

Inspection Check Sheet

Hurricane®II Diesel Hydronic Heating System

November 2009

NOTICE

No warranty will be extended to unapproved, unauthorized or improper installations. Use of any materials or equipment unsuited for their intended use will result in a voided warranty for the entire heating system.

This Inspection Check Sheet is intended for use after the ITR heating system has been installed; it should also be used informally to monitor progress during the installation. Only authorized personnel may carry out the inspection and testing. The last page of this Check Sheet, Test Points, provides troubleshooting data for the test points in the control board.

No rewiring of the Hurricane®II heater is permitted unless it has been pre-approved by ITR.

1. Before Start-up **Hour Meter Reading** _____

✓	Step	1. Before Start-up
	1	The heater and all components are mounted in appropriate locations according to standards, with required clearances for maintenance. (see manual)
	2	All components, accessories and materials are ITR-manufactured or approved for their intended use.
	3	Length, routing and sizing of coolant hoses, fuel lines, air vents, combustion air intake hose, and exhaust tubing are installed and connected according to the installation guide standards.
	4	Hurricane®II Heater is properly exhausted (i.e. no exhaust fumes from unit will infiltrate the living area).
	5	The combustion inlet is drawing 100% outside air and is unrestricted.
	6	No exhaust parts are close to, touching or passing through any combustible material (unless fire-protected).
	7	All exhaust connections and fittings are secure and airtight. Proper clamps are used and no hoses are kinked or pinched.
	8	Fuel supply has a dedicated pickup from main diesel fuel tank with no more than 60" of lift.
	9	Fuel lines do not pass through areas of excess heat and are separated from water lines.
	10	Fuel lines are secure with no risk of becoming pinched, kinked, or damaged during normal operation.
	11	All DC wiring connections are correctly secured, sized and installed according to normally-accepted wiring practices and applicable standards (ABYC, CSA Standard C22, Canadian Electrical Code Part 1 or the National Electrical Code).
	12	All AC electrical connections are correctly secured and sized to applicable standards (ABYC, CSA Standard C22, Canadian Electrical Code Part 1 or the National Electrical Code)

✓	Step	1. Before Start-up
	13	Fuses are correctly sized and positioned. Total amperage draw of all components are compatible with amperage supply of control board.
	14	Battery connection is secure and direct from the heater to the house battery bank, with correct polarity.
	15	Battery connection is protected with a circuit breaker or heavy-duty fuse that is properly sized to the total system load and is protected from accidental disconnect.
	16	All external electrical connections are properly grounded.
	17	Circulation system is full of 50/50 (recommended) mix of antifreeze and water (propylene glycol is strongly recommended).
	18	Circulation lines are properly insulated from cold and protected from solvents where necessary.
	19	If the engine waste heat, re-use function is installed, ensure the coolant supply and return ports are correctly located as per the engine manufacturer's recommendations.
	20	If engine pre-heat function is installed ensure that all these connections are tight and correct.
	21	Expansion tank is at the highest point or there is a provision for the elimination of air from the system.
	22	The thru hull must be installed in such a way as to preclude water ingestion into the heater through the combustion fan intake or exhaust pipe due to wave action, the vessels wake or spray.
	23	If the air-intake is attached to the thru hull ensure that it is placed between 10 o'clock and 2 o'clock and goose necked similar to the exhaust to avoid water intake.
	24	The air source for the cabin fans must be supplied from living spaces or outside air only.
	25	Exhaust is goose necked to prevent water ingestion.

Comments: _____

Inspection #1 completed by: _____

Print name

Signature

Date

2. Initial Start-up

! DANGER

- Never** •
- operate heater in enclosed area without adequate ventilation
 - shut off heater power via an inline battery or master switch while system is running
 - disconnect battery when heater is running
 - disconnect battery when inverter is on
 - leave heater running in bypass mode while unattended
 - let the circulating water pump run dry
 - operate the pump without fluid in the system

- mix antifreeze from engine with heater's coolant

✓	Step	2. Initial Start-up
	26	The voltage at main power feed to the heater is between 11 VDC and 15 VDC.
	27	Turn on the power ON/OFF button on the heater and the green power LED on the heater should light up.
	28	Turn on the AC element circuit breaker and the AC LED should light up on the Hurricane®II heater.
	29	Turn on the Hurricane®II heater at the remote operating panel and the green burner LED should light. It may be necessary to restart the Hurricane®II heater (Press reset Button) to bleed the air from the fuel system after the fuel line is initially hooked up. Since this is the initial start up the water in the tank should be cold enough for the burner to start. The indicator LED's for the burner components will light as the burner goes though its ignition sequence
	30	Ensure these signs of normal operation appear: <ul style="list-style-type: none"> • the green compressor, fuel pump, combustion fan, and igniter LED's on Hurricane®II heater should be lit. (The igniter shuts off 30 seconds after ignition). • the red flame out, and voltage LED's on Hurricane®II heater should not be lit. If they are lit, correct the situation per the Installation and Operating Manual. • hot air comes out of the exhaust
	31	Ensure the circulation system is tested and purged of air: <ul style="list-style-type: none"> • fluid outlet on heater becomes warm • supply and return fluid hoses become warm (with a MAX of 30°F [17°C] difference between them) • no bubbling or cavitations is present If all of these conditions are not met, shut down the heater and check fluid circulation.
	32	Flow rate is checked and verified to be approximately 1 GPM per 10,000 BTU/H
	33	Ensure no leaks are present (check all hosing, connections, etc.).
	34	Ensure the overflow tank is filled to line and top up as necessary.

Comments: _____

Inspection #2 completed by: _____

Print name

Signature

Date

3. Normal Operation

✓	Step	3. Normal Operation
	35	If the Hurricane®II distribution module is being used, ensure the thermostats are not calling for heat. Allow the burner to fire and check that it cycles off on its own (when operating temperature is reached).
	36	Turn on the thermostats to draw heat from the Hurricane®II. When enough heat has been drawn, check that the burner fires again to compensate for the heat loss.
	37	If installed, ensure the domestic hot water system operates effectively. Refer to the manual.
	38	Ensure each interior fan operates effectively. Set Zone 1 thermostat to 10°F above ambient. If there is fan speed switch, set it to high. Zone 1 fans should come on immediately as the system should be at temperature. Set fan speed to low and confirm that speed reduces. Turn down thermostat and confirm fans shut down. Repeat for each interior zone.
	39	All interior fans operate effectively together (turn up all zone thermostats; total amperage draw of all fans must be 18 Amps or less).
	40	If installed ensure that the freeze protection device functions correctly by finding the Low Temperature Thermostat (normally located on or immediately adjacent to the fresh water tanks) and with the heater enabled hold an ice-cube to the contact surface of the device. The freeze protection device should come on.
	41	If installed, ensure the engine waste heat recycling function works correctly (start the engine and bring it up to normal operating temperature, turn on the thermostat and check that heat comes out of the vents).
	42	If installed, ensure the engine pre-heat function works correctly (with the heating system at temperature, turn on the pre-heat pump switch; engine temperature should change within 15 minutes).
	43	If the heater cycles off on its own, ensure the combustion fan continues to operate for another two minutes to purge the burner.

Comments: _____

Inspection #3 completed by: _____

Print name Signature Date

4. Shutdown

✓	Step	4. Shutdown
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✓	Step	4. Shutdown
	44	When the heater is turned off at the remote operating panel the heater should run through its two minute purge cycle.
	45	Ensure the fluid levels are checked and topped up after cool-down.
	46	If the heater will not be operated in low temperature conditions, drain the domestic water system to avoid freezing.

Hour Meter Reading at completion of check out _____

Comments: _____

Inspection #4 completed by: _____
Print name
Signature
Date

Heater Model and Serial No.

Type of Installation

Cubic Volume of Heated Areas

Owners Name / Address / Telephone Numbers

Supervisor and final sign-off: _____
Print name
Signature
Date