducting. Loosen the adjustment screw on blower mount ring, rotate blower to desired position, and then tighten adjustment screw See Figure 2.

Placement of A/C Unit

IMPORTANT INSTALLATION NOTE: The condensate base pan is equipped with vibration isolators installed in the bottom of the pan. These isolators are designed to dampen the vibration caused by the operating a/c unit from transferring into the mounted surface. Care must be taken when moving the a/c unit across mounting surfaces as isolators can be damaged. Isolators will not normally pull out of pan, but can turn sideways if dragged and may break if excessive dragging occurs. Unit must be picked up after moving to allow isolator to reset into well or vibration isolation will be ineffective.

The a/c unit must be mounted to a low flat level surface, in bottom of locker, under a bunk or dinette seat, or in a similar location. Read the safety considerations above and see Figure 1 before mounting unit.

OUTLINE DRAWING



Installation

FIGURE 1. Installation overview

Parts list:
This is a generic parts list for all items needed for installation. Specific items needed will vary based on your project. If replacing a pre existing unit, many plumbing parts are often re-used. Make sure to confirm any re-used parts are proper specifications and in quality working order.

Parts Chart:

Condensation Drain Pipe (1)	
PVC Hose with Spiral Reinforcement (1)	

Male Hose Adapter (5)
(2) For Condensation Drain Pipe
(2) For Seawater Strainer
(1) For Ball Valve



Female Hose Adapter (1)



1/2" Ball Valve (1)



1/2" Sea Water Intake (1)



1/2" Sea Water Discharge (1)



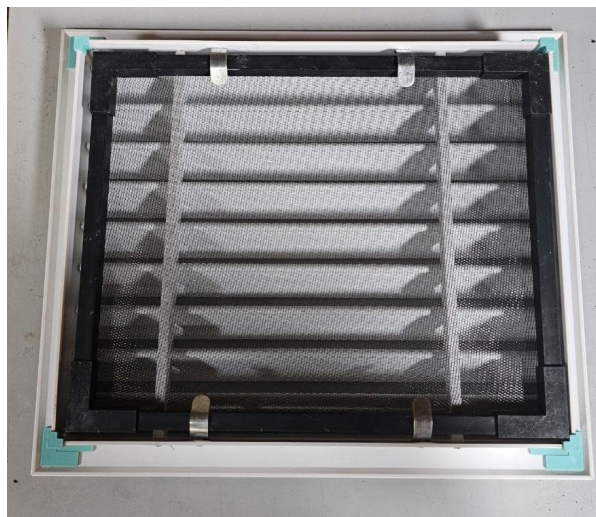
Small Hose Clamp (8)
Large Hose Clamp (2)



Air Duct (1)



Air Inlet Grill (1)



Air Outlet Grill (1)

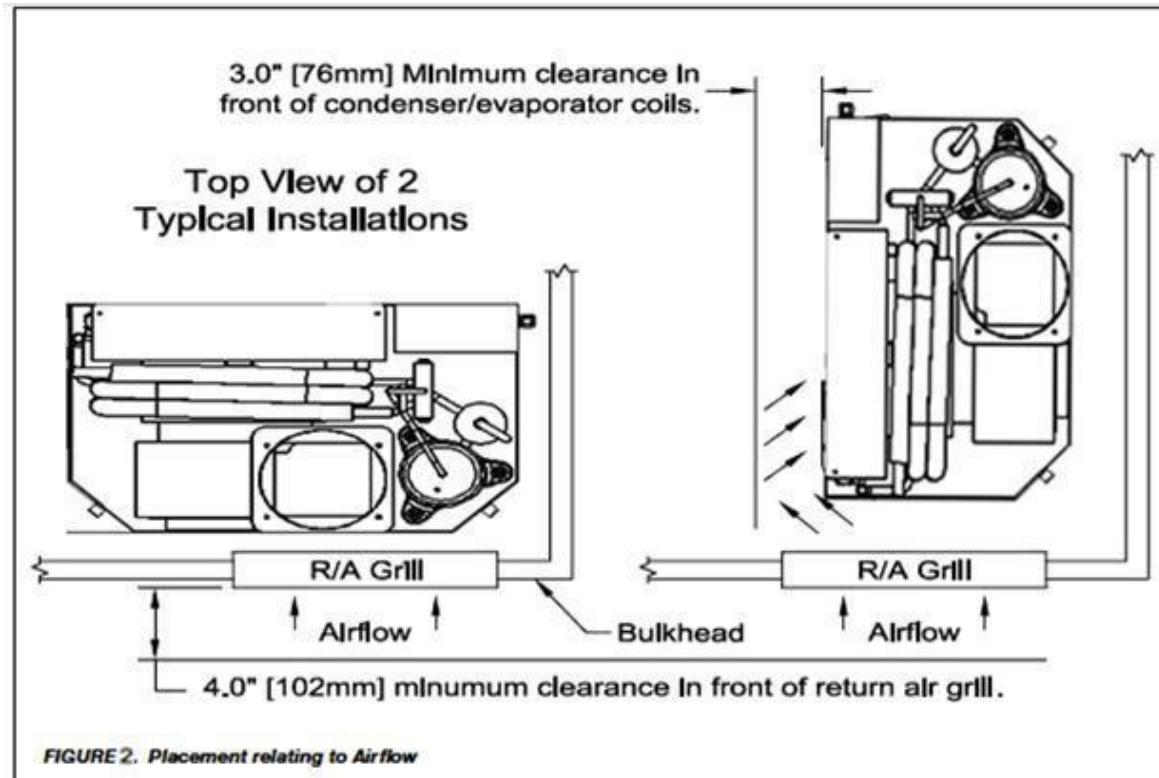


Wire Ties (5)



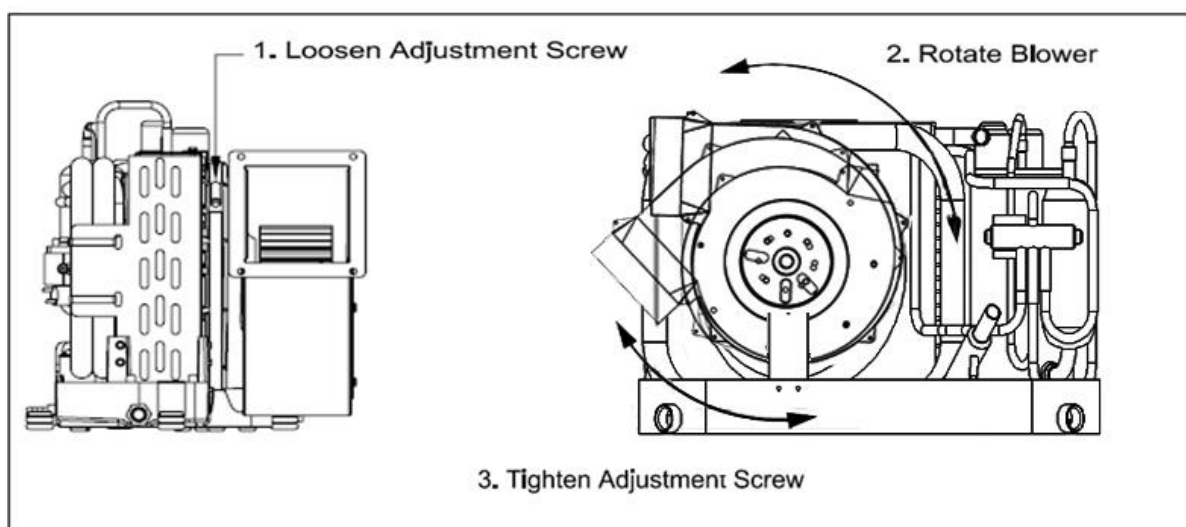
Installation

Mount unit with condenser/evaporator coil directly behind return air grill or with at least 3" (76mm) of air circulation clearance if adjacent to a bulkhead or other obstructions. See Figure 2. Compressor should be mounted away from return air grill if possible to minimize sound level in cabin.



Fan motor rotation

Adjust the air outlet by loosening lock screw and secure the screw tightly once the air outlet is adjusted at the optimal location. See figure 2.



Installation

Non-slip tape

Put the attached non-slip tape on the base of AC system securely. See Figure 4.

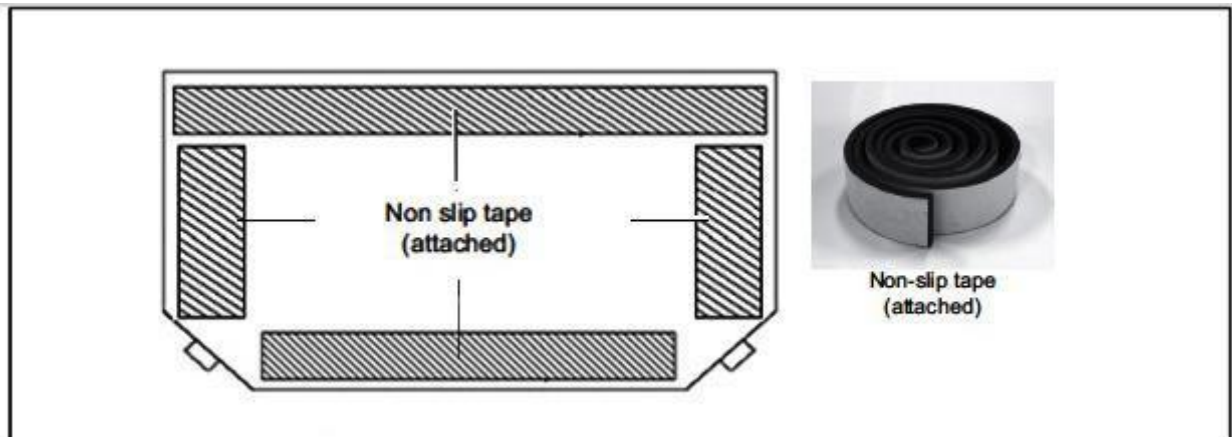


FIGURE 4. Mounting brackets installation overview

Mounting Brackets

The four mounting brackets provided should be placed around edge of drain pan as equally spaced as possible. Secure a/c unit to a flat level mounting surface. Brackets with vibration isolators and sleeves are provided. Customer is to supply screw or bolts. See Figure 5.

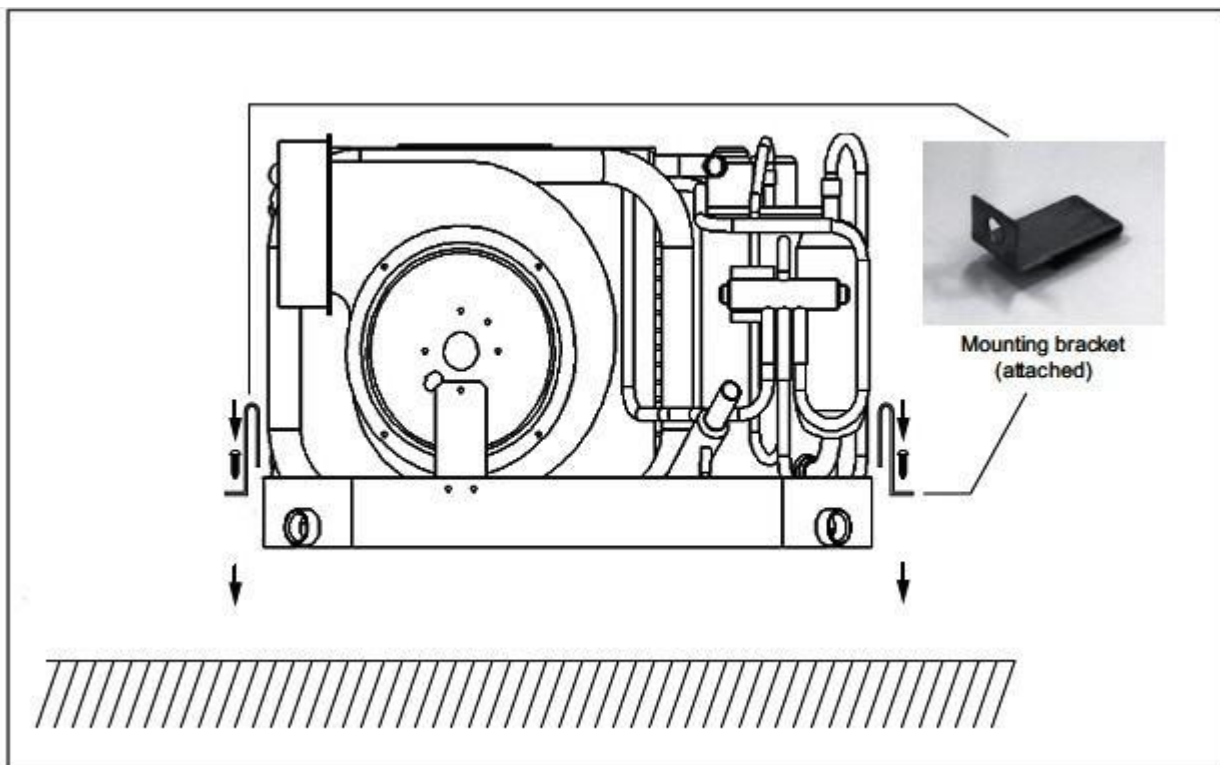


FIGURE 5. Mounting brackets installation overview

Installation

Ducting

Good airflow is critical for the performance of the entire system. It is highly dependent on the quality of the ducting installation. The ducting should be run as straight, smooth and taut as possible minimizing the number of 90° bends (two 90° bends can reduce airflow by 25%). If a transition box is used, the total area of supply air ducts going out of the box should at least equal the area of the supply duct going in to the box.

All ducting should:

- Be appropriately sized for each application.
- Run as smoothly and taut as possible.
- Have as few bends or loops as possible.
- Be securely fastened to prevent sagging during boat operation.
- Have all excess ducting lengths trimmed off.
- Not be flattened or kinked.
- Insulated when located in high heat load areas (hull side, mechanical compartments, etc.).
- Be properly protected against potential damage when routed through open areas.
- Do not route ducting through engine room or any area where it may be exposed to dangerous vapors or exhaust fumes.

Seawater System

Several guidelines should be followed during the installation of the seawater system. If the circulation pump is centrifugal and not self-priming, it must be mounted so that it is always at least one foot below the water line regardless of which tack the vessel is on. Pump may be mounted horizontally or vertically. The following is a summary of the seawater system installation:

1. Install the seawater scoop thru-hull inlet as close to the keel and as far below the water line as possible, facing forward. Bed the scoop with a marine sealant designed for underwater use.
2. Install a bronze or stainless steel full flow seacock on the seawater scoop thru-hull inlet.
3. Install a seawater strainer below the level of the pump with access to filter.
4. Mount the pump above the strainer and at least one foot below the waterline.
5. Connect the seacock and strainer with an uphill run of reinforced marine grade hose.
6. Connect the discharge from the pump uphill to the bottom inlet of the a/c unit's condenser coil with 5/8" (15.9mm) reinforced marine grade hose. Connect the discharge from the condenser coil to the overboard discharge thru-hull fitting with 5/8" (15.9mm) reinforced marine grade hose.
7. Avoid loops, high spots or the use of 90° elbows with seawater hose (each 90° elbow is equivalent to 2.5' (0.762M) of hose and a 90° elbow on the pump outlet is equivalent to 20' (6.1M) of hose).
8. Double clamp all hose connections with two stainless steel clamps, reversing the clamps.
9. Use Threaded seal tape on all threaded connections.
10. Connect all metallic parts in contact with seawater to the vessel's bonding system including the speed scoop inlet, strainer, pump and the air conditioner.

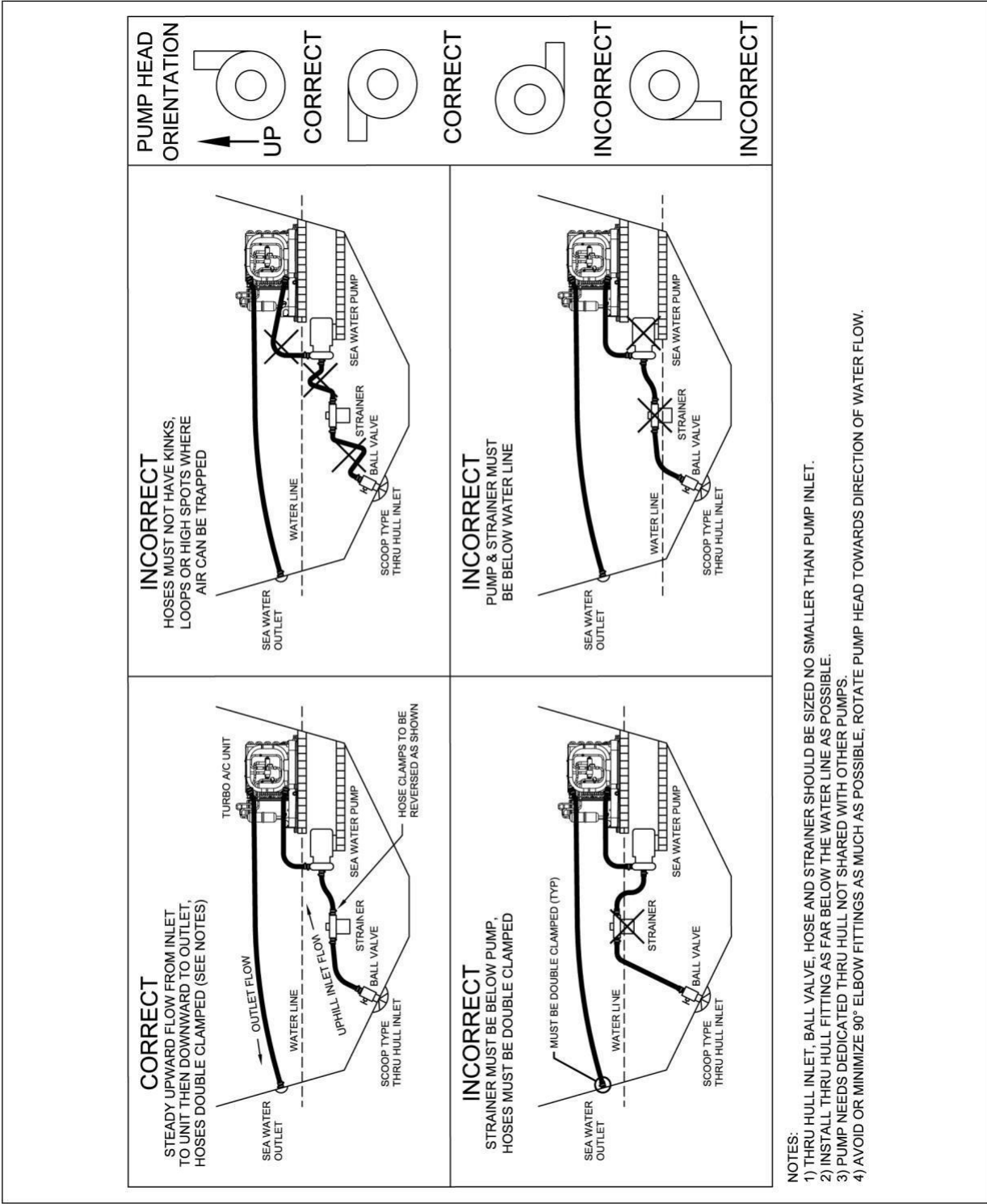


FIGURE 6. Seawater system

Electrical connections



WARNING

Electric shock hazard

Failure to properly ground and connect the system will void the warranty

Before opening the electrical box, be sure to turn off the power circuit breaker. Failure to follow this warning could result in death or serious injury.

Both the air conditioner and pump require the same voltage. Make sure the power source is correct for the equipment. (DC 24V /48V) Power is obtained from the master power source in the boat. Power cables run from this source to the air conditioner. The air conditioner will then supply power to the pump as required.

Use appropriate AWG marine cable to power the air conditioning unit and sea water pump. Use ring or fixed fork terminals for all connections.

Please pay attention to the following when making electrical connections:

- Ensure that the ground of the air conditioning unit is properly connected to the ground of the boat.
- During installation, each unit must be electrically grounded to prevent damage. Use a grounding wire to connect the unit frame to the appropriate neutral ground.

Installations steps:

1. Connect the live wire of the power supply to input wires.

- Positive DC input must be connected to the Large red wire
- Negative DC Input must be connected to the Large black wire.
 - Ensure input voltage matches the proper operating voltage of the DC Air Conditioner
 - (CHART)
 -

Model	Operating Voltage Range
24v Model	23v - 28.3v
48v Model	46v - 56.6v

-
- Proper gauge wire will need to be determined by professional installer using proper method to calculate gauge based on distance of wire run and peak amperage.

2. Connect the water pump wiring to “Pump Terminal Block” inside the control box as shown in the physical diagram below.

- Pump draw must not exceed 6 amps. (If using a larger pump, a higher amp relay may need to be used)

3. The unit must be electrically grounded to prevent damage. Use a grounding wire to connect the unit frame to the appropriate neutral ground of the vessel. Remove a structural bolt from the drip pan and fix an independent ground wire with proper terminal to bolt. Run wire and connect the other end to an appropriate ground on the vessel. (Consult a

professional for proper grounding/Neutral for your application/Vessel.)

Installation checklist and final inspection

Check the marine air conditioner

- A. Check if any damage of the appearance, inside pipes when in transporting and handling.
- B. Check if the fan motor is rotating normally.

Check the piping system

- A. Check if the system piping, valves are installed correctly.
- B. Check if the ducts are loosened or not, its insulations and drains are well done.
- C. Check if the piping is clean, in order to avoid the unit to be damaged.
- D. Check if all the opening valves of the system are to be opened, all the off valves of the system are to be shut off.

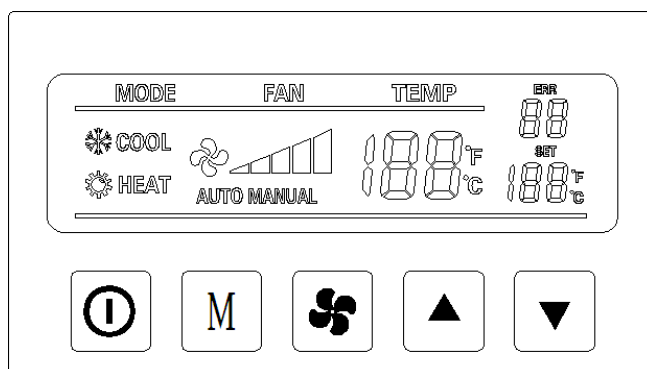
Check the electricity

- A. Check if the power source is exactly same with the instructions of the rating label and operation manual.
- B. Check if the electricity and control circuit are correctly connected, well grounded, all the terminals are fastened.
- C. During installation, each unit must be electrically grounded to prevent damage. Use a grounding wire to connect the unit frame to the appropriate neutral ground.

Remark: the testing must completed by professional person

Operation controllers and Display panel

The buttons on the wire control can switch on and off the unit, increase/decrease the temperature, set the mode, set the timer, and control the fan speed. etc.



 On / Off

- Press and release to toggle between the **On and Off Modes**.



Mode Button

- Press to cycle through the modes of operation. Mode sequence selections are **COOL, HEAT, and FAN**.



FAN Button

- Press to select Automatic or Manual Fan mode, indicated by the AUTO Fan LED indicator being on or off. In Manual Fan Mode, additional presses of the Fan button will adjust fan speed higher, then lower, then back to AUTO. In AUTO Fan, fan speed is controlled by the microprocessor as a function of the difference between set point and inside temperature.

Turn on/off “Fan always on”: This controls if the fan will stay running with compressor off vs only when compressor is ON.

1. Press “Mode” + “Fan” for 3 seconds until beep
2. Hold “Fan” for 3 seconds until beep
3. Press “Mode” to return to normal operation screen



Up Button

- Press and release to display the **set point**. Press and hold the UP button to increase the set point. Set point increases one degree each time the button is pressed.



Down Button

- Press and release to display the **set point**. Press and hold the DOWN button to decrease the set point. Set point decreases one degree each time the button is pressed.

Change units from Fahrenheit vs Celsius: Press and hold the “up” and “Down” keys simultaneously for 5 seconds.

Trouble shooting:

The PCB controller will estimate errors within the system operation, and do the treatments according to these error types. The trouble shootings and errors go into four types, which are the unit resumed protection, system resumed protection, unit serious fault protection, and system serious fault protection.

Error codes table

Error Code	Error descriptions	Treatments	Resumes
1	Return air temp. sensor error	Shut off the compressor	Automatically resumed
2	Evaporator temp. sensor error	Shut off the compressor	Automatically resumed
3	Circuit water temperature was failure	Shut off the compressor	Automatically resumed
4	Indoor coil sensor is overheat	Shut off the compressor	Automatically resumed
5	Refrigerant gas was leakage	Shut off the compressor	Manually resumed
6	Compressor was overloaded	Shut off the compressor	Automatically resumed when unlocked / Manually resumed when locked
7	Low pressure protection is shut off	Shut off the compressor	Automatically resumed when unlocked / Manually resumed when locked
8	High pressure protection is shut off	Shut off the compressor	Automatically resumed when unlocked / Manually resumed when locked
9	Filter was blocked	Shut off the compressor	Automatically resumed
10	Chilled water temperature protection	Shut off the compressor	Automatically resumed
11	Water flow switch is failure	Stop the machine when it is locked	Manually resumed
12	Compressor current failure	Shut off the compressor	Automatically resumed
13	Fan motor was over-loaded	Shut off the compressor	Automatically resumed when unlocked / Manually resumed when locked
15	Communication failure between PCB and wireless controller	Operate the machine in previous settings, don't stop the machine	Automatically resumed
16	Input the primary password by user	Stop the machine, input the correct passwords (if it is beyond three times, password will be locked, the error code 20 displays, you should input the super password for unlocking.)	Automatically resumed when unlocked / Manually resumed when locked