INTERNATIONAL LTD
THERMAL RESEARCH

Inspection Check Sheet

.

Hurricane® Chinook™ Diesel Hydronic Heating System **February 2019**

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.

No rewiring of the Hurricane® Chinook™ 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® Chinook™ Heater** is properly exhausted (i.e. no exhaust fumes from unit will infiltrate the yacht interior).
	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.
	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/RV Standard).
	12	All AC electrical connections are correctly secured and sized to applicable standards.
	13	Fuses are correctly sized and positioned. Total amperage draw of all components are compatible with amperage supply of control board.

✓	Step	1. Before Start-up
	14	Battery connection is secure and direct from control board to 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	Heater case and 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	Circulation pump switch is off on the zone board.
	20	If the engine waste heat reuse function is installed, coolant supply and return ports are correctly located, as per the engine manufacturer's recommendations.
	21	If engine pre-heat function is installed, all connections are tight and correct.
	22	Ensure expansion tank is at the highest point in the system, or there is another provision for the elimination of air from the system.
	23	Ensure air source for the cabin fans be supplied from living space or outside air only.

Comments: _____

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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 pumps run dry.
- Operate the pump(s) without fluid in the system.
- Mix antifreeze from engine with heater coolant.

✓	Step	2. Initial Start-up
	24	The voltage at main power feed at control board is between 11 VDC and 15 VDC.
	25	Turn on the heater at the remote panel and turn up all thermostats. If the furnace does not start, reset system by turning the remote switch off/on. When the heater tries to fire, wait until the fuel filter is full and all air is purged from the system
	26	Ensure these signs of normal operation appear immediately: • Circulating pump is running. • Green indicator lights on control board lights up. • Combustion air-intake fan is running. • Igniter glows orange or bright yellow. • Compressor and fuel pump turn on; fuel solenoid opens. • Furnace ignites (and igniter shuts off after thirty seconds). • Hot air comes out of the exhaust.
	27	Circulation system has been tested and purged of air: • fluid outlet on heater becomes warm • supply and return fluid hoses become warm (with a MAX of 30°F [17°C] difference between them when heater cycles off and only the pump is running) • no bubbling or cavitations is present If all of these conditions are not met, shut down the heater and check fluid circulation.
	28	Turn off the burner switch. Once system has cooled turn on the electric immersion elements by pressing 1.5 KW or 3.0 KW on the touch screen and confirm they are drawing current. and heating the fluid. Pump(s) should start once fluid has reached 120F for both the burner and the electric element(s)
	29	No leaks are present (check all hosing, connections, etc.).
	30	The overflow tank is filled to cold line (top up as necessary).

Comments: _____

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Inspection #2 completed by: _____

Print name Signature Date

3. Normal Operation

✓	Step	3. Normal Operation
	31	Burner continues to operate until all zones have reached set temperature (Heater should cycle at 170°F with overheat shutdown at 190°F.).
	32	If installed, ensure the domestic hot water system operates effectively. Refer to the manual.
	33	Each interior fan operates effectively. Set Zone 1 thermostat to 10°F above ambient. If there is fan speed switch, set it to high. Furnace should fire and Zone 1 fans should come on immediately if system is at temperature. If system is cold and fans have internal aquastats, they will not turn on until the coolant reaches temperature. Set fan speed to low and confirm that speed reduces. Turn down thermostat and confirm fans shut down. Repeat for each interior zone.
	34	All interior fans operate effectively together. Turn up all zone thermostats; Zone 1 fan is 10 Amps or less zone 2 to 5 is 5 amps or less each.
	35	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). With the heater enabled, hold an ice-cube to the contact surface of the device. The heater should come on and run in less than one minute from the initial contact.
	36	Check to see if the heater shows a flame out code in front of the heater by blocking the compressor air intake. (Take sintered air filter off) Keep the intake blocked after the initial shutdown to confirm that the heater makes two attempts to relight, that the fault buzzer sounds at the Remote Panel shows a flame out Code.
	37	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.
	38	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.
	39	If the heater cycles off on its own, ensure the combustion fan and the circulating pump continue to operate for another two minutes to purge the burner.

Comments: _____

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Inspection #3 completed by: _____

Print name Signature Date

4. Shutdown

✓	Step	4. Shutdown
	40	Ensure that when the heater is turned off at the remote indicator panel, the heater runs through its two minute purge cycle.
	41	Check that with all systems off and no call for heat, the system shuts down completely after purging (two minutes).
	42	All fluid levels have been checked and topped up after cool-down.
	43	When the remote switch is turned off the heater runs through its two minute purge cycle.
	44	Make sure that if the heater will not be operated during low temperature conditions, the domestic water system has been drained to avoid freezing.

Hour Meter Reading at completion of check out _____

Comments: _____

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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

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Supervisor and final sign-off: _____

Print name Signature Date