Arctic Spas Troubleshooting Guide

1. HL/Top Light on (solid): 119ºF detected at heater temperature probe.
2. HL/Top Light (flashing): 112ºF detected at spa temperature probe.
3. FLO/Middle Light on (solid): No pressure detected at the heater when pump 1 is on low.
4. FLC/Middle Light (flashing): Pressure detected at the heater when pump 1 is off.
5. PRR/Bottom Light on (solid): A Fault with the spa temperate probe detected.
6. All Lights are Flashing: A power interruption has occurred.
7. Lights Are Not Working.
8. Arctic Ozone is not Working.
9. Peak Ozone is not Working.
10. Buttons Do Nothing (With the Lights on).
11. Spa Turns on and off sporadically.
12. The Blower is not Working.
13. Nothing Works (The Breaker Trips).
14. Too Hot (Hot AxBx).

HL/Top Light On (Solid):

119ºF Detected at the heater temperature probe

***Note:** This error message will remain on the display until the power is interrupted
***Note:** Confirm one of the possible causes to follow before assuming the problem is resolved.

<u>Possible Causes</u>

A. Power Interrupted:
Water in the heater can reach 119ºF if the flow is stopped suddenly by a power cut (while heating).
B. Air Lock:
Air trapped in pump 1 can restrict the water flow through the heater and cause the temperature to reach 119ºF.
C. Cabinet Air Overheated:
Long-term continuous use of the pumps can cause the cabinet air (and heater probe) to reach 119ºF.
D. Heater Relay Stuck On:
A stuck relay will prevent the heater from turning off before it reaches 119ºF.
E. Pump Relay Stuck On:
Heat generated from a stuck pump relay can cause the water and cabinet air to heat to 119ºF.
F. Heater Element Touching Barrel Wall:
Heat from the element can transfer through the barrel wall to the probe if incorrectly positioned against the barrel wall.
G. Blocked Flow on Pressure Side:

Restricted flow through the heater from a blocked check valve or other obstruction can cause the water in the heater to reach 119ºF.

H. Bad Connection at the Board:

The probe cable connection can come loose or the pins can be corroded, blocking the circuit.

I. Pump Fault:

An internal pump 1 fault that restricts water flow (such as a broken or blocked impeller) can cause the water in the heater to reach 119ºF.

J. Pressure Switch Not Set Correctly:

If the pressure switch has been set too low it will not detect low water flow in the heater and the water may reach a temperature of 119ºF.

The purpose of the pressure switch is to protect the heater from damage and to protect the users from injury by interrupting power to the heater.

***Note: DO NOT BYPASS THE PRESSURE SWITCH OR ADJUST IT BELOW 3 PSI.**

K. Extreme Hot Weather Overheating the Cabinet Air and Water:

Normal to heavy use of the spa in extremely ho external temperatures can cause the water and cabinet air to reach 119ºF.

L. Heater Positioned Too Close To Pump:

If the HL Probe, which is attached to the outside of the heater, is positioned very close to an operating pump, the heat generated by the pump can transfer to the probe causing it to detect 119ºF.

M. VOS on Pump 2:

Older model spas with VOS jet plumbing can sometimes cause backpressure on the pump one outlet. This will restrict flow and cause the water temperature in the heater to overheat.

N. Power Supply Problem:

Incorrect wiring or fluctuations in the power supply from the power provider can cause the pump to overheat and transfer enough heat to the water and cabinet air for the HL probe to detect 119ºF.

HL/Top Light (Flashing):

112ºF Detected at spa water temperature probe.

<u>Possible Causes</u>

A. Spa Filled with Hot Water:

Domestic or commercial water heaters can produce water hotter than 119ºF.

B. Filter Cycle on when the Temperature is Above a Set Point:

Continuous operation of the pumps can create increased water and cabinet air temperatures. Normally the filter cycle is stopped of the temperature reaches 2 degrees over set temperature. This feature can be changed in Low Level Programming, allowing the water to reach 112ºF.

C. Stuck Relay on the Board:

Heat generated from a stuck pump or heater relay can cause the cabinet air and water temperature to reach 112ºF. New motherboards are being designed with removable self diagnostic relays.

D. The Board got Wet:
During transport or service the connection for the HL probe may have gotten wet and caused corrosion on the board connection.
E. Circulation Pump Fault:
In rare cases, an internal fault in the circulation pump can cause enough heat to raise the cabinet air and water temperature above 112ºF.
F. Coating on the Pins:
Over time, moisture in the cabinet air can cause a layer of residue from corrosion on the board connection pins.
G. Probe is Not Insulated
The spray foam insulation covering the back of the temperature probe may be missing or incomplete which will allow heat (or cold) from the cabinet air to affect the temperature reading of the probe.
H. Probe Wire Damaged:
The probe cable may have been cut or damaged in transport, production, or previous service.
I. Probe Fault:
In very rare cases the probe may have an internal manufacturing fault.
J. Extreme Ho With normal to heavy use of the pumps on extremely hot external temperatures the water may reach 112ºF.**t Weather:**

K. Pump Fault:
An internal pump fault such as corroded bearings can generate enough heat to increase the cabinet air and water temperature above 112ºF.

FLO/Middle Light On (Solid):

No pressure detected at heater when pump 1 is on low. Solid middle indicator light means that the system has detected an open circuit at the pressure switch when it is expecting a closed circuit.

<u>Possible Causes</u>

A. The Water Level is too Low:
If the water level drops to a point that causes air to be drawn in through the top filter intake it can case an airlock in pump 1. This will result in insufficient flow and pressure at the pressure switch.
B. The Spa Filter Cartridge is too Dirty:
An excessively dirty filter can cause a restriction in water flow and pressure at the pressure switch.
C. There is an Obstruction in the Plumbing:

i. **Blocked Filter Intake-**
A foreign object can be lodged in the filter basket or canister, which can restrict flow and pressure at the pressure switch.
ii. **Blocked Suction Intake-**
Articles of clothing or other foreign objects covering the bottom suction housings in the spa may restrict water flow.
iii. **Too Many Jet Barrels Turned Off-**

Too many individual jets may be turned off causing a restriction in water flow.

iv. **Pump One is Air Locked-**
Air trapped in pump one from a recent water change or another source may be causing restricted water flow.

v. **A Ball Valve is not Fully Opened-**
A closed or partially closed ball valve in the line BEFORE pump one can restrict flow and pressure at the pressure switch.

vi. **The Filter Bypass Valve is Blocked or Malfunctioning-**
The bypass valve located at the very bottom of the filter canister may be damaged or blocked by a foreign object, which can restrict flow at the pressure switch.

vii. **A Check Valve is Blocked or Malfunctioning-**
A check valve positioned in the line before pump one may be damaged or blocked by a foreign object.

viii. Pump One Impeller is Broken Off or Blocked-
A foreign object may have got into the pump during production, or through an open suction intake or dismantled filter weir.

D. Power to Pump One Is Insufficient due to:

i. **Blown Fuse-**
A power surge or use of incorrect fuse may be the cause.

ii. **Power Cord-**
The power cord is damaged or not connected properly.

iii. **The Motherboard is Malfunctioning-**
A manufacturing defect or other damage could, in rare cases, deliver incorrect power to pump one that affects its performance and water flow.

iv. **The Power in the Motherboard is insufficient-**
Incorrect wiring of the GFCI or insufficient power from the supply can affect the performance of pump one.

E. Pump One Motor Has Failed:
In rare cases, the pump one motor itself can develop a fault.

F. The Pressure Switch Connection Pins are Dirty:
Over time, a thin film or residue from corrosion can form on the pins, blocking the signal across the connection. Cleaning the connection pins on the motherboard with a sharp object will take the film off.

G. The Pressure Switch Cable is not Connected Correctly:
An external force may have disconnected the pressure switch cable from the motherboard.

H. The Pressure Switch Cable is Cut or Damaged:
Rarely, the cable may have been accidentally cut during other service work.

I. The Pressure Switch is not Set Correctly:
The manufacturer or other individual may have adjusted the switch outside the recommended range. It should be at 3 psi.

J. The Pressure Switch is Malfunctioning:
***Note:** This is the least likely of all possible causes for this error message.

FLC/Middle Light (flashing):

Pressure detected at heater when pump one is off.

Possible Causes

A. Pressure Switch is not Adjusted Correctly:
The manufacturer or other individual may have adjusted the switch outside the recommended range. It should be at 3 psi.
B. Motherboard Fault:
In rare cases, a stuck pump one relay on the motherboard, or other fault, can cause a FLC message.
C. VOS with Pump 2:
On older spa models with VOS jet plumbing, water flow from pump two or three can be directed back toward the heater and pump one, which could produce enough pressure to open the pressure switch and cause an FLC message.

PRR/Bottom Light on (solid):

A fault with the spa temperature probe is detected.

Possible Causes

A. Cut Cable:
A defect or accidental damage to the cable can produce a PRR message.
B. Not Connected:
The cable may have been partially or completely disconnected.
C. Coating on the Pins:
Over time, a thin film of residue from corrosion may form on the connector pins on the motherboard, blocking the circuit and triggering a PRR message.
D. Motherboard Fault:
In rare cases, a defect of the motherboard can cause a false PRR message.

All Lights are Flashing:

THIS IS NOT AN ERROR MESSAGE:
A power interruption has occurred. All functions should work normally and the display will return to normal once any button is used.

Lights Are Not Working:

When no lights in the spa are functioning, a number of problems could be the cause.

Possible Causes

A. Bulb Burnt Out or Defective:
One or all colors may not work due to a manufacturing defect in the LED bulb.
B. Blown Fuse:
A power surge or use of an incorrect fuse may prevent the light from turning on.
C. Cable Not Connected to the Board or Slaves:

The connection at the motherboard may not be connected securely or the individual lights may not be connected in series as required.

D. Bulb is not in Place:

The LED bulb may not be securely connected.

E. Pins on the Board:

Over time the connection pins at the motherboard may develop a film of residue from corrosion that blocks the circuit.

F. Light Button is not Working:

A stuck or defective button on the topside control panel may cause the light to be stuck on or off.

G. Motherboard Fault:

In rare cases, a defect in the motherboard can prevent the light from working.

Ozone Does Not Come Out:

The Ozone does not come out in either the

I. Arctic Ozone; or in the

II. Peak Ozone

Possible Causes

I. Arctic Ozone

A. Fuse:

A blown fuse from a power surge, or using the wrong fuse can prevent power from getting to the generator (this alone will not affect the flow of water or visible bubbles from the ozone jet).

B. Check Valve:

One of the check valves in the ozone plumbing may be blocked or broken.

C. Too Hot in the Cabinet:

If the water temperature rises 2 degrees C over the set temperature the spa may stop the filtration cycle from coming on. Heat sources that can cause this include overused pumps, faulty pumps, and very hot outside temperatures (To change the filter cycle overtemp function, use low level programming: FC=0 or FC=1)

D. Low Flow from Plumbing Fault or Blockage:

A restriction in water flow before or after pump one can prevent the Venturi action required for ozone to be drawn into the water line.

E. Pause Function Activated:

The filtration cycle and ozone generator function are automatically paused for 40 minutes when any topside control button is pressed. This is a normal function that can be reset by interrupting the main power supply.

Possible Causes

II. Peak Ozone

A. Fuse:

A blown generator or circulation pump fuse, or using the wrong fuse can prevent power from getting to these devices.

B. Low Level Programming Not Set:

Peak ozone systems include a circulation pump that must be activated in low level programming. (CP=1 or CP=2).

C. Check Valve:

One of the check valves in the ozone plumbing may be blocked or broken.

D. Mazzei Injector Fault:
A blocked Mazzei will prevent ozone (and air) from being drawn into the system, preventing bubbles from exiting the ozone jet.

E. Pause Function Activated:
The circulation pump and ozone generator function are automatically paused for 40 minutes when any topside control buttons is pressed. This is a normal function that can be reset by interrupting the main power supply.

F. Circulation Pump:
The circulation pump may have an air lock, the wet end may have been assembled incorrectly, or the pump may not be connected securely to the pack.

G. Low Flow:
If the hose lengths in the ozone system are excessive, the water flow may be restricted enough to prevent normal ozone delivery to the spa. This is more common in Peak Systems that have been installed after initial production.

H. Generator Failed:
The generator itself may have an internal fault.

I. Internal Fuse:
The peak generator has an internal fuse that may be blown or absent.

J. Wrong Generator:
The generator power specifications should match the power supply in your region. North American generators should be labeled 60 Hz and European generators should be 50 Hz.

Buttons Do Nothing:

There is Light on the Topside, but the Buttons Do Not Work.

<u>Possible Causes</u>

A. Topside is not Connected:
The topside can be partially disconnected at the motherboard.

B. Wrong Topside:
Global Coyote packs and Global Arctic Packs look very similar, but they are different and only compatible with the matching topside control panel.

C. Motherboard Software:
The wrong software may be installed on the board. This can be changed without replacing the board.

D. Buttons Unresponsive:
Some versions of the topside control panel may require more force to activate or individual buttons may be stuck in the depressed position.

E. Insufficient Power Supply:
The spa may be wired wrong, supplying only 110V to the board.

F. Coating on the Pins:
Over time, a thin film of residue from corrosion can form on the connector pins at the motherboard. This can usually be removed with a knife or other sharp object.

G. Lock Out Function Activated:
The topside control may have been manually locked out by the user or other individual. See owners manual.

Spa Turns On and Off:

The spa itself will turn on and off sporadically.

Possible Causes

A. Timing Software:
The wrong software may be installed on the board. This can be changed without replacing the board.
B. Not a Fault!:
It is normal for the spa pumps and some other functions to turn on and off automatically at various times of the day and night. This is normal. Details of this and how it can be altered can be found in the owners manual.

The Blower is not Working:

There is no air coming out of the blower.

Possible Causes

A. Fuse:
The blower is protected by a fuse on the motherboard that can be blown, incorrect or missing.
B. Power to Blower is Blocked:
The power to the blower may be blocked because of a bad pin connection on the board, a cut cable, or may not be securely plugged in.
C. Low Level Programming is not Set Correctly:
The blower function can be activated or disabled in Low Level Programming (bl=0 or bl=1).
D. Blower Fault:
The blower may have an internal fault.
E. Check Valve Fault
The check valve in the line after the blower may be blocked.
F. Thermal Overload:
The blower has an internal thermal override switch that will turn the blower off if the blower is used continuously for too many cycles, or if the cabinet air temperature gets too high from internal or external heat sources.
G. Hose is not Connected:
The hose may be disconnected at the blower.
H. Improperly Plumbed:
A blower plumbing system without a correctly installed Hartford Loop can allow water back into
I. Cap Missing From Aromatherapy Canister:
Newer spa models have the air system plumbed into the aromatherapy system. If the cap is off the aroma compartment, air will be diverted though this opening rather than into the air jets.
J. Blower Not Included in the Deal!:
Sometimes people incorrectly assume that because the blower is present on the topside control, that the blower must be installed.

K. The Blower is Missing:
The blower may have been removed from the spa prior to delivery.
Don't laugh, it happens.

Nothing Works:

The breaker trips and nothing works.

Possible Causes

A. Component Fault:
Internal short circuits in any of the components can cause the GFCI to trip. Unplugging each of the possible components can help determine if it is that component.
B. Transformer Fuse:
A power surge may have caused the transformer fuse to blow.
C. Transformer:
The transformer may have failed.
D. Thermal Fuse Before Transformer:
The electrician may have wired it wrong, causing it to not work properly.
E. Motherboard:
The board may have failed.
F. GFCI Breaker is Wired Wrong:
It is quite common for the GFCI to be wired incorrectly, even by certified experienced electrician. See owner manual for instructions.
G. Breaker Fault:
The wrong GFCI may have been installed , or the GFCI may have developed a fault.
H. Damaged Cable:
The cable bringing power to the spa may have been damaged (by digging or other external force). This will be detected by a properly functioning GFCI, causing the breaker to trip.

Too Hot/Hot (Axbx):

117F detected at spa temperature probe.

Cause

117F detected.

If the spa temperature probe reads 117F, the *TOO HOT* message will be displayed until the power is interrupted and the temperature is reduced. *HOT Axbx* will be displayed on power up each time indefinitely until a button is depressed, where x represents the

number of times this situation has been detected (Ax for 117F and bx for 119F).

***Note:** If 117F is detected by the temperature regulator probe, the high speed relays for pumps one and two will be bypassed and the spare relay will be activated. If the pumps are in high speed, this will cause the pump to make a loud and abnormal noise, which is intended to alert the user to the problem. This event will be recorded in the board memory and displayed next to the 'A' in the Axbx message, where 'x' represents the number of times this event has occurred.

If 119F is detected, the relay for pump 3 will be bypassed, and the spare relay for that pump will be activated. This should disable pump 3 and cause a loud noise if pump 3 is on. This event will be recorded next to the 'b' in the Axbx message, where x represents the number of times that this event has occurred.