

Instruction for use

Marine Defroster 12 kW



This instruction for use is structured according to the European Commission COUNCIL RESOLUTION (98/C 411/01) of 17 December 1998 on operating instructions for technical consumer goods.

Albin Pump Marine Defrosters are designed and manufactured to the highest standards of reliability and safety. The content of this manual is in accordance with the design and construction of the equipment at the time of publishing. Albin Pump Marine reserves the right to introduce design modifications without prior notice.

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1. Introduction

1.1. Intended use of product

This equipment is intended for use in marine environment, incorporated in marine vessels. The equipment is not designed for use and operation in explosive environments.

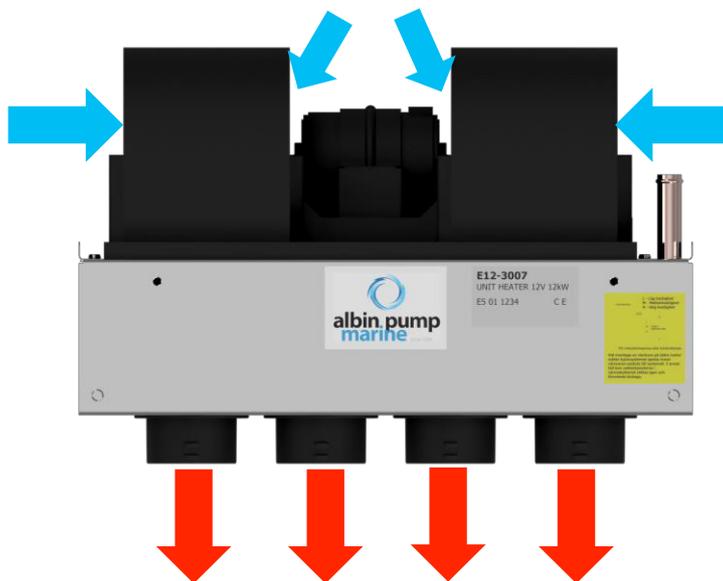
This product has been designed and manufactured for the purpose to provide heated air during normal working conditions.

1.2. General description of product

This product comprises mainly of metal casing, heat exchanger and blower. Detailed information about ingoing components can be found in drawings and schematics. Purpose of the product is to heat up air passing through the unit and distribute it through air ducts to desired locations.

1.3. Main function of product

Main function of the product is to heat and circulate the air by means of heat exchanger connector to water- based system and electrical blower. Air is sucked through blower's inlets and ejected through outlets located in front of the unit.



2. Safety information



This product must only be operated, maintained and repaired by personnel who have been informed of the residual risks involved in operating it, and who have been warned of the risks involved if not following the instructions in this manual.

No modifications to the product are allowed without consulting the manufacturer.

Read and understand the manual before using this equipment!



Hazardous voltage may shock and burn. The power supply must be securely turned off before any maintenance is performed inside the electrical powered equipment on the product.

Familiarize yourself with the proper operation of any service equipment you will be using. Always read the manual enclosed with the equipment, and always follow the manufacturer instructions. Failure to do so could cause personal injury or damage to your equipment. Never perform any maintenance or service on your equipment before consulting authorized service personnel. Always unplug unit before any maintenance.

Always use appropriate protective equipment, wear goggles and gloves. Always work in pairs. Never work on the equipment alone.

2.1. Warnings

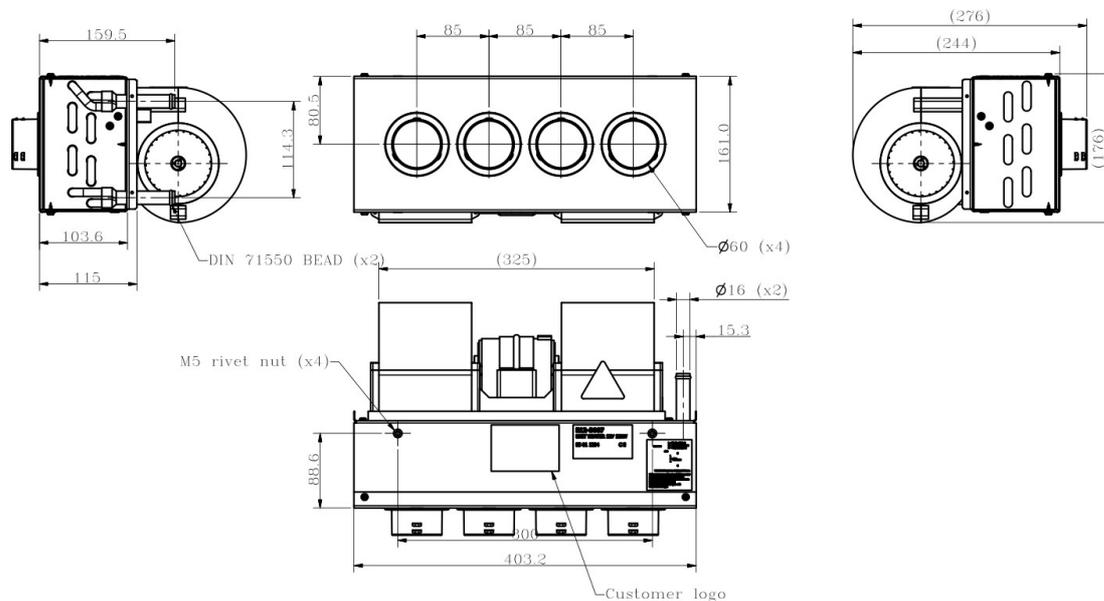
	Do not perform any work on the system unless power is turned off!
	Do not put body parts or clothes etc. into blower fans, unless power supply is disconnected!
	Immediately turn of the system in case of any suspicion of malfunction!

2.2. Residual risks

Due to unprotected wheels of blower, please strictly follow additional restrictions listed below.

	Rotating blower wheels can cause serious injuries.
	Never put fingers or any part of your body inside operating blower.
	Never install or maintain the defroster with blower turned on.
	Do not wear clothes with loose parts (e.g. scarfs, ties, belts, etc.) close to operating blower. Loose parts can be dragged in and result in serious injuries.
	Install defroster in a way that blower wheels cannot be reached by users in normal operating conditions.

3. Technical data



Parameter	Value	
Part number Albin Pump Marine	09-02-007 kit 09-02-013 unit	09-02-008 kit 09-02-014 unit
Description	Premium defroster 12 kW 12V	Premium defroster 12 kW 24V
Rated heating performance (max)	12 kW 41000 BTU/h	
Rated air flow (max)	680 m ³ /h (400 ft ³ /min)	
Rated voltage	12 V DC	24 V DC
Rated power consumption	Hi	10.0 A 5.5 A
	Med	6.5 A 4.5 A
	Low	4.5 A 3.5 A
Electrical connection (unit)	4x AMP FASTON 6.3 1-POLE TAB	
Electrical connection (extension cable)	AMP FASTON 6.3 2-POLE FEMALE, AMP 180908	
Fuse (not included)	15 A	10 A
Water connection	Size	2x 16 mm (5/8") copper pipes with DIN 71550 bead
Water pressure (max)	2.5 bar (36 psi)	
Air connection	Inlet	Blower inlets
	Outlet	4 plastic hose adapters for Ø60 mm (2.4") air hoses
Noise level (max)	70 db(A)	
Dimensions	Width	403 mm (15.9")
	Height	176 mm (6.9")
	Depth	244 (276) mm (9.6" (10.9"))
Weight	5.2 kg (11.5 lbs)	

4. Handling

Product is packed in carton box and can be handled by any available means, due to its low weight and size.

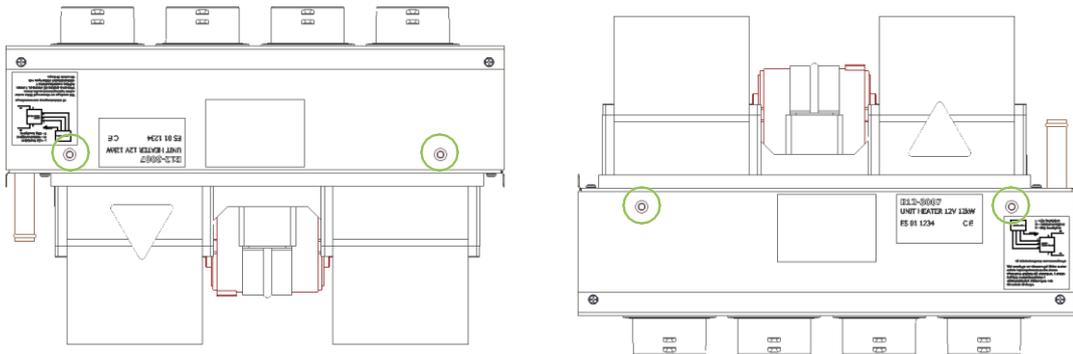
	<p>Wear protective gloves to prevent any cuts from possible sharp edges.</p>
	<p>Do not carry the product holding it by water connection tubes.</p>

5. Preparing for use and installation

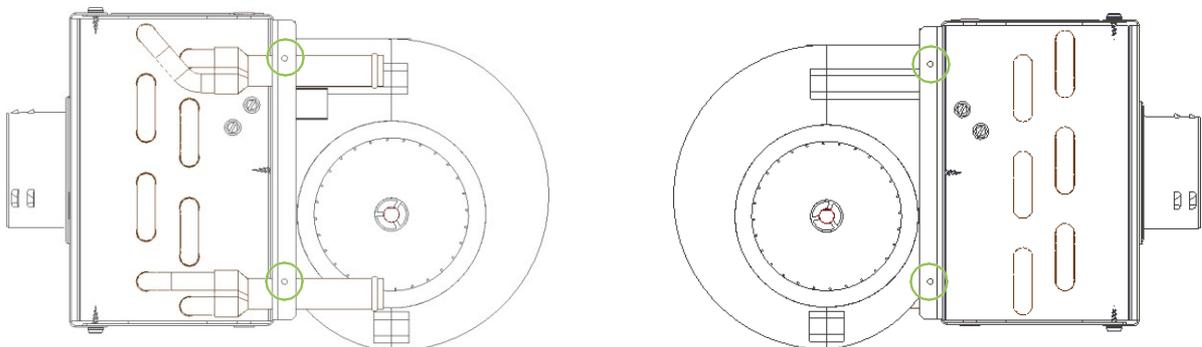
Unpack the equipment and start mounting the unit as described below. Also check with instructions from vessel manufacturer.

5.1. Defroster

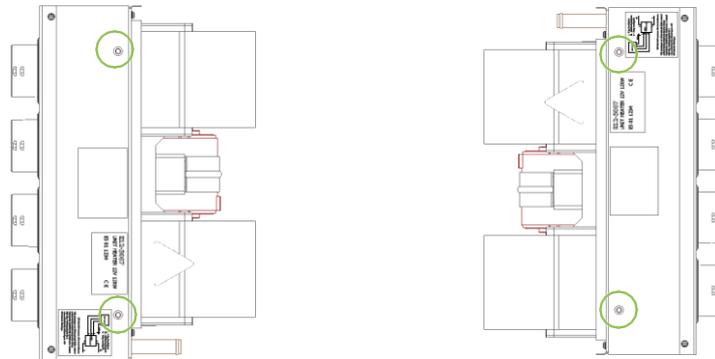
Securely mount defroster in one of following positions (vertical or horizontal) by means of M5 screws or bolts and 4 M5 rivet nuts in defroster's casing (on top and bottom).



Alternatively, $\Phi 3$ mm (0.12") holes on both sides of defroster, combined with adequately sized screws, can be used to mount the unit in place.

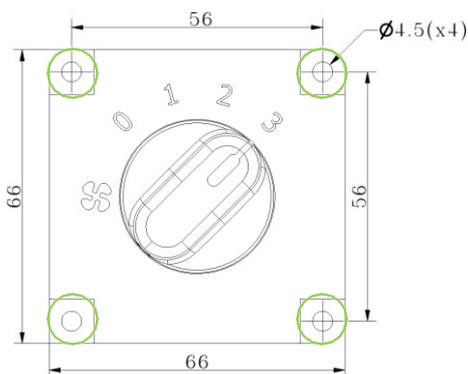


Following mounting positions (vertical blower axis) are possible, but not recommended. Product will operate in such position, however longevity of blower will be decreased.



5.2. Control panel

Mount control panel in designated place by means of suitable screws or bolts (not included). Control panel has four $\Phi 4,5$ mm (0.18") holes shown below.



5.3. Electrical connection

Connect the unit directly or by means of extension cable to the vessel's power supply with adequate voltage, using matching connectors (see section 3 for details). Connect control panel to extension cable.

	<p>Make sure that wires with cross section of at least 2,5 mm² are used to connect the unit to power supply.</p>
	<p>Make sure that all connectors are properly connected and will not become loose during normal operation.</p>
	<p>Make sure defroster's electrical circuit is fused with appropriate sized fuse (see section 3).</p>
	<p>Make sure that defroster is connected to adequate power supply with voltage matching rated voltage of defroster. Incorrect connection can damage product.</p>

We recommend applying technical vaseline to additionally protect electrical connectors against moisture and dirt.

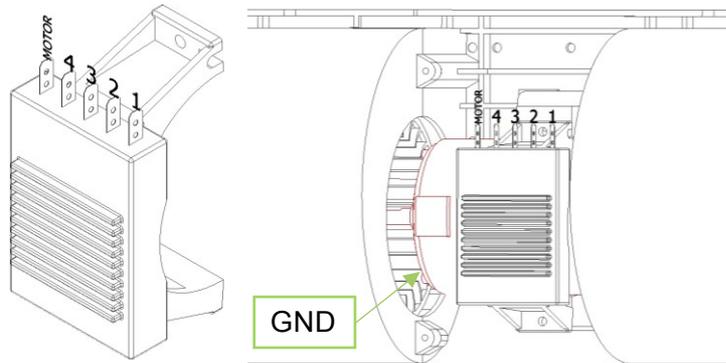
5.3.1. Pinning

Positions in each connector given in this instruction are matching markings on connectors and related manufacturer's documentation.

Note that all connectors below are shown from the **front**.

Main connector pinning is as follow: MOTOR Power – already connected

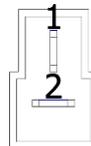
- 4 High speed
- 3 Medium high speed
- 2 Medium low speed
- 1 Low speed
- GND Ground



In case when extension cable is used, it is possible to connect only 3 wires to blower. In such case, one pin on the blower must be left empty and end user must choose, which speed should be connected to medium speed settings of control panel.

Extension cable pinning is as follow:

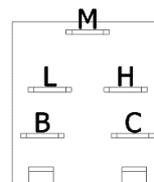
- 1. Power
- 2. Ground



Control panel pinning is as

- follow: H High speed
- M Medium speed
- L Low speed

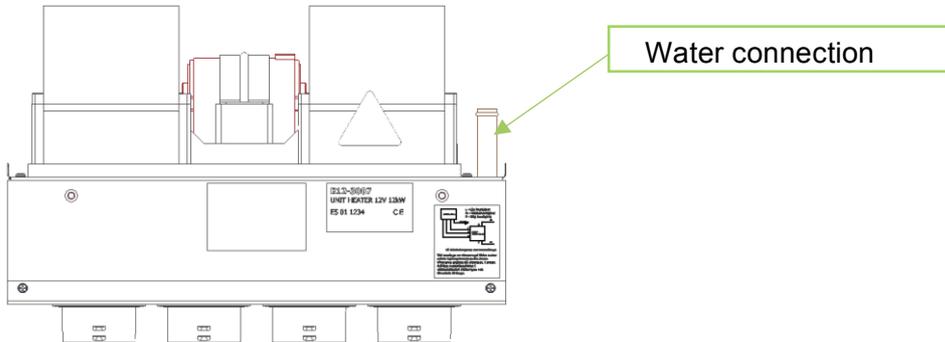
- B Power
- C Clutch (common out), not used



Please also refer to wiring schematic for additional information.

5.4. Water connection

Product is connected to water-based system by means of two 5/8" (outer diameter, ≈ 16 mm) copper pipes with beads according to DIN 71550 standard.



Appropriate set of hoses and hose clamps should be used to connect the product to the system.

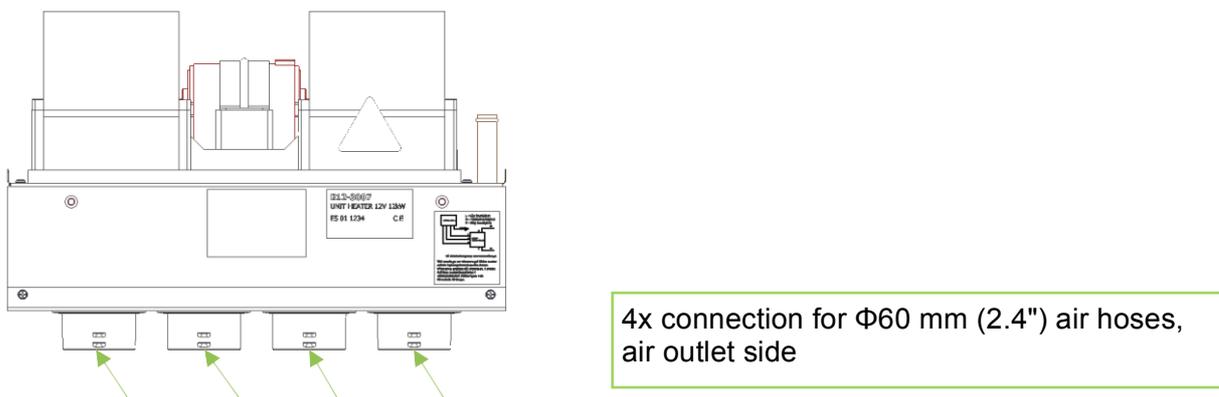
Make sure that hose clamps are mounted according to recommendation from manufacturer in order to avoid any leakages or malfunctions. Pay attention to proper tightening torque and positioning of clamps.

It does not matter which pipe will be used as inlet and which as outlet.

To ensure best performance, mount the product below water level in storage tank.

5.5. Air connection

Securely connect air hoses to plastic hose adapters on outlet side.



Make sure that air hoses are affixed tightly to adapters by means of adequate clamps to prevent any air leakages and loss of performance.

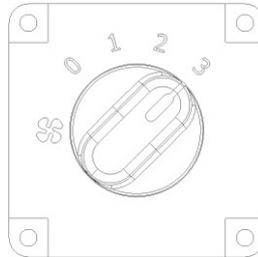
6. Operation

6.1. Control panel

Heater can be run in different blower speeds or turned off completely. Use knob in control panel to set desired blower speed.

Possible speeds to select from:

- 0 – blower turned off
- 1 – blower runs in low speed
- 2 – blower runs in medium speed
- 3 – blower runs in high speed



Refer to water valve manual or vessel manual to get instructions how to regulate fluid flow.

7. Maintenance

It is recommended to perform following check-up before and after each season:

- Control that blower works normally, does not make any unusual noise and does not vibrate more than normal
- Control electrical connectors and make sure that they did not become loose, damaged or rusted
- Control hose clamps and make sure they are securely holding hoses; if needed, re-tighten them, following clamp's manufacturer's recommendations

If any malfunction is noticed, please refer to Spare parts section for list of available spare parts or replace faulty product, if spare parts are not available for faulty component.

8. Troubleshooting

#	Malfunction	Possible cause	Action
1	Unusual noise from the blower motor	The blower motor might not operate correctly	Replace blower. Contact technical service!
2	Insufficient airflow	Obstruction: dust, dirt	Remove obstructions from inlets, air ducts or filter.
		Air leakage	Check duct connections and their condition (cracks). Contact technical service!
3	No airflow	Jammed blower fan	Remove obstruction.
		No power supply to blower	Check electrical connections. Contact technical service!
		Broken blower or blower motor	Replace blower. Contact technical service!
4	Insufficient heating	Electrical connections	Check wiring and connections. Contact technical service!
		Broken electrical components	Contact technical service!

9. Consumables and spare parts

Following list of spare parts are suggested by Albin Pump Marine AB.

Albin Pump Marine AB may not be considered liable of possible damages caused from faulty spare parts, if the spare parts are:

- Not supplied by Albin Pump Marine AB
- Not correctly installed according to the drawings, instructions or in any way not installed following the rules of “good technique”
- Not been correctly used
- Unsecured

For other spare parts then listed below the replacement shall be made under approval Albin Pump Marine AB. Otherwise any guaranties are not valid.

9.1. Consumables

No consumables were identified.

9.2. Spare parts

Following parts are available as spare parts.

APM P/N	Description	Notes
09-66-023	Air hose adapter $\Phi 60$, snap-in	
09-66-026	Blower, 12V, standard	
09-66-027	Blower, 24V, standard	
09-66-017	Control panel, 12-24V	
09-66-028	Knob	
09-66-029	Switch, 12-24V, 4-step	
09-66-029	Extension cable, 5 m, 12-24V	

10. Packaging and product recycling

The packaging must be submitted to the nearest environmental recycling center.

The product cannot be treated as household waste. It shall instead be left at a collection site for recycling of electrical- and electronic components.

For further Recycling information, contact your local authorities, waste collection service.



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