MERMAID MARINE TROUBLESHOOTING

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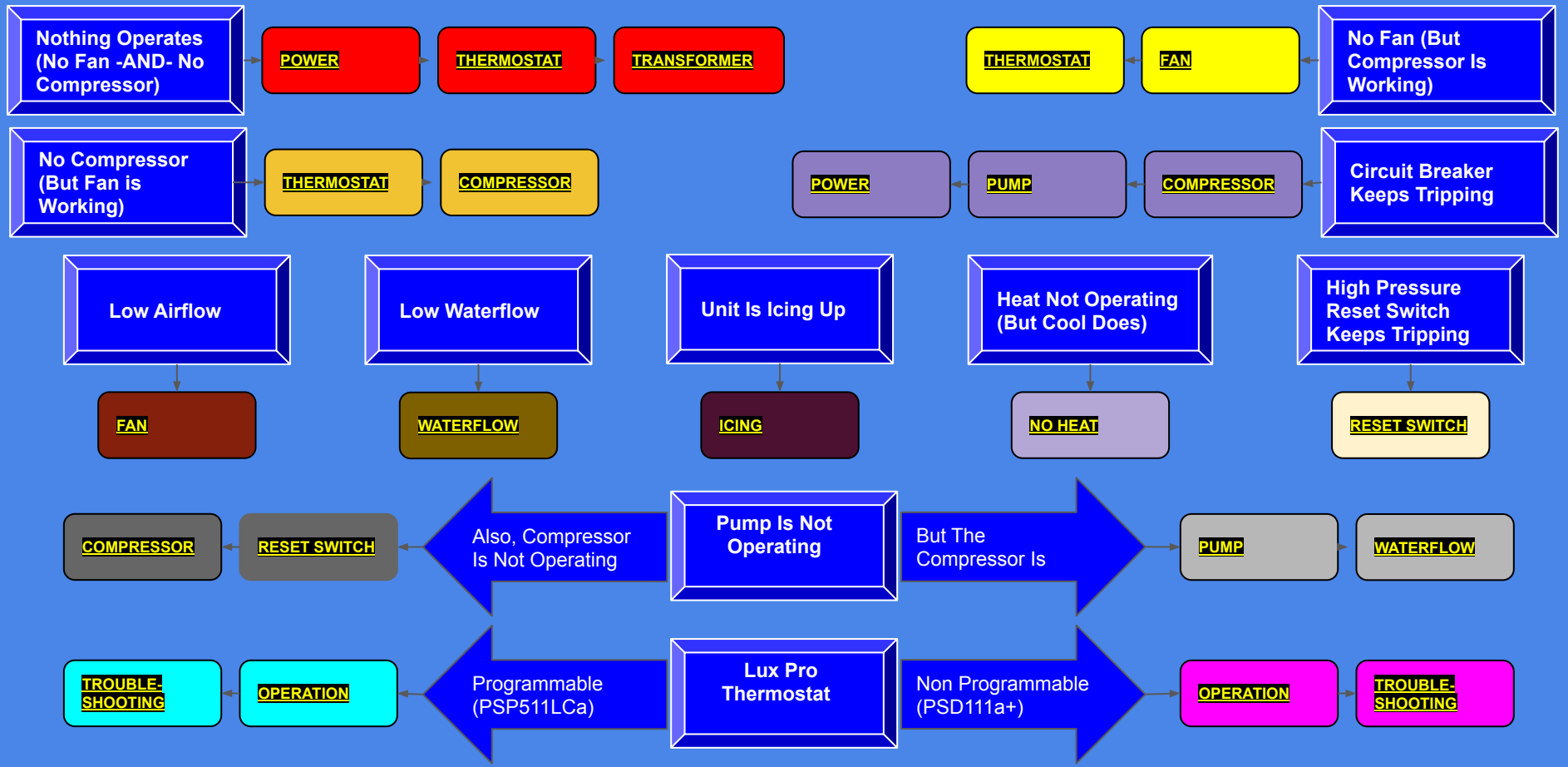

Problem: Nothing Operates -OR- Circuit Breaker Keeps Tripping.
Solution: Check Power.

Check your shore power. Make sure the plugs are in good condition and it is securely connected.

Check your circuit breaker panel. Make sure the panel main breaker and the units circuit breaker are on.

If your unit has a fuse on the inside or on the outside of your control box, make sure it is not blown.

Make sure the plug pins on both the harness and the control box are in good condition and they are firmly connected together.

Temporarily turn off your circuit breaker and then check for loose or burnt wires inside the control box. If you find a burnt or broken wire, cut it off and attach a new terminal.

If all above appears correct, make one more power check with a voltmeter at the white terminal block on the side of the control box to make sure you are getting the correct voltage (120 or 240 volts) to the unit.

Note that your unit will not operate properly if voltage is less than 80% of normal (100 or 200 volts) as the transformer cannot make enough low voltage to power the contactor and relays,

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Problem: Nothing Operates -OR- No Fan -OR- No Compressor.
Solutio: Check Thermostat.

If your thermostat has no LCD display, replace the batteries. You will need a new thermostat if this does not restore the display.

If the time is blinking on your LCD display, turn the dial to SET DATE/TIME and use the arrows to set a time. The thermostat will not operating unless the time is set (even if the setting is not correct).

Make sure the dial is set to RUN.

Make sure your thermostat is set to the on position, and the temperature is set to allow operation.

Allow 3-10 minutes for the time delays (one located inside your control box and one built into your thermostat).

If the thermostat has recently been wired (a new install) or rewired (thermostat moved, etc), make sure that the thermostat wires are connected correctly. At the control box, RED (24 Volts) connects to R, GREEN (Fan) to G, WHITE (Heat) to W, and BLACK (Cool) to B. At the thermostat, RED connects to RH or RC [there will be a wire jumper or an internal jumper between them], GREEN to G, WHITE to W and BLACK toY [BLACK DOES NOT CONNECT TO -B- AT THE THERMOSTAT].

If everything seems fine here, but something is still not functioning, you can jump out (bypass) your thermostat. At the thermostat, twist the RED (24 Volt), GREEN (Fan) and either BLACK (Cool) or WHITE (Heat) wires together.

You can find more information the operation of our thermostats here: PROGRAMMABLE, NON-PROGRAMMABLE.

If you have an aftermarket thermostat, you will have to contact that manufacturer for troubleshooting and other help.

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Problem: Nothing Operates.
Solution: Check Transformer.

The transformer (located inside your control box) converts your incoming power (either 120 or 240 volts) into 24 volts. The lead (hot) side of this circuit goes to your thermostat (via the red wire). When your thermostat calls for fan, or fan+cool, or fan+heat, it sends power down one or two of the wires to activate the corresponding relay(s), turning on their components.

To test your transformer with a voltmeter to make sure it is making 24 volts:

1) **Turn off your breaker.**
2) **Open your control box and locate the transformer.**
3) **Turn your breaker back on.**
4) **Test the 24 volt leads to make sure the transformer is operational.**

While here, you could also use your voltmeter to make sure your transformer is receiving your incoming power (either 120 or 240 volts). The transformer supply wires are connected to the contactor, on the same lugs where the power comes in from the white terminal block on the outside of the box.

If your transformer is receiving supply power but is not making 24 volts, you will require a new transformer.

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Problem: No Compressor OR Breaker Keeps Tripping OR No Pump.
Solution: Check Compressor.

Make sure the High Pressure Reset Switch located on your unit is not tripped. If it is tripped, reset it. You can read about what causes it to trip here: HIGH PRESSURE RESET.

If the reset was not tripped (or was tripped, but the compressor is still not functioning even after being reset), temporarily turn off your circuit breaker to check for loose or burnt wires. If you find a burnt or broken wire, cut it off and attach a new terminal.

1) **Check the wires going to the High Pressure Reset and the white terminal block it is connected to (on some units).**
2) **Check the wires going to the compressor (remove the plastic cap on top of the compressor to access these wires).**
3) **Check that the plug pins both on the units harness and on the control box are in good condition and they are firmly connected.**
4) **Check the power terminals on the outside and all wires inside of the control box.**

If everything looks fine at the unit itself (at the compressor and the high pressure reset), and the plug pins seem fine, the next step is to check that the relays inside the control box are operating correctly. You can check that your time delay is closing and allowing 24 volts to pass. You can test your compressor/pump relay to make sure it is getting 24 volts and that is allowing to hot side of power to pass.

You can use a voltmeter at the compressor to make sure it is getting power. Remove the plastic cap on top of the compressor to access the wires. You can also test the high pressure switch to see if it allowing power to pass.

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Problem: Low Airflow OR No Fan.
Solution: Check Fan

The main causes of low airflow are:

1) **Something is obstructing the air intake into the unit. This is usually as simple as a dirty air filter, or a dirty evaporator (air) coil if you have been running your system without a filter. Make sure they are cleaned regularly. Replace the filter when it gets to a point that is uncleanable. We use a ¼" foam filter, as this does not slow down airflow. It can be purchased from us (a 2-pack is $20 including shipping in the continuous US), or you can find it online (search for ¼" foam filter material).**
2) **Something is obstructing the supply air in your ducting. This could be crushed duct or closed air vents.**

In the cool mode, low airflow will cause the unit to ice up (since it is not getting enough cold off of your unit). Low freon will also cause this. In the heat mode, low airflow will cause the high pressure reset to trip (since it is not getting enough heat off of your unit).

The causes of NO airflow can be the same issues as above, or it can be:

1) **The blower wheel is locked up or obstructed. Turn off your breaker, disconnect the ducting to gain access to the inside of your blower, then reach in and see if the wheel spins. You may need a new blower if it is locked up.**
2) **If not locked up, determine if your capacitor is faulty. Turn your breaker back on, make sure your thermostat is in the FAN ON position and then reach in and spin the blower wheel while pulling you have out of the blower (to make sure your fingers do not get caught should the fan start working). This is to help the wheel break inertia. If this works, and the fan starts running, you will need a new fan capacitor.**
3) **If not the capacitor, you can check the fan relay inside the control box to make sure it is sending voltage to to fan. Trace the green wire from the t-stat hookup to the fan relay. One end of the relay is 24 volt control voltage. The other end is the hot side of power. Make sure when activated, the relay sends the power voltage down the line. If not, you need a fan relay.**

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Problem: Pump & Compressor Not Operating OR High Pressure Reset Keeps Tripping.
Solution: Check High Pressure Reset Switch.

Your high pressure reset switch monitors heat on the compressor.

In the cool mode, heat is expelled in the seawater. If you are tripping in the cool mode, it is probably due to low or no water flow.

In reverse cycle heat mode, heat is expelled into the cabin air. If you are tripping in reverse cycle heat mode, it is probably due to low or no air flow. Make sure your air filter is clean and all of your air vents are open.

If the reset was not tripped (or was tripped, but the compressor is still not functioning even after being reset), temporarily turn off your circuit breaker to check for loose or burnt wires. If you find a burnt or broken wire, cut it off and attach a new terminal.

1) **Check the wires going to the High Pressure Reset and the white terminal block it is connected to (on some units).**
2) **Check the wires going to the compressor (remove the plastic cap on top of the compressor to access these wires).**
3) **Check that the plug pins both on the units harness and on the control box are in good condition and they are firmly connected.**
4) **Check the power terminals on the outside and all wires inside of the control box.**

If everything looks fine at the unit itself (at the compressor and the high pressure reset), and the plug pins seem fine, the next step is to check that the relays inside the control box are operating correctly. You can check that your time delay is closing and allowing 24 volts to pass. You can test your compressor/pump relay to make sure it is getting 24 volts and that is allowing to hot side of power to pass.

You can use a voltmeter at the compressor to make sure it is getting power. Remove the plastic cap on top of the compressor to access the wires. You can also test the high pressure switch to see if it allowing power to pass.

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Problem: Unit Icing Up.

An iced up evaporator/air coil (in cool mode) can be caused by running the unit in cool when the temperature is already in or below the 60's, or running the unit at a very low setting so it does not have a chance to cycle. It can also be caused by LOW AIRFLOW or a low freon charge.

An iced up condenser/water coil (in reverse cycle heat mode) can be caused by LOW WATERFLOW or a low freon charge.

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Problem: Breaker Keeps Tripping OR No Pump.
Solution: Check Pump.

Make sure the High Pressure Reset Switch located on your unit is not tripped. If it is tripped, reset it. You can read about what causes it to trip here: HIGH PRESSURE RESET.

If tripped, reset your high pressure reset switch and then make sure your pump is getting water (boat is in the water, seacock is open, strainer is clear, pump is primed, hoses are connected and not kinked, hoses are not blocked by barnacle growth or accumulated debris).

If a new install, make sure your water inlet, sea cock, water strainer and pump are all below the water line. Pump will not prime if any of these are above sea level. Also, make sure no plastic caps remain on the air units black water coil (these are to keep debris out during shipping).

If all of this checks out and you still have no pump, use a voltmeter to make sure the control box is sending power to the pump.

Note that minimum water flow at the unit is 360 GPH. Maximum waterflow at the unit is 500 GPH. To check your water flow, see WATERFLOW.

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Problem: Low Waterflow OR No Pump.
Solution: Check Waterflow.

You can test your flow at the discharge port with a 1 gallon bucket. The outflow should give you 1 gallon of water in 10 seconds (this is 360 GPH which is the minimum flow our units require). If you are getting less flow than this, and everything from PUMP checks out fine, you may need to clean your condenser and water hoses. To do this:

1) **Turn off your unit and pump.**
2) **Leave the seacock open.**
3) **Using a water hose, force water into the units overboard discharge port (this should force debris out the bottom of the boat). You can use Barnacle Buster (or similar) in the line to soak (close the seacock first), and then force water in a few hours later to clean it out.**
4) **Remember to check your strainer after this as it may have accumulated debris**

If cleaning the lines does not improve flow, you may need a new water pump.

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Problem: Heat Not Operating (But Cool Does).

If everything is running normally in cool, but you are getting no heat (or it is making cool instead of heat), make sure the THERMOSTAT is connected correctly.

On Reverse Cycle units, check the reversing valve (located on the unit) for a loose wire, and make sure the harness is firmly connected to the control box. If everything seems correct, you will need to check to wires going to the reversing valve coil with your voltmeter to make sure it is getting power. You could also check to make sure the reversing valve is not stuck by disconnecting/reconnecting one of the wires on the coil. If operating correctly, you should hear the valve open and close. You can tap the valve while doing this to try to free it. If not getting power to the coil, but all of the wires in the harness and control box seem fine, you probably need a new reversing valve relay.

On Electric Heat units, if the thermostat checks out and your unit is not making heat, it is probably the heat strip fuse, located on the heat strip that is inside your shroud (between the blower and the evaporator/air coil). You can disconnect the 2 wires going to the heat strip and do a continuity test thru the heat strip and overload. If there is a break, you can remove the shroud (it pulls straight up once the 2 screws on either side are removed) and do a continuity test on them to determine which is blown. If everything seems fine with the heat strip and fuse, it may be the heater contactor located in your control box. Access it and make sure it is activating, and allowing voltage to pass thru.

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Lux Pro PSD111a+ Non Programmable Thermostat.

For wiring, see THERMOSTAT, or see TROUBLESHOOTING THE LUX PRO NON PROGRAMMABLE THERMOSTAT.

Internal Settings. There are 3 internal jumpers.

The brown jumper says OPEN or RH=RC. This should be set to RH=RC.

The green jumper says GAS or ELEC. This should be set to ELEC.

The black jumper says VERT or HORI for setting the LCD readout as vertical or horizontal.

Additionally, there is a black RST button. This reset button will put the MENU settings back to default.

MENU Settings:

To access MENU, press the up and down arrows simultaneously while unit is in the off position.

Highlight a setting to be changed, then again press the up and down arrows simultaneously to change it.

Once again, press the up and down arrows simultaneously to back out of a setting.

CAL accesses the temperature calibration (-5 to +5).

SWNG accesses the temperature swing.

DELY accesses the compressor delay.

F/C accesses the Fahrenheit or Celsius setting.

TLMT accesses the temperature limits.

TEST temporarily bypasses the compressor delay.

EXIT exits the MENU. You will automatically exit if unit sits idle for 60 seconds.

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Troubleshooting The Lux Pro PSD111a+ Non Programmable Thermostat.

No LCD display

This typically means the batteries are dead. If there is still no display after a battery change you can try a reset (push the internal RST button). If there is still no display, the thermostat is dead.

No Fan -OR- No Compressor -OR- No Pump

Make sure the unit is on via a solid COOL/HEAT on the display. WAIT means you are waiting out the 2-5 minute delay. Make sure the circuit breaker for the unit (and pump, if on a seperate breaker) is on. Make sure your wires are connected properly (see HERE).

You can jump out the thermostat to make sure the issue is not with the unit. Twist the Red (24 Volts) and Green (Fan) wires together to test the fan. Add in the Black (Cool) or White (Heat) wire to test cool and heat.

If twisting the wires together still results in a non functional unit, go to POWER.

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Lux Pro PSP511LCa Programmable Thermostat, Part 1.

For wiring, see THERMOSTAT, or see TROUBLESHOOTING THE LUX PRO PROGRAMMABLE THERMOSTAT.

Internal Settings:

There internal FAN jumper that says GAS or ELEC should be set to ELEC.

There are 4 slide switches marked 1, 2, 3 and 4.

1 TIME format ON is 24 hour (military time) or off is 12 hour (standard time).

2 SCALE display is ON for Celsius or off for Fahrenheit.

3 FILTER display is ON is days mode (days remaining before filter should be cleaned/replaced) or off is percent mode.

4 BATTERY monitor set to ON disabled monitoring battery life or set to off it will monitor battery life remaining.

The red RST button is a hardware reset. There is also a software reset pinhole on the front that resets programming, etc.

EXIT exits the MENU. You will automatically exit if unit sits idle for 60 seconds.

Rotary Dial Settings:

This allows the user to adjust the day/time, programming, and remaining filter life.

The time must be set for the unit to function, even if it's not set to the correct time. Itt will not operate if blinking.

Set dial to RUN to run the unit.

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Lux Pro PSP511LCa Programmable Thermostat, Part 2.

Programming:

DAY/TIME - Turn the dial to DAY/TIME and use the arrows and the NEXT button to navigate to the desired setting.

PROGRAM SETTINGS - This thermostat has pre programed temperature settings for four time periods. The periods and setting are:

PERIOD:	In Heat:	In Cool:	PERIOD:	In Heat:	In Cool:
Morning (6 AM)	70F/21C	78F/26C	Evening (6 PM)	70F/21C	78F/26C
Day (8 AM)	62F/17C	85F/29C	Night (10 PM)	62F/21C	85F/29C

These settings can be changed by turning the dial to WEEKDAY or WEEKEND, and using the keys.

OVERRIDE - Temporarily override the programming. Will return to the programmed setting at the start of the next period.

HOLD - Similar to OVERRIDE, but by this temperature setting will remain until the HOLD button is again pressed.

AIR FILTER - Use the keys to reset the countdown by pressing both arrows at the same time while dial is set to AIR FILTER.

KEYLOCK - Locks the screen (a lock icon will appear). Activated and deactivated by pressing the NEXT, NEXT, NEXT, HOLD buttons.

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Troubleshooting The Lux Pro PSP511LCa Non Programmable Thermostat.

No LCD display

This typically means the batteries are dead. If there is still no display after a battery change you can try a reset (push the internal RST button). If there is still no display, the thermostat is dead.

No Fan -OR- No Compressor -OR- No Pump

Make sure the unit is on via a blinking COOL/HEAT on the display. Make sure the circuit breaker for the unit (and pump, if on a seperate breaker) is on. Make sure your wires are connected properly (see HERE).

You can jump out the thermostat to make sure the issue is not with the unit. Twist the Red (24 Volts) and Green (Fan) wires together to test the fan. Add in the Black (Cool) or White (Heat) wire to test cool and heat.

If twisting the wires together still results in a non functional unit, go to POWER.

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