Error Codes

When there are faults within the system, an error code will be displayed on the display controller: Power off the unit and contact professional service.

Error code	Description
E1	Compressor high pressure protection – check sea water flow
E2	Evaporator freezing protection – check air flow and outlets
E3	Compressor low pressure protection
E6	Communication error
F0	Ambient temperature sensor error
F1	Evaporator temperature sensor error

Troubleshooting

FAULT	POSSIBLE REASON	CORRECTION
Will not start	Air conditioning circuit breaker is off	Turn circuit breaker on at ship's panel, See control operation section in this manual.
	Display control is not turned on.	Check wiring Diagram and correct if necessary.
	Fuse is broken	Replaced with a new fuse. (3.15 AL 250V)
	Incorrect wiring at terminal strip.	Disconnect power supply and open electric box, check wiring diagram, correct if necessary,
	Push-on butt connectors pulled apart during installation.	Check power source (shore/generator) for proper voltage.
	Input line voltage is insufficient,	Check wiring and terminals for proper sizes and connections.
Fan not running.	Check your specific control Troubleshooting section	
No cooling or heating	Temperature set point is above (in cooling) or below (in heating) ambient temperature	Lower or raise set point.
	Obstructed seawater flow.	Clean seawater strainer. Check for obstructions at speed scoop thru-hull inlet. Check for a good steady flow from the overboard discharge.
	Seawater pump maybe air-locked,	Remove hose from pump discharge to purge air from line
	Refrigerant gas leaked.	Check air conditioning unit for refrigerant oil leakage, call service technician.

No cooling or heating (continued)	Seawater temperature too high for cooling or too low for heating.	Seawater temperature will directly affect the air conditioning unit's efficiency. This air conditioning unit can effectively cool your boat in water temperature up to 90^0F and heat (if reverse cycle option is installed) in water as low as 40°F.
	Coil is iced (in cooling)	See below
	Fan is not running.	See below
	Pressure switch or thermal overload opened.	Check your specific control troubleshooting section.
No Heating	Reversing valve may be stuck.	Tap reversing valve lightly with rubber mallet while unit is in heat mode, call for service if the problem cannot be solved.
Low air flow	Air flow is blocked	Remove any obstructions in return air stream, Clean return air filter and grille. Check for crushed or restricted ducting, ducting must be as straight, smooth and taut as possible.
	Coil is iced	See below.
Coil is iced	Thermostat set point is too low	Raise set point.
	Improper air flow	Remove any obstructions in return air stream. Clean return air filter and grille. Check for crushed or restricted ducting, ducting must be as straight, smooth and taut as possible.
	Supply air is short-cycling,	Redirect supply air so that is not blowing into the return air stream. Seal any air leaks on duct.
	Seawater temperature is below 40°F	Shut down system to prevent damage to condenser. Allow coil to defrost (see below).
	Humidity level too high.	Close hatches and doors.
	When all else fails.	Switch air conditioner to heat until ice melts or use hair dryer
	Check your specific control troubleshooting	
System runs continuously.	Set point temperature is improperly set: too low for cooling or too high for heating.	Raise or lower set point.
	Porthole or hatches open.	Close all port holes and hatches,
	Seawater temperature too high for cooling or too low for heating.	Seawater temperature will directly affect the air conditioning unit's efficiency. This air conditioning unit can effectively cool your boat in water temperatures up to 90°F and heat (if reverse cycle option is installed) in

		water as low as 40^0F.
	Improper air sensor location.	Check your specific control troubleshooting section,
Digital display is not lit.	4-pin display cable plugs are not making contact (unplugged, dirty, bent, or broken pins).	With POWER OFF at the circuit breaker, remove connector and inspect. If damaged, replace connector or entire display cable.

Maintenance

Reversing Valves

Reverse cycle units have a reversing valve; the valve must be energized periodically to keep the internal parts moving freely. To do this, switch the air conditioning unit into heat mode 2-3 cycles per month.

Seawater Strainer

Ensure that your pump receives adequate seawater flow by regularly (daily in extreme cases) cleaning the strainer basket. Periodically check the overboard discharge for a steady stream of water. Check seawater intake speed scoop for obstructions. Make sure hoses are not looped, kinked or crushed. Check and clean strainer as needed weekly - minimum once per month.

Condenser Coil Cleaning (Seawater Acid Flush)

1. With the system turned off at the circuit breaker on the ship's panel, disconnect the inlet and outlet connections of the condenser coil.
2. Use chemical resistant hoses (PVC 3/4" I.D. or 5/8” I.D. as required, etc.) to connect the inlet of the condenser coil to the outlet of a chemical resistant, submersible pump and let the hose connected to the Coil outlet flow freely into the container mentioned below.
3. Place a strainer or piece of screen over the inlet of the pump and submerse the pump into a container filled with a 5% solution of muriatic or hydrochloric acid and fresh water or use a premixed over-the-counter solution. Use a large container as possible to hold the solution (5-25 gallons). CAUTION: avoid spilling or splashing the solution. Remember to wear all necessary protective gear, i.e. approved safety goggles and chemical resistant gloves. Follow all warnings and recommendations given by the manufacturer of any acids or premixed solutions.
4. Power the pump and circulate the solution through the condenser coil for 15-45 minutes depending upon the size of the coils and the extent of the contamination. Visual inspection of the solution in the container should indicate when the contamination has been removed.
5. Circulate fresh water through the coil to flush any residual acid from the system.
6. Restart the system and check operational parameters to ensure thorough cleaning has taken place. Additional cleaning may be necessary with extreme contamination.
7. Minimum once per year or as needed.

⚠WARNING For the purpose of protecting the environment, dispose of any contaminated acid solutions in accordance with federal, state and/or local regulations.

Return Air Filters

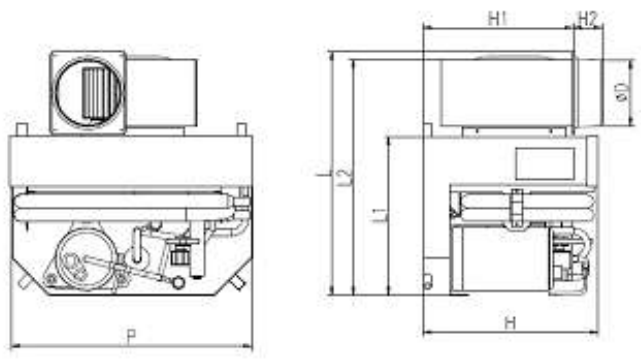
Check the return air filter about once a month and clean as necessary. To clean the filter, remove it from the unit, rinse with water, air dry and reinstall. (Do not used compressed air)

Winterization

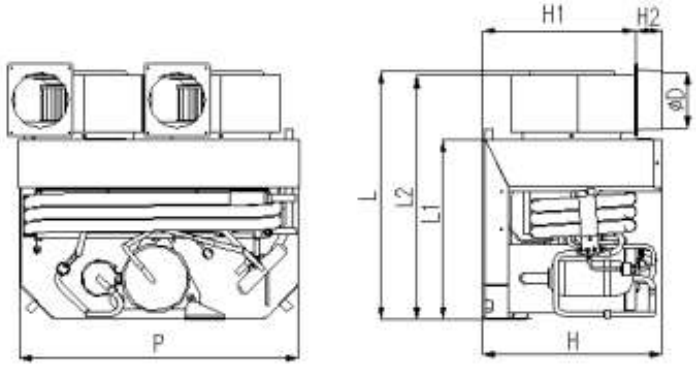
There are several methods of winterization, some of which work better than others. There are various methods employed using a 50/50 non-polluting biodegradable anti-freeze/water solution. Any method that causes the anti-freeze solution to flow downward is the method of choice. By this, the anti-freeze solution will displace any water trapped and eliminate the possibility of freezing in hidden areas. In addition, since the seawater pump utilizes a magnetically driven impeller, the impeller should be removed from the wet end assembly, Wiped with a solution, and stored in a warm, dry area until commissioning takes place.

Collect all discharged liquids and recycle or dispose of in a proper manner.

Unit Dimensions & Technical Specifications



FCF 5,000, 9,000, 12,000, 16,000



FCF 24,000

** Slow Delay

Unit Dimensions & Technical Specifications															
BTU Capacity	5000			9000			12000			16000			24000		
Capacity in kW	1.5			2.6			3.5			4.6			7.5		
Voltage (V)	115	230	230	115	230	230	115	230	230	115	230	230	115 Soft	230	230
Frequency (Hz)	60	50	60	60	50	60	60	50	60	60	50	60	60	50	60
Running Current (A)	5.8	3.8	2.5	8.3	4.9	4.6	11	4.6	5.6	12.4	6.2	8.4	20.4	8.6	12.5
Starting surge (A)	23.5	15.5	13.5	36.5	16.5	18	45	29	25	54.5	25.5	26.5	39	41	46
Starting Time (ms)	150	160	200	125	115	165	150		125	340	140	190	320	250	350
Refrigerant	R410A			R410A			R410A			R410A			R410A		
Net Weight (kg)	24			27			33			34			60		
Shipping weight (kg)	28			32			38			39.5			68		
Blower Output (m^3/h)	300			450			550			750			1100		
Dia. Cupro (mm)	16			16			16			16			16		
H (mm)	295			310			330			330			382		
H1 (mm)	260			260			290			290			326		
H2 (mm)	54			54			54			54			56		
P (mm)	285			380			380			450			595		
D (mm)	100			100			125			125			127		
L (mm)	408			408			438			454			529		
L1 (mm)	280			280			280			295			382		
L2 (mm)	380			395			410			440			519		
**Suggest Breaker (A)	15	10	10	15	10	10	20	15	15	**25	20	20	30	25	25
Internal Fuse	3.15 AL 250V			3.15 AL 250V			3.15 AL 250V			3.15 AL 250V			3.15 AL 250V		
Minimum Flow Rate	6l / min. 360l / hr. 1.584gal / min.			11l / min. 660l / hr. 2.904gal / min.			15l / min. 900l / hr. 3.960gal / min.			19l / min. 1140l / hr. 5.016gal / min.			28l / min. 1680l / hr. 7.392gal / min.		
Recommended Flow Rate	10l / min. 600l / hr. 2.640gal / min.			15l / min. 900l / hr. 3.960gal / min.			20l / min. 1,200l / hr. 5.280gal / min.			25l / min. 1,500l / hr. 6.600gal / min.			32l / min. 1920l / hr. 8.448gal / min.		
Recommended Pump	Iwaki WB 350 Pan World 30PX			Iwaki WB 500 Pan World 50PX			Iwaki WB 1000 Pan World 100PX			Iwaki WB 1000 Pan World 100PX			Iwaki WB 2000 Pan World 250 PS		

This data is subject to change without notice; please refer to the data on the nameplate.

Limited Warranty

This product comes with a 24 month limited warranty from the date of purchase. For warranty policy details, visit http://www.techwebasto.com. To obtain warranty service, contact a customer service representative at: (800) 860-7866 or e-mail at: info-us@webasto.com.

Technical Assistance

If you require help, check our technical assistance website at http://www.techwebasto.com or call the technical support hotline at (800) 860-7866.

For quick service, please have the following information available:

- Full Name
- Phone number including the area code
- Unit Model Information and serial number
- The type of assistance you are requesting
- Document any error codes

Webasto Thermo & Comfort N.A., Inc.
Technical Assistance Hotline
Phone: (800) 860-7866
Outside U.S. (810) 593-6000
www.webasto.us

www.techwebasto.com

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