

S-CLASS
Clearly Advanced spa systems™



CLEARLY ADVANCED SPA SYSTEMS!™



SERVICE MANUAL
SC-CF CE & AS SPA SYSTEMS TROUBLESHOOTING
VISUAL STEP-BY-STEP GUIDE & MORE!

SPA BUILDERS

TAKING OVER THE WAVES!

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In order to be as helpful as possible, most sections of this manual were written in two distinct formats: problem-solving solutions are described using both troubleshooting flow charts and step-by-step procedures.

They should be used in conjunction, flow charts giving a global overview of specific problems while step-by-step procedures are more detailed.

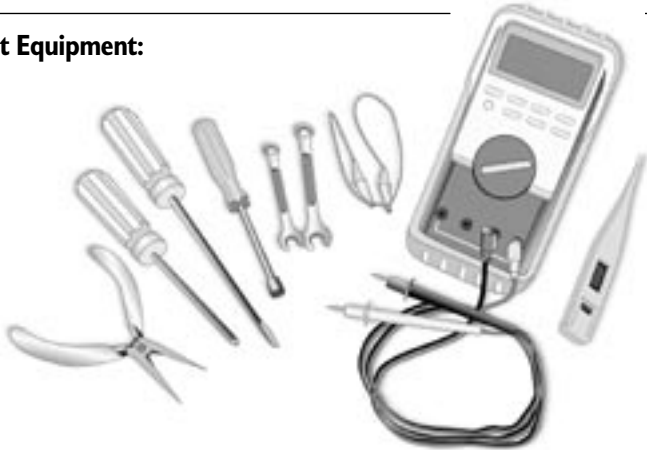
Although this manual has been prepared with great care, some information may seem erroneous or unclear to you. In this case, please do not hesitate to contact us with your remarks or questions.

Important Safety Information

WARNING: Risk of electrical shock! All procedures described in this service manual must only be performed by qualified personnel, in accordance with the standards applicable in the country of installation and, whenever possible, with the equipment powered off. When connecting the equipment, always refer to the wiring diagram affixed to the inside of your spa pack's power box cover. This diagram always prevails over the wiring diagram at the end of this manual.

The tools, test equipment and components needed to carry out SC-CF Spa Pack service calls.

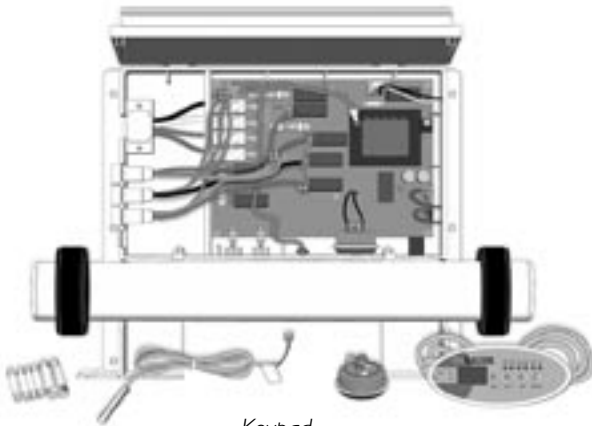
Tools & Test Equipment:



Pliers
Phillips & flat screwdrivers
1 1/32" (M8) nut driver
1/4" (M6) open-end wrench

3/8" (M10) open-end wrench
Jumper cable
Multimeter
GFCI tester & digital thermometer (optional)

Pack Parts:



Fuses
Temperature probe
Hi-limit sensor
Pressure switch

Keypad
SC-CF system board
(or complete spa pack)

Notes: The equipment delivered may slightly differ from the illustrations shown in this manual.

Spa Builders Systems Group sells Professional Repair Kits that include everything needed for SC-CF Spa Pack servicing. For more information, go to the last page of this manual.

Keypads

SC-CF single-pump and dual-pump systems are available with several types of keypads.

Described procedures and instructions apply to SC-CF systems equipped with one of the following keypads. For convenience purposes, the K-9 model will be used throughout this manual to illustrate specific actions to be performed.

Please note that key location can vary from one software to another. Refer to the Spa Pack Quick Reference Card (QRC) if needed.



K-19 model (177 mm x 82 mm)

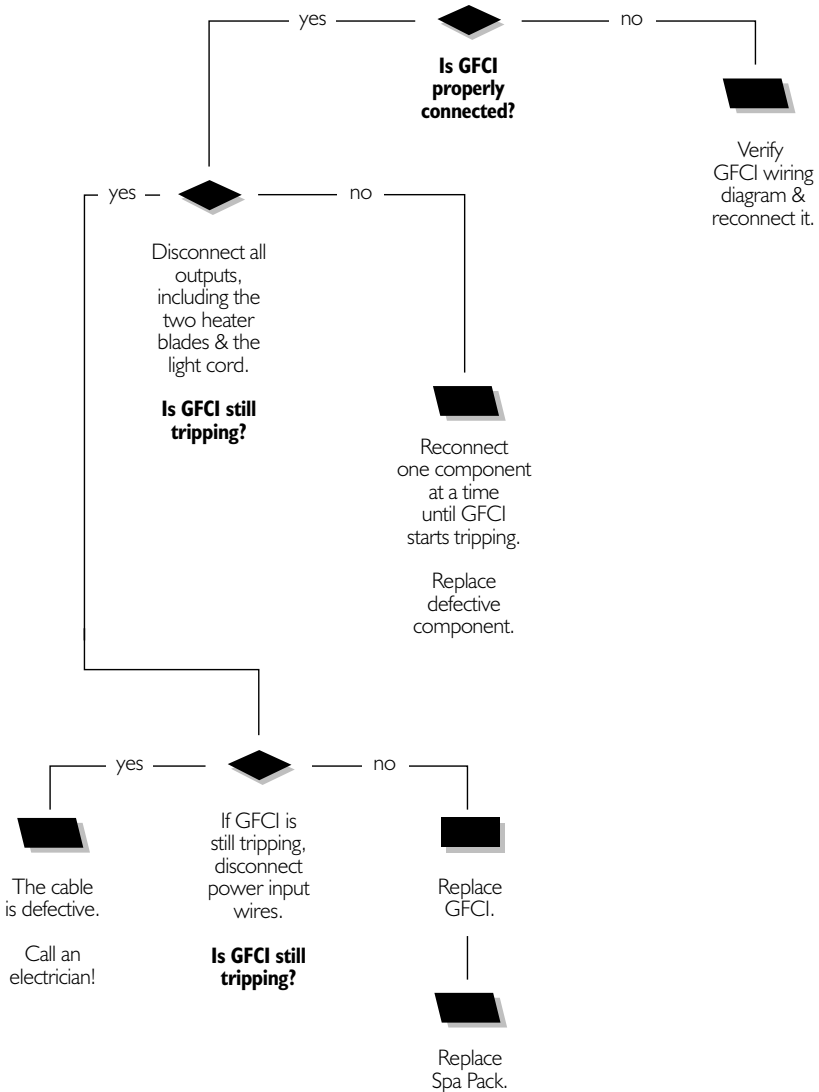


K-18 model (127 mm x 63 mm)



K-9 model (114 mm x 51 mm)

If GFCI trips, follow Troubleshooting Flow Chart below to identify the problem:

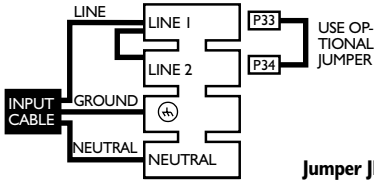


Electrical Wiring

Correct wiring of the electrical service box, GFCI and spa pack terminal block is essential.

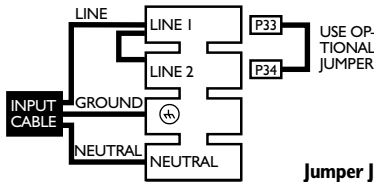
- Make a visual inspection for signs of miswiring. Refer to the supplied wiring diagram. Call an electrician if necessary.

1 x 230 VAC (32 A) input supply wiring



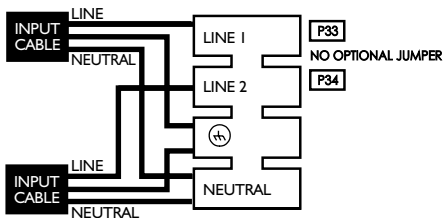
Note: For systems manufactured before 1999, if P33 & P34 are missing, install a 4-mm dia. cable between Line 1 and Line 2.

1 x 230 VAC (16 A) input supply wiring



Note: For systems manufactured before 1999, if P33 & P34 are missing, install a 4-mm dia. cable between Line 1 and Line 2.

2 x 230 VAC (2 x 16 A) input supply wiring NOT ALLOWED IN AUSTRALIA



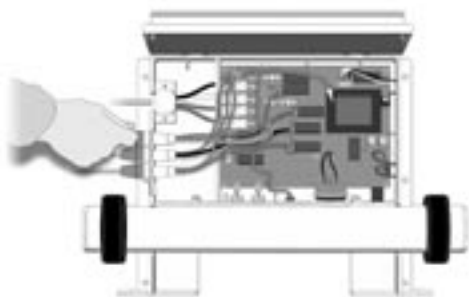
If the equipment is connected but nothing seems to work, the power supply must be defective. Perform the following:

Note that in new installations, GFCI trippings due to miswiring are very common.

If breaker is properly wired, GFCI trippings can occur when the total amount of current drawn by the spa exceeds the rating of the breaker. Such an occurrence, however, is very unlikely since each output of the spa pack is individually fused and fuses will blow before GFCI trips.

A current leak to the ground will also make GFCI trip. If one of the components is faulty and there is a leak of more than 5 mA, GFCI will trip to prevent electrocution.

- 1 • Verify if GFCI is properly connected.
- 2 • If it is not, verify GFCI wiring diagram and reconnect it.



- 3 • If GFCI is properly connected but still tripping, disconnect all outputs, including the two heater blades & the light cord.



- 4 • If it stops tripping, reconnect one component at a time until GFCI starts tripping again. Then replace the defective component.

- 5 • If problem is still not solved, disconnect the power input wires on the board.

If GFCI still trips, the cable must be defective.

Call an electrician!

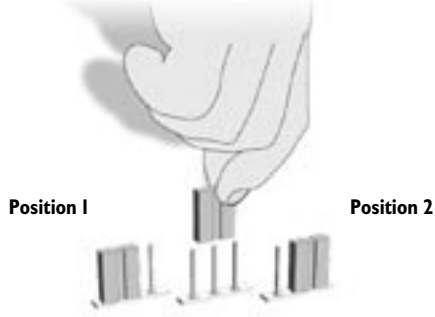
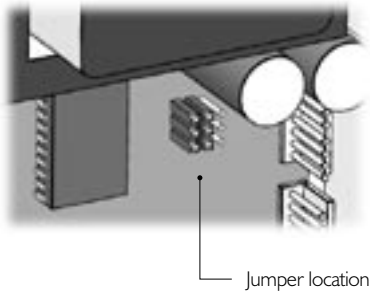
- 6 • If GFCI stops tripping, replace it.
- 7 • If GFCI is still tripping, replace Spa Pack.

Jumper Positions

Certain parameters can be modified by changing the position of jumpers on the board.

To access jumpers, first remove SC-CF power box cover.

In some cases, jumper functions may differ from the following. Please check wiring diagram on power pack box cover to verify specific functions for your pack.



- 1 • Jumpers are located in the lower right section of the board.
- 2 • To change a setting, simply pull cover off and replace in desired position.

Jumper JMPI: Current Limiting Option

This jumper is used to limit the current drawn when the two pumps are activated simultaneously.

- Position 1 (HC): High Current mode. No current restriction.
- Position 2 (LC): Low Current mode. The heater may not be turned on if pump is on at high speed. *Factory default setting.*

Jumper JMP2: Temperature Display Unit

- Position 1: Temperature will be displayed in degrees Fahrenheit (°F). *Factory default setting.*
- Position 2: Temperature will be displayed in degrees Celsius (°C).

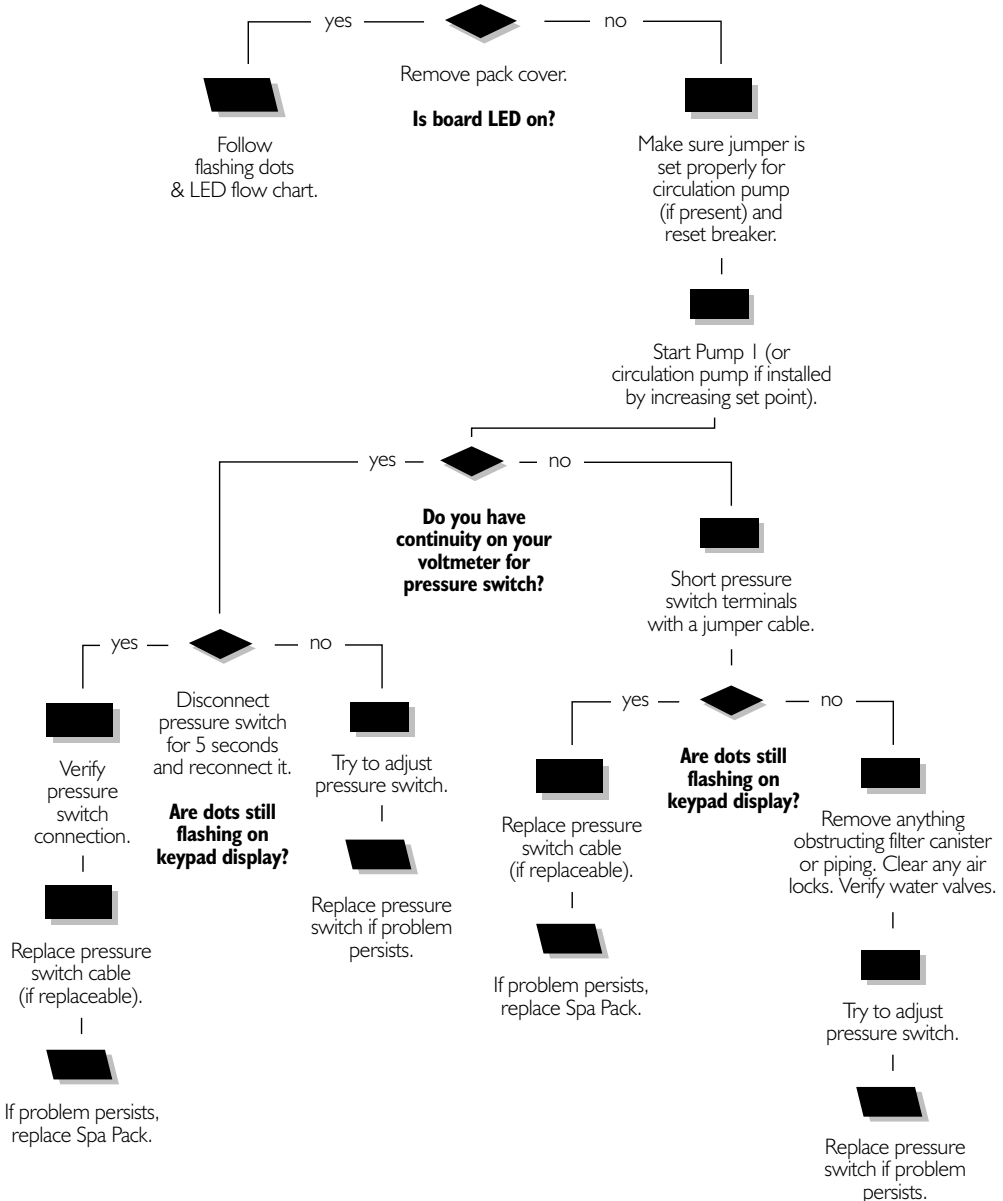
Jumper JMP3: Pump

- Position 1: Single-pump system. *Factory default setting.*
- Position 2: Dual-pump (or pump & blower) system.

Flashing Dots Flow Chart

If 3 flashing dots appear on keypad display, follow Troubleshooting Flow Chart below to identify the problem:

3 flashing dots appear on the display!



Flashing Dots Displayed

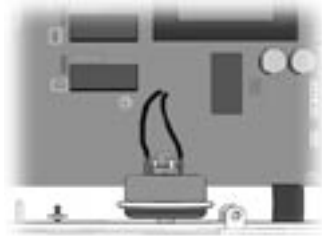
Three flashing dots error condition indicates a pressure switch problem.

There must be enough water in the spa for normal operations. System may detect error condition if spa filter is dirty or if something restricts flow of water in piping.

The heater will automatically shut down when error condition occurs.

Power may remain On when the following steps are carried out.

- 1 • Make sure jumper is set properly for circulation pump (if present). See jumper settings for more details (p.8).
- 2 • Verify if Pump 1 (or circulation pump if installed) is working. If pump is not working right, refer to pump section of this manual.
- 3 • If Pump 1 is working properly, turn it on by pressing **Pump 1** key (or start circulation pump by increasing the set point) and test continuity on pressure switch.
- 4 • If you detect continuity, go to step # 10.
- 5 • If you do not detect continuity, verify if pressure switch cable is properly connected to pressure switch and board.



- 6• Ensure adequate water flow in the heater and short two pressure switch terminals with jumper cable.

- 7• **If the three dots disappear**, first make sure there is no blockage of water or air lock and check water valves.

If the installation is older than 2 years, replace pressure switch and recalibrate it.

If installation is recent, try readjusting the pressure switch. If this is not possible, replace switch.

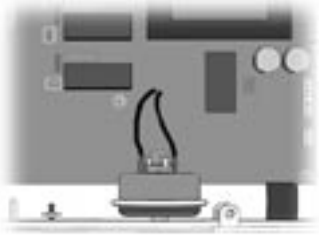
(Refer to "How to Adjust the Pressure Switch" section of this manual.)

- 8• **If the three dots still appear**, the problem may be either with switch cable or board.

Remove plastic cover and replace cable (if replaceable).

- 9• Replace Spa Pack if error condition still persists. (Refer to "How to Replace the Spa Pack" section of this manual.)

Power may remain On while the following steps are carried out.



- 10 • If you have continuity on pressure switch, follow these steps:

Disconnect pressure switch cable for 5 seconds and reconnect it.

If error condition disappears, adjust pressure switch, if it is a new installation (less than two years) or replace it.

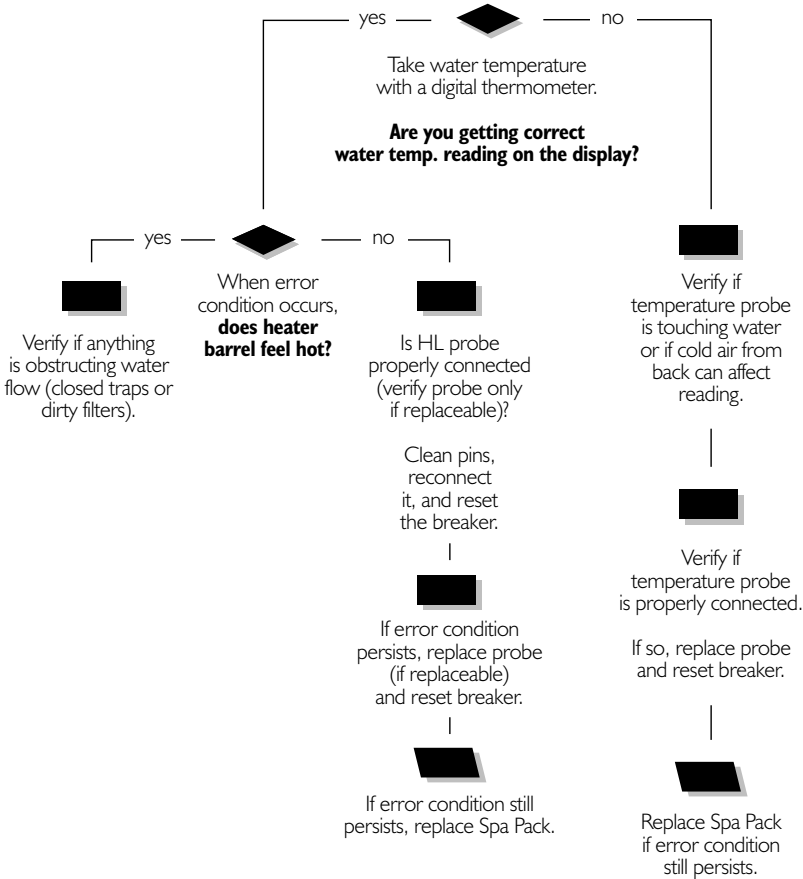
(Refer to "How to Adjust the Pressure Switch" section of this manual.)

- 11 • If error condition persists, remove plastic cover and replace pressure switch cable (if replaceable).
- 12 • Replace Spa Pack if error condition still persists. (Refer to "How to Replace the Spa Pack" section of this manual.)

Flashing dots & LED Flow Chart

If error condition occurs (potential Hi-Limit sensor or temperature probe problem), follow Troubleshooting Flow Chart below to identify the problem:

**Turn breaker off then on again to reset the system.
If Hi-Limit condition no longer persists, check for blockage
of water in the piping.**



Flashing Dots & LED Displayed

The three flashing dots and LED error condition is related to the Hi-Limit sensor or temperature probe.

Turn breaker off then on again to reset the system.

If 3 flashing dots and LED disappear, wait until they are displayed again on keypad.

Power may remain On.

- 1 • Take water temperature with a digital thermometer.
 - c- If error condition persists, replace probe (if replaceable only) and reset breaker.
- 2 • **If keypad display shows correct temperature:**
 - a- Check if heater barrel feels hot.

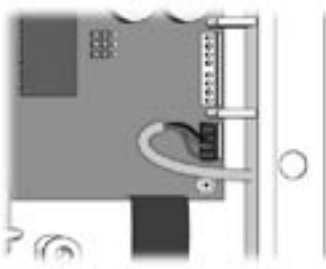
If it's hot, verify if anything is obstructing the flow of water (closed valves or dirty filter).
 - b- If it's not, verify if hi-limit probe is properly connected (check probe only if replaceable).

Try to clean probe connector pins. Even a small coating of film may cause a bad connection. Reconnect probe and reset breaker.
 - d- If problem is not solved, replace Spa Pack. (Refer to "How to Replace the Spa Pack" section of this manual.)
- 3 • Proceed to following page if keypad display shows incorrect temperature.

If keypad display isn't showing correct temperature, carry out the following tests:

- 1 • Verify if temperature probe is in contact with water and if cold air from the back could be affecting readings.

Use foam to isolate probe from cold air if that is the problem.



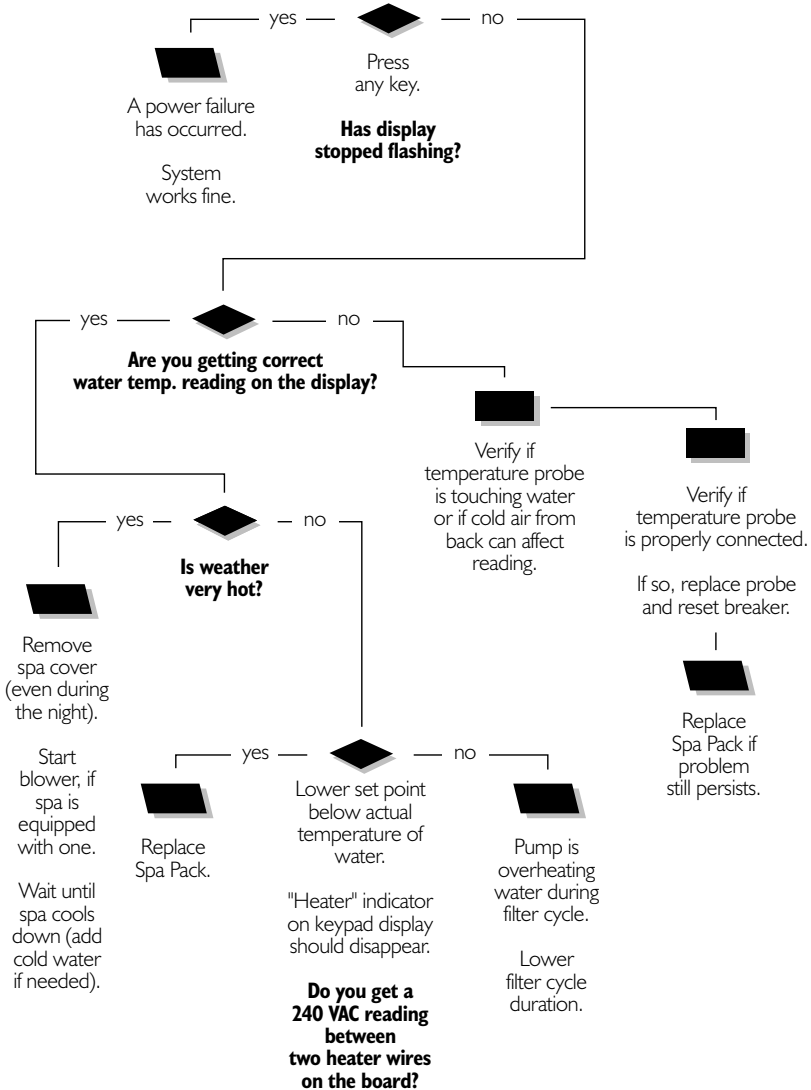
- 2 • Make sure temperature probe is properly connected.

If it is, replace probe and reset breaker.

- 3 • Replace Spa Pack if error condition still persists. (Refer to "How to Replace the Spa Pack" section of this manual.)

Display Flashing Flow Chart

On certain packs, if system detects temperature at 44°C (112°F) or higher, the display will start flashing. Follow Troubleshooting Flow Chart below to identify the problem:



Display Is Flashing

If digital thermometer water temperature reading is 44°C (112°F) or higher and keypad display indicates correct temperature, carry out the following tests:

If display stops flashing after pressing a key, this means that a power failure has occurred. System works fine.

If weather is very hot:

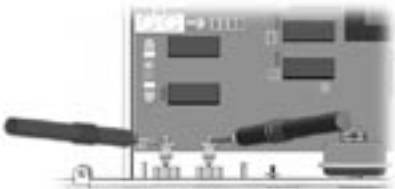
- 1 • Remove spa cover (even during the night). Start blower if spa is equipped with one. Wait until spa cools down (add cold water if necessary).

If hot weather is not a factor:



- 2 • Lower set point below current water temperature.

"Heater" indicator should disappear from keypad display.



- 3 • Remove spa cover. With a voltmeter, read the voltage between the two heater wires on the board.

- 4 • **If you do not read 240 VAC**, pump may be overheating water during filter cycle.

Enter Programming mode and shorten filter cycle duration.

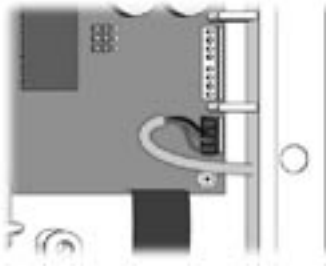
- 5 • **If you do read 240 VAC**, test the element. If it is opened, replace it. If element works fine, replace Spa Pack.

(Refer to "How to Replace the Spa Pack" section of this manual.)

If digital thermometer water temperature reading is 44°C (112°F) or higher and keypad display isn't showing correct temperature, carry out the following tests:

- 1 • Verify if temperature probe is in contact with water and if cold air from the back could be affecting readings.

Use foam to isolate probe from cold air if that is the problem.



- 2 • Make sure temperature probe is properly connected.

If it is, replace probe.

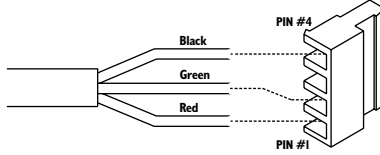
- 3 • Replace Spa Pack if display is still flashing.

(Refer to "How to Replace the Spa Pack" section of this manual.)

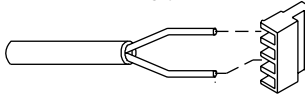
Wrong Temperature Flow Chart

On certain packs, if system detects that temperature is not within normal limits, wrong temperature will be displayed. Follow Troubleshooting Flow Chart below to identify the problem:

Make sure to use the right probe!
Probe wires should be in this order:



OR:



Check if regulation probe is properly connected.



Unplug probe connector and clean pins on the board (even a small coating of film may cause a bad connection).
Reconnect probe.



Replace probe with a spare and verify if problem is solved.

If it is, replace probe with spare.

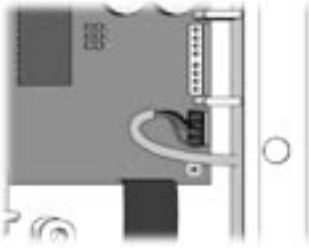


Replace Spa Pack if problem persists.

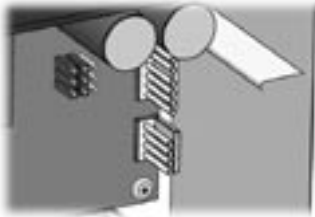
Wrong Temperature Displayed

Wrong temperature on keypad display indicates a problem with regulation sensor. The system is constantly verifying if temperature probe reading is within normal limits.

Note that water temperature must be over 2°C (35°F) in order to carry out the following steps. Power can remain On.



- 1 • Verify if regulation probe (sensor located in spa) is properly connected.



- 2 • Disconnect probe connector and clean probe connector pins. Even a small coating of film may cause a bad connection.

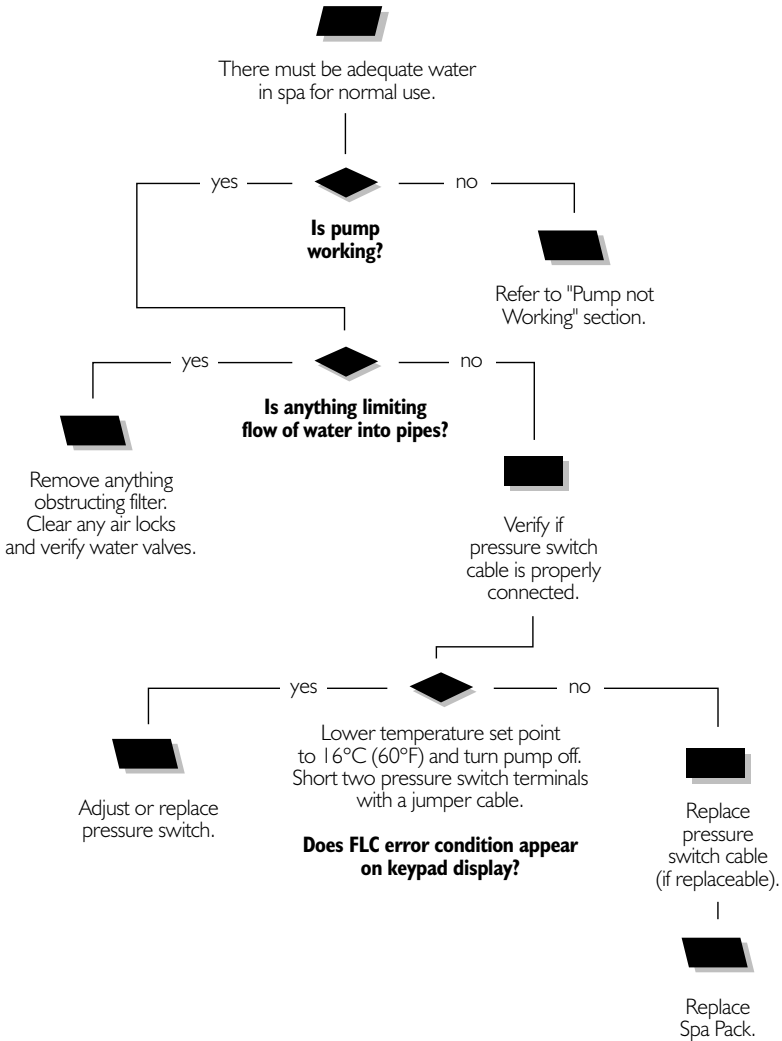
- 3 • Reconnect probe.

If wrong temperature is still displayed, replace probe with a spare and place probe head directly in spa water.

If problem is solved, replace probe.

- 4 • Replace Spa Pack if problem persists.

If FLO error condition occurs (problem with the pressure switch: pump is on but no water pressure detected), follow Troubleshooting Flow Chart below to identify the problem:



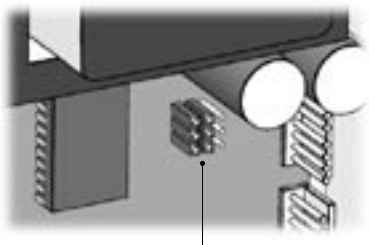
FLO Error Condition

An FLO error condition indicates a pressure switch problem. If system does not detect any pressure when pump is manually or automatically turned on, an FLO error condition will occur.

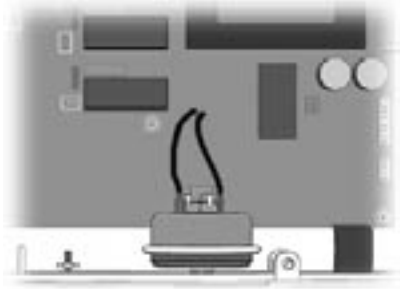
There must be enough water in the spa for normal operations. System may detect an FLO error condition if spa filter is dirty or if something restricts flow of water in piping.

The heater will automatically shut down when an FLO error condition occurs.

Power may remain On when the following steps are carried out.



Jumper location



- 1 • Verify if pump is working. If pump is not working properly, refer to pump section of this manual.
- 2 • Clean filter and check for air blockages, closed trap valves or anything that could restrict flow of water in piping.
- 3 • Verify if pressure switch cable is properly connected to pressure switch and board.

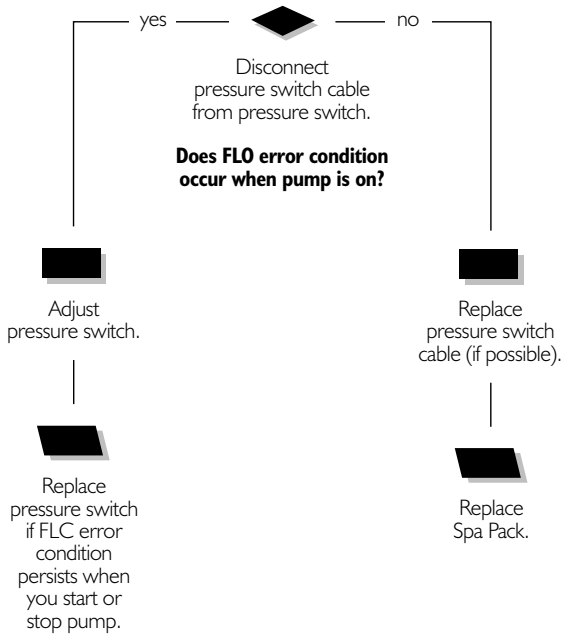


- 4• If problem has not been solved, lower Set Point at 16°C (60°F) by pressing on **Down** arrow key and turning pump off; then short two pressure switch terminals with a jumper cable.
- 5• An FLC error condition should occur. If it does, try to readjust pressure switch. If this is not possible, replace switch.
- 6• If the FLC error condition does not occur, problem may be either the pressure switch cable or the board.
- 7• If problem still persists, replace Spa Pack.

Replace pressure switch cable (if replaceable).

(Refer to "How to Adjust the Pressure Switch" section of this manual.)

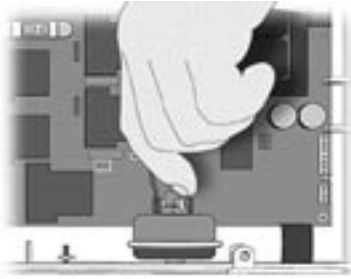
If FLC error condition occurs (usually pressure switch problem - pump is off but water pressure is detected), follow Troubleshooting Flow Chart below to identify the problem:



FLC Error Condition

An FLC error condition indicates a pressure switch problem. If system detects any pressure when pump is off, an FLC error condition will occur.

Power may remain On when the following steps are carried out.



- 1 • Disconnect pressure switch cable on pressure switch.

If FLO error condition occurs when pump is turned on, adjust pressure switch.

If this is not possible, replace switch.

- 2 • If FLO error condition does not occur, replace pressure switch cable (if possible).
- 3 • replace Spa Pack.

If Prr error condition occurs (potential regulation probe problem), follow Troubleshooting Flow Chart below to identify the problem:

Prr error condition is ignored for an hour to allow water temperature to reach 1°C (34°F).

Press any key after each step to reset the system!



Note that water temperature must be over 1°C (34°F) to operate spa.



Check if regulation probe is properly connected.



Unplug probe connector and clean pins on the board (even a small coating of film may cause a bad connection).
Reconnect probe.



Replace probe with a spare and verify if problem is solved.

If it is, replace probe with spare.



Replace Spa Pack if problem persists.

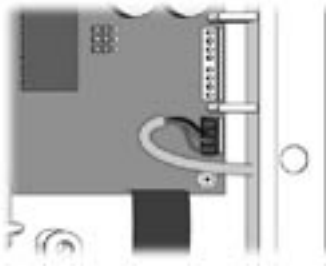
Prr Error Condition

The Prr error condition indicates a problem with regulation probe. The system is constantly verifying if temperature probe reading is within normal limits.

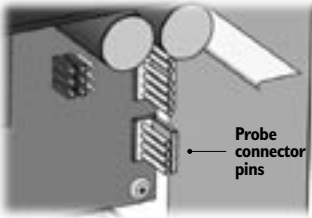
Prr error condition is ignored for an hour to allow water temperature to reach 1°C (34°F). Water temperature must be over 1°C (34°F) to carry out the following steps.

Press any key after each step to reset the system.

Power may remain On when the following steps are carried out.



- 1 • Verify if regulation probe is properly connected to the board.



- 2 • Disconnect probe connector and clean probe connector pins. Even a small coating of film may cause a bad connection.

- 3 • Reconnect probe.

If Prr error condition still persists, replace probe with a spare and place probe head directly in spa water.

If problem is solved, replace probe.

- 4 • If problem persists, replace Spa Pack.

HL (OH) Flow Chart

If HL (OH) error condition occurs (potential hi-limit sensor or temperature probe), follow Troubleshooting Flow Chart below to identify the problem:

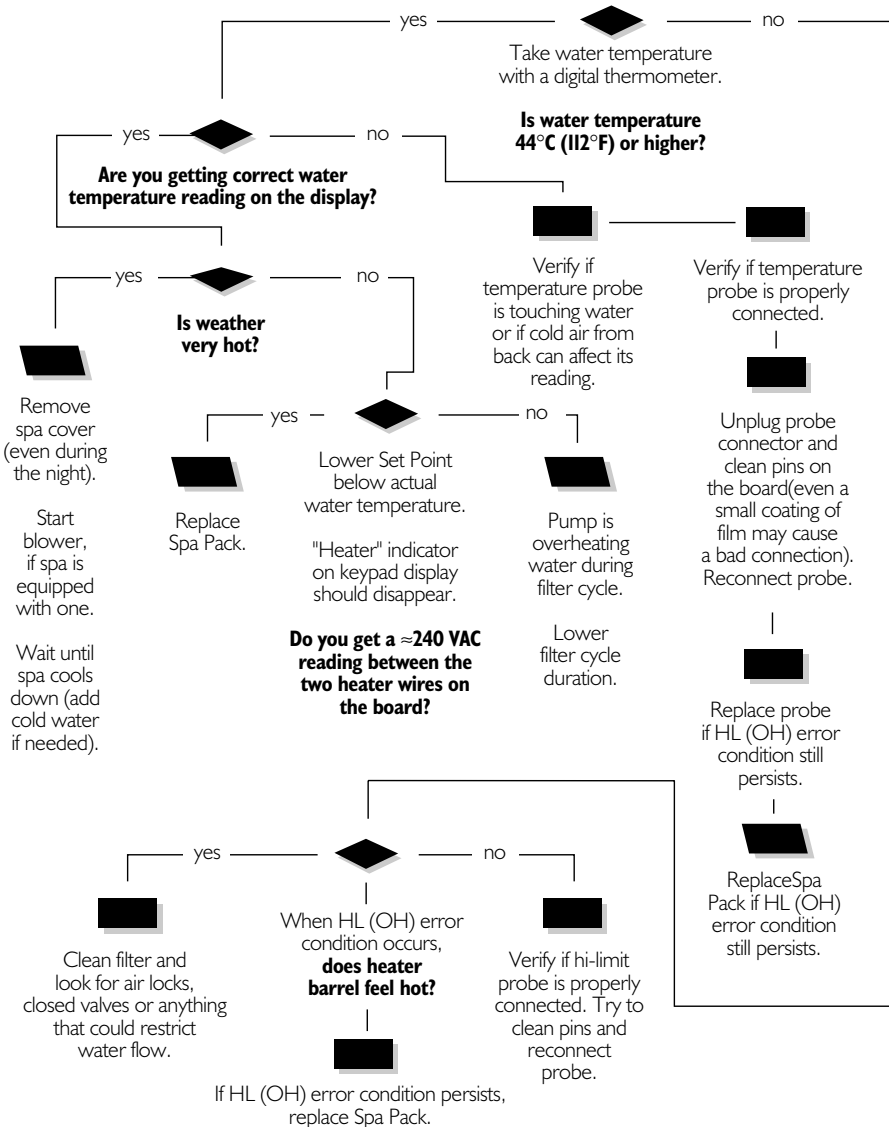
Steady message:

Means system has shut down heater because water temperature at the heater has reached 48°C (119°F).

Blinking message or OH:

Means except for the Smart Winter Mode, system has shut down because water temperature in the spa has reached 44°C (112°F).

Switch GFCI off then on after each step to reset the system!



HL (OH) Error Condition

The HL (OH) error condition is related to the hi-limit sensor or the temperature probe.

- Steady message: Means system has shut down heater because water temperature at the heater has reached 48°C (119°F).
- Blinking message or OH: Means except for the Smart Winter Mode, system has shut down because water temperature in the spa has reached 44°C (112°F).

Switch GFCI off then on after each step to reset the system.

- 1 • Take water temperature with digital thermometer.
- 2 • **If reading is below 44°C (112°F):**
 - a- Check if HL (OH) error condition still occurs.
 - b- If so, check if heater barrel feels cold. If it's cold, replace hi-limit sensor.
 - c- If HL (OH) error condition still occurs, check if heater barrel feels hot.
 - d- If it's hot, clean filter and look for air locks, closed valves or anything that could restrict flow of water in piping.
 - e- If problem still persists, replace Spa Pack.
- 3 • **If reading is 44°C (112°F) or higher:**

Proceed to following page if keypad display shows correct temperature.

Proceed to page 34 if keypad display doesn't show correct temperature.

If digital thermometer water temperature reading is 44°C (112°F) or higher and keypad display indicates correct temperature, carry out the following tests.

If weather is very hot:

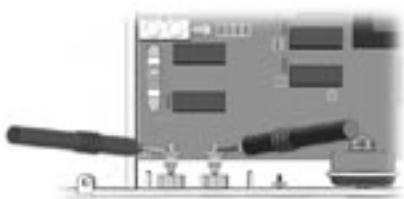
- Remove spa cover (even during the night). Start blower if spa is equipped with one. Wait until spa cools down (add cold water if necessary).

If hot weather is not a factor:



- Lower Set Point below current water temperature.

The "Heater" indicator should disappear from keypad display.



- With a voltmeter, read voltage between the two heater wires on the board.
- If you do not read ≈ 240 VAC**, pump may be overheating water during the filter cycle.

Shorten filter cycle duration.

To shorten filter cycle duration:

- Press and hold **Light** key for 5 seconds. The display shows the currently set filter cycle duration in hours.



Use **Down** arrow key to lower the number of hours:
0 = no filtration
12 = continuous filtration



When the desired value is displayed, press **Light** key again. The filter cycle will start immediately.

(For more information on filter cycles, refer to the User's manual).

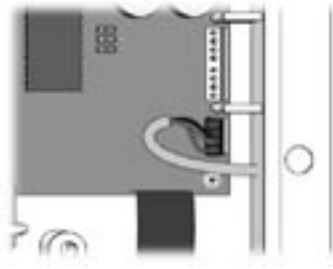
- If you do read ≈ 240 VAC**, replace Spa Pack.

HL (OH) Error Condition

If digital thermometer water temperature reading is 44°C (112°F) or higher and keypad display isn't showing correct temperature, carry out the following tests.

- 1 • Verify if temperature probe is in contact with water and if cold air from the back could be affecting readings.

Use foam to isolate probe from cold air if that is the problem.



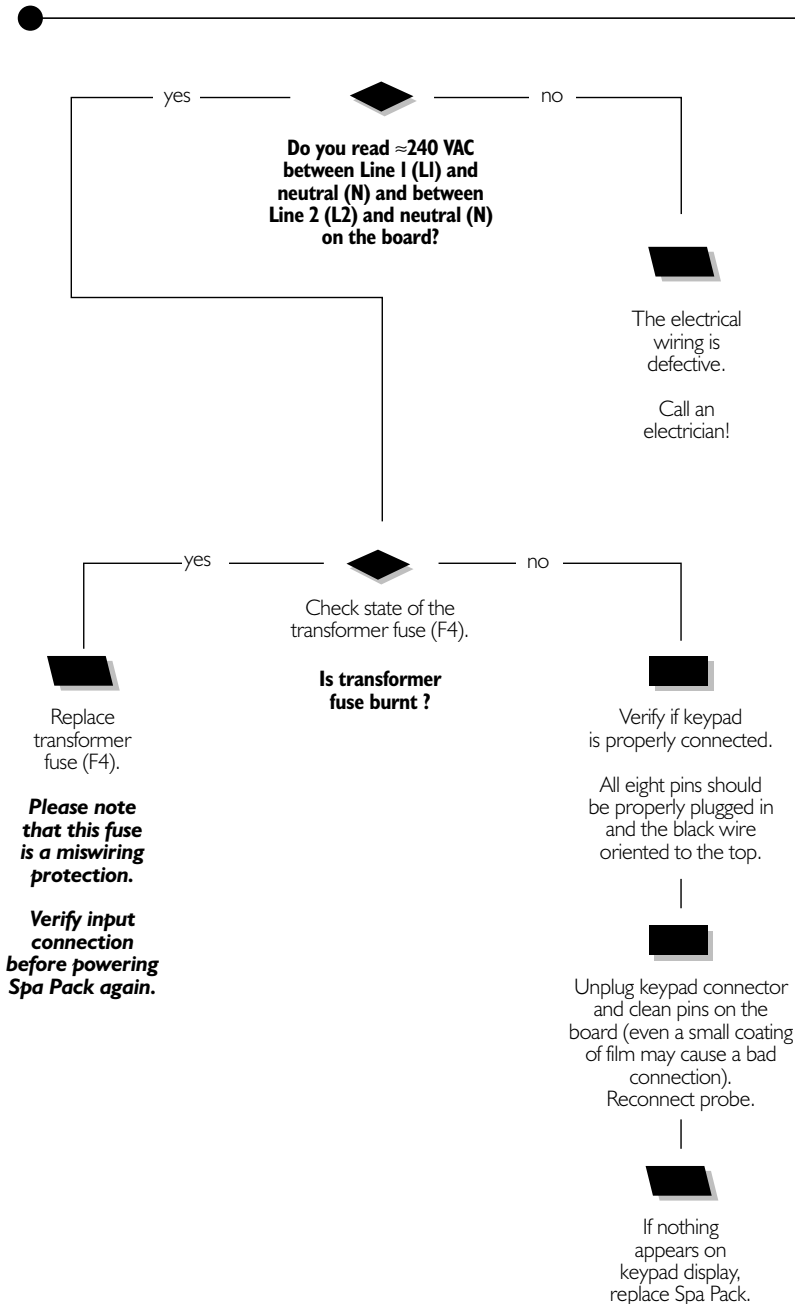
- 2 • Make sure temperature probe is properly connected to the board.
- 3 • Disconnect probe connector and clean probe connector pins. Even a small coating of film may cause a bad connection.

If it is, replace probe.

- 4 • Replace Spa Pack if HL (OH) error condition still persists.

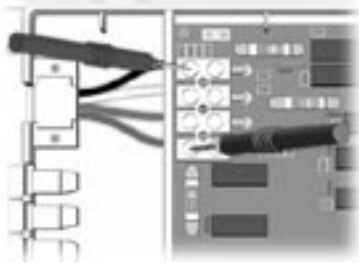
"Nothing Works!" Flow Chart

If nothing seems to work, follow Troubleshooting Flow Chart below to identify the problem:



Nothing Works!

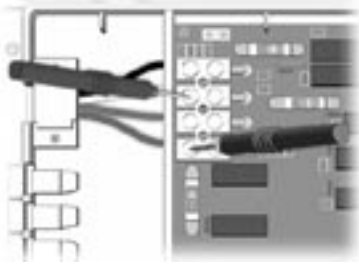
If the equipment is connected but nothing seems to work, the power supply must be defective. Refer to the "Power & Ground Check" section of this manual. If required, proceed as follows:



- 1 • On the power supply terminal block, measure the voltage between Line 1 (L1) and neutral (N).

Note: If necessary, refer to the supplied wiring diagram!

You should read ≈ 240 VAC.



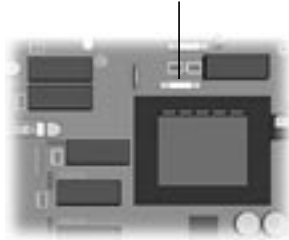
- 2 • Measure the voltage between Line 2 (L2) and neutral (N).

You should read ≈ 240 VAC.

- 3 • If you do not get good readings, the electrical wiring must be defective.

Call an electrician!

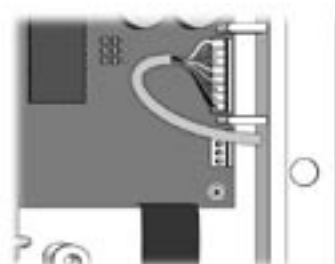
Transformer fuse (F4)



- 4 • If voltage readings are correct but nothing seems to work, verify state of transformer fuse F4 on board.

Please note that this fuse is a mis-wiring protection.

Verify input connection before powering Spa Pack again.

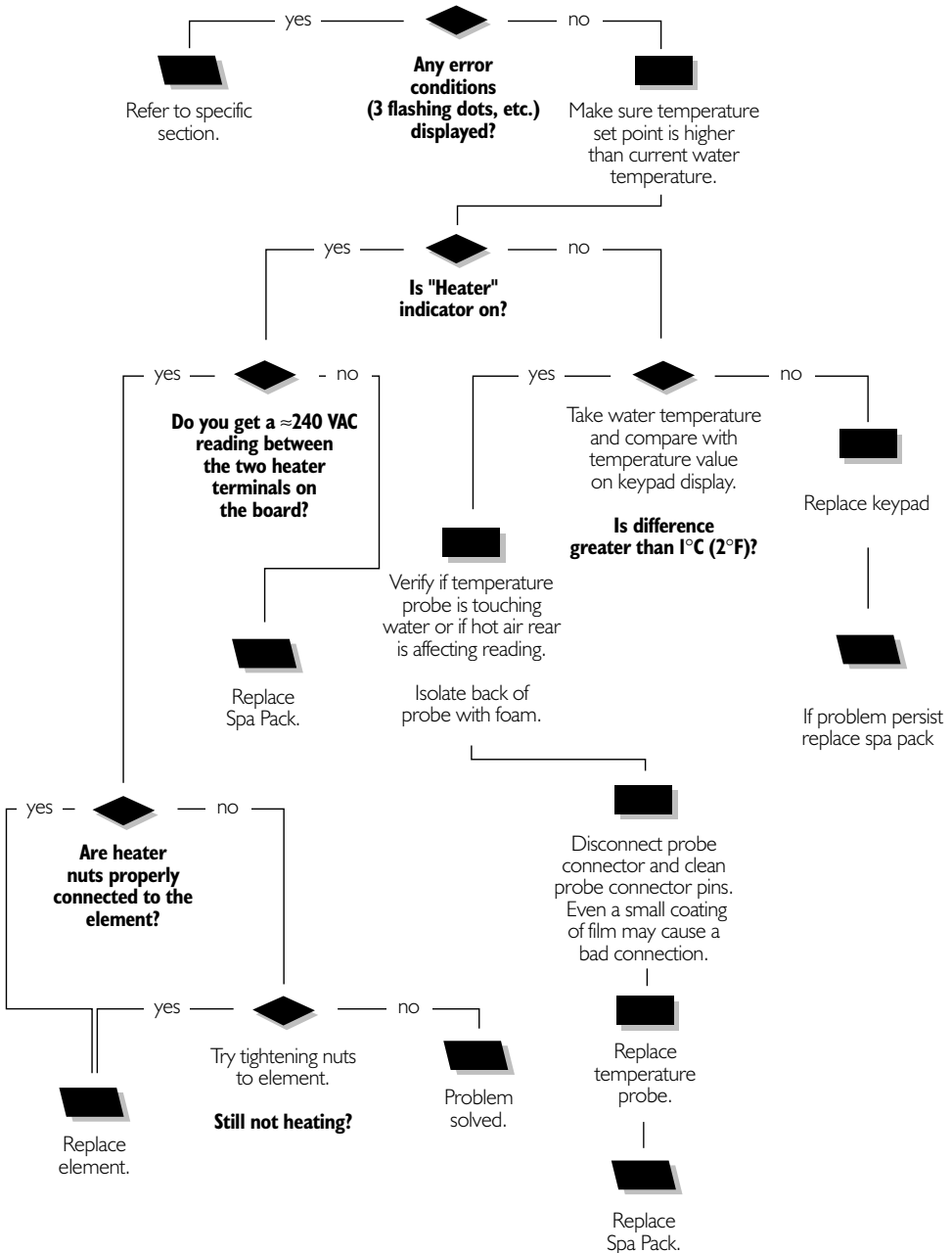


- 5 • Disconnect keypad connector and clean its pins. Even a small coating of film may cause a bad connection.

- 6 • If problem persists, replace Spa Pack.

"Spa Not Heating!" Flow Chart

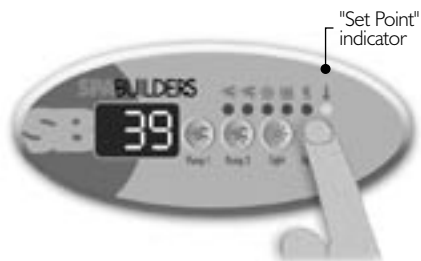
If the system does not seem to be heating the water, follow Troubleshooting Flow Chart below to identify the problem:



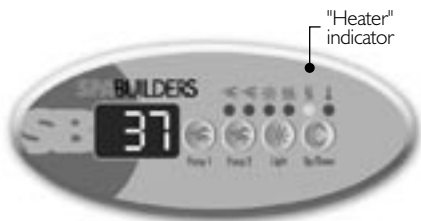
Spa Not Heating!

If the spa does not appear to be heating the water, carry out the following tests to correct the problem:

- 1 • Verify if an error condition is displayed on keypad. If so, refer to specific section of this manual.



- 2 • Try to increase temperature by raising temperature Set Point. Press **Up** key to increase Set Point.



- 3 • Verify if "Heater" indicator goes on.

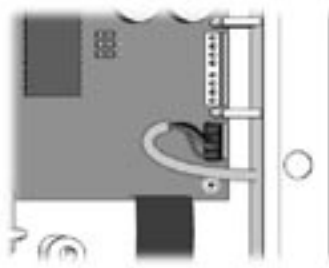
"Heater" indicator will be on when heater is on. It will flash when there is a request for more heat but heater has not yet started.

If "Heater" indicator does not light up:

- 4 • Use a digital thermometer to take water temperature and compare your reading with the value on keypad display.

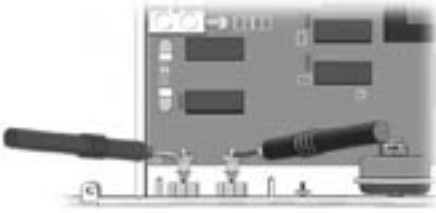
If values are different (1°C), verify if temperature probe is touching water or if hot air from rear could be affecting readings.

- 5 • If so, use foam to isolate behind the probe.



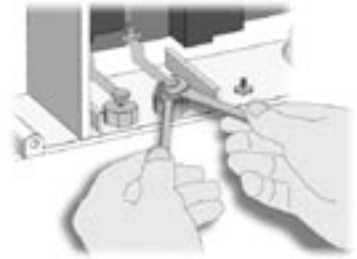
- 6 • If not, disconnect probe connector and clean probe connector pins. Even a small coating of film may cause a bad connection.
- 7 • Replace temperature probe with a spare one.
- 8 • If spa is still not heating, replace Spa Pack.

If "Heater" indicator appears on the display, but spa is still not heating, carry out the following tests to correct the problem:



- 1 • Measure voltage between the two heater screws on the board.

Replace Spa Pack if you are not getting a reading of ≈ 240 VAC.



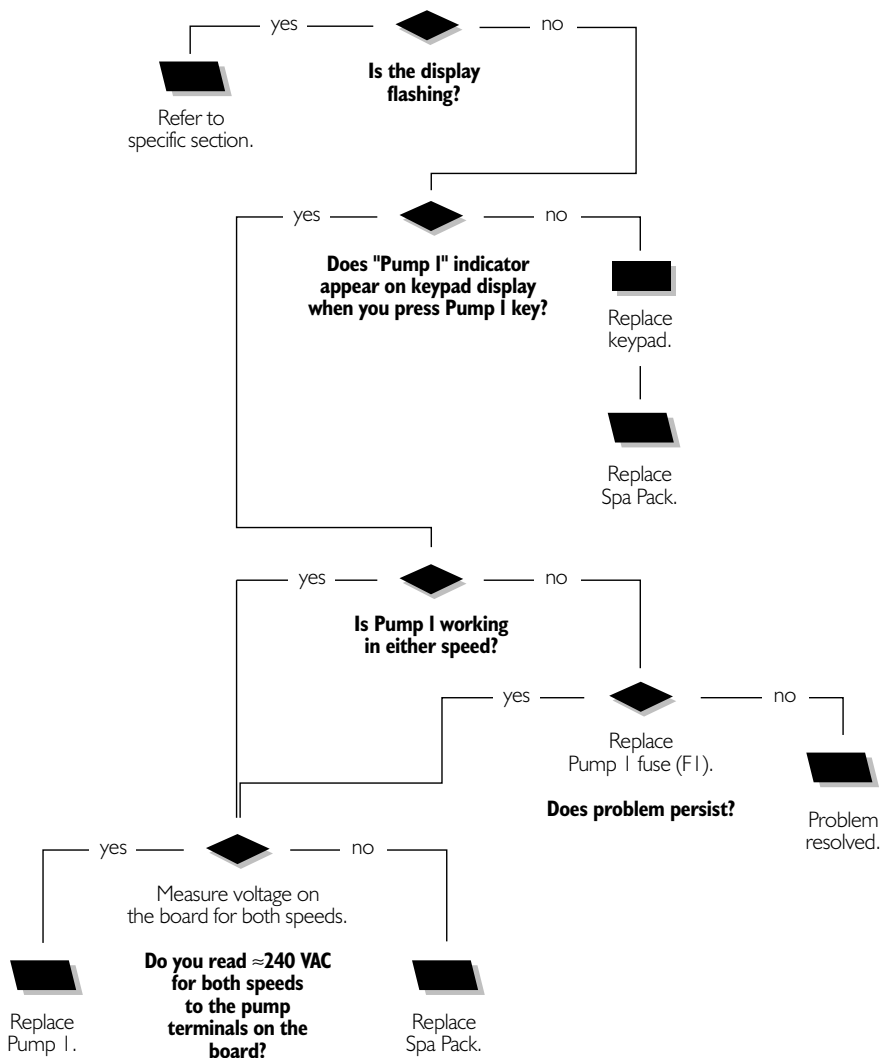
- 2 • If voltage reading is correct, verify if heater nuts are properly connected to the element.

If not, tighten the two heater nuts to the element.

- 3 • If problem persists, replace the element.

Pump 1 Flow Chart

If Pump 1 does not work, follow Troubleshooting Flow Chart below to identify the problem:



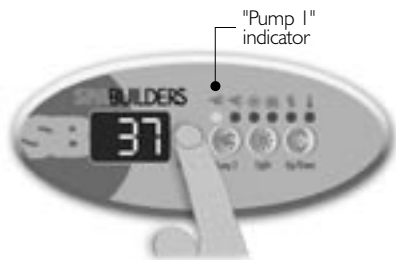
Pump 1 Does Not Work!

If Pump 1 is not working, carry out the following tests to correct the problem:

To increase the life of the relay, we use a "snubber" circuit on the pump relay. With this type of circuit, if no pump is connected to an output and relays are open, the voltmeter will continue reading around 60 V. This is normal.

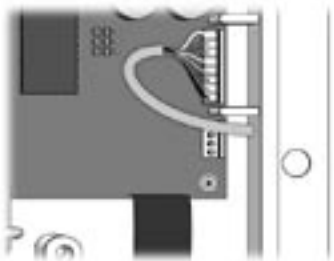
It is important to measure voltage when pump is connected to pack.

- 1 • Check if the display is flashing. If so, refer to specific section.



- 4 • If "Pump 1" indicator appears when **Pump 1** key is pressed, verify if pump works in either speed.

- 2 • Verify if "Pump 1" indicator appears on keypad display when you press **Pump 1** key.



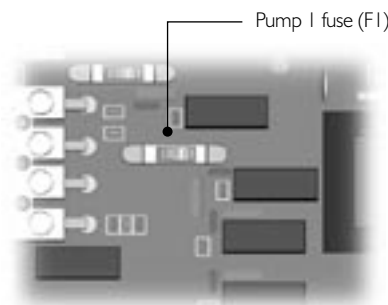
- 3 • If "Pump 1" indicator does not appear, use a spare keypad to verify if keypad is defective.

If it is, replace defective keypad.

If not, replace Spa Pack.

Pump 1 Does Not Work!

If Pump 1 does not work in either speed, carry out the following tests to correct the problem:



- 1 • Replace Pump 1 fuse (F1).
- 2 • If replacing the fuse is not effective or if Pump 1 works in only one speed, take voltage reading on the board for both speeds.



Turn Pump 1 to high speed and take voltage reading between blue and brown wire connectors (P7 & P12).

Your should read ≈ 240 VAC.

Note: If necessary, refer to the supplied wiring diagram!



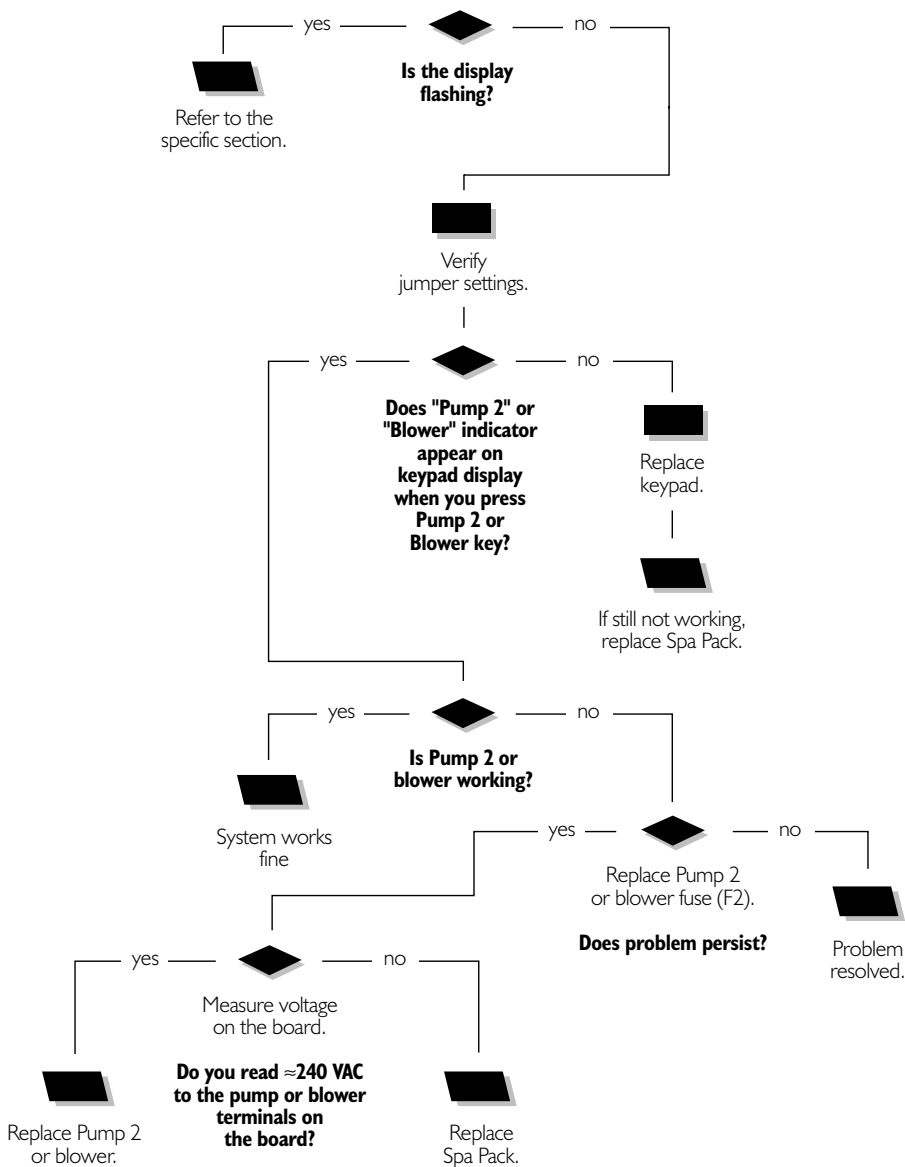
- 3 • Turn Pump 1 to low speed and take voltage reading between blue and black wire connectors (P7 & P14).

You should read ≈ 240 VAC.

- 4 • If voltage reading is correct, replace Pump 1.
- 5 • If not, replace Spa Pack.

Pump 2 or Blower Flow Chart

If Pump 2 or blower does not work, follow Troubleshooting Flow Chart below to identify the problem:



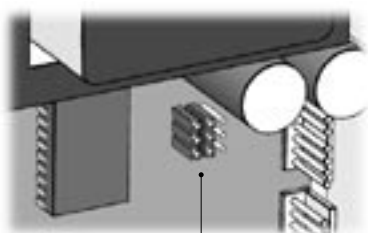
Pump 2 or Blower Does Not Work!

If Pump 2 or blower does not work, carry out the following tests to correct the problem:

To increase the life of the relay, we use a "snubber" circuit on the pump or blower relay. With this type of circuit, if no pump or blower is connected to an output and relays are open, the voltmeter will continue reading around 60 V. This is normal.

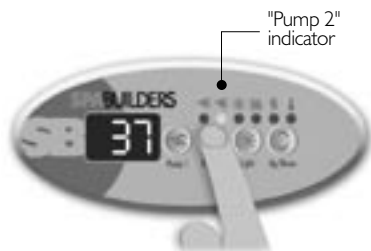
It is important to measure voltage when pump or blower is connected to pack.

- 1 • Check if the display is flashing. If so, refer to specific section.

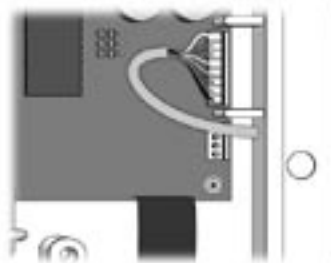


Jumper location

- 2 • Verify that jumper JMP3 is set properly (see page 8).



- 3 • Verify if "Pump 2" or "Blower" indicator appears on keypad display when you press **Pump 2** or **Blower** key.



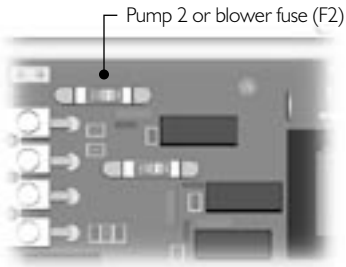
- 4 • If "Pump 2" or "Blower" indicator does not appear, use a spare keypad to verify if keypad is defective.

If it is, replace keypad.

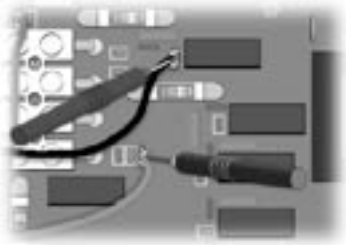
If not, replace Spa Pack.

Pump 2 or Blower Does Not Work!

If Pump 2 or blower does not work, carry out the following tests to correct the problem:



- 1 • Replace Pump 2 or blower fuse (F2).
- 2 • If replacing the fuse is not effective, take voltage reading on the board.



Turn Pump 2 or blower on and take voltage reading between blue and black wire connectors (P9 & P11).

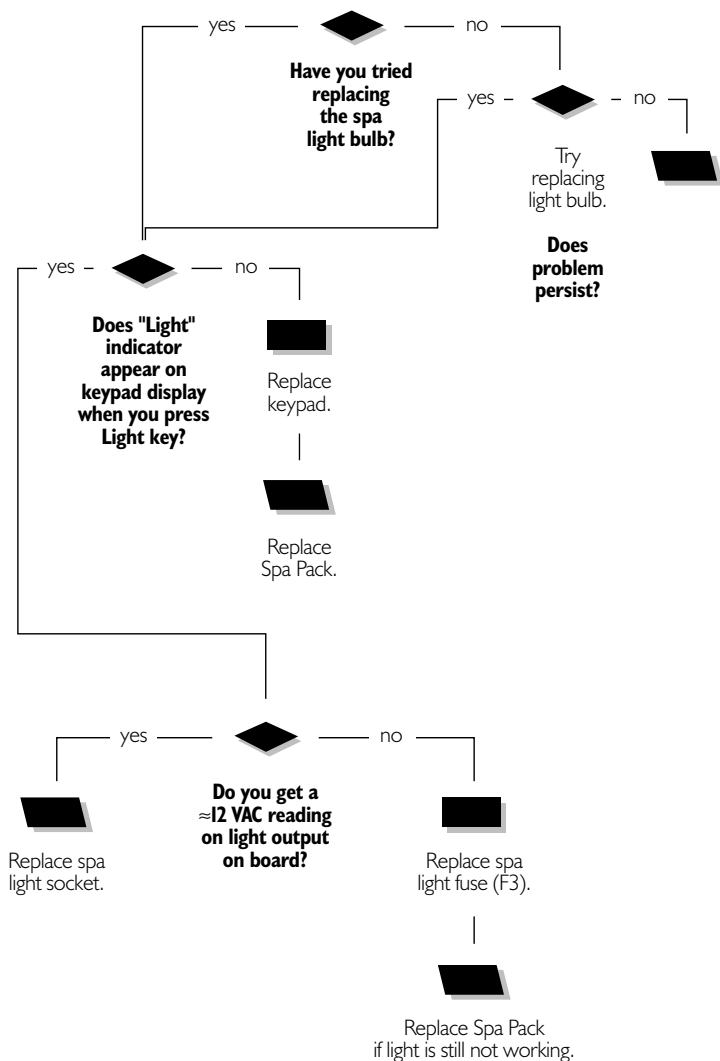
You should read ≈ 240 VAC.

Note: If necessary, refer to the supplied wiring diagram!

- 3 • If voltage reading is correct, replace Pump 2 or blower.
- 4 • If voltage reading is not correct, replace Spa Pack.

Spa Light Flow Chart

If spa light does not appear to be working, follow Troubleshooting Flow Chart below to identify the problem:

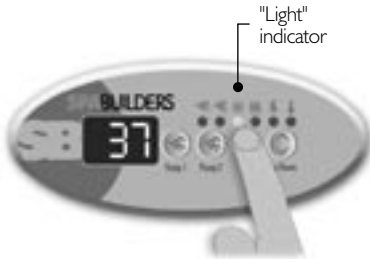


Spa Light Does Not Work!

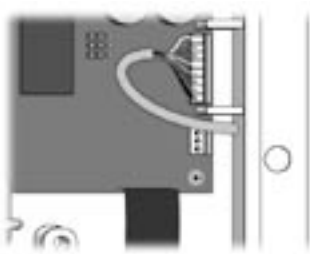
If spa light is not working, carry out the following tests to correct the problem:

It is important to measure voltage when spa light is connected to pack.

- 1 • The first step is to replace the spa's light bulb.



- 2 • If light still is not working, verify if "Light" indicator appears on keypad display when you press **Light** key.



- 3 • If "Light" indicator does not appear, use a spare keypad to verify if keypad is defective.

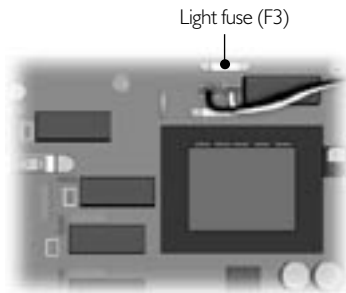
If it is, replace keypad.

If not, replace Spa Pack.



- 4 • If "Light" indicator appears, but light still is not working, measure voltage between two light wire connectors (P22 & P23) on the board.

If you read ≈ 12 VAC, replace spa light socket.

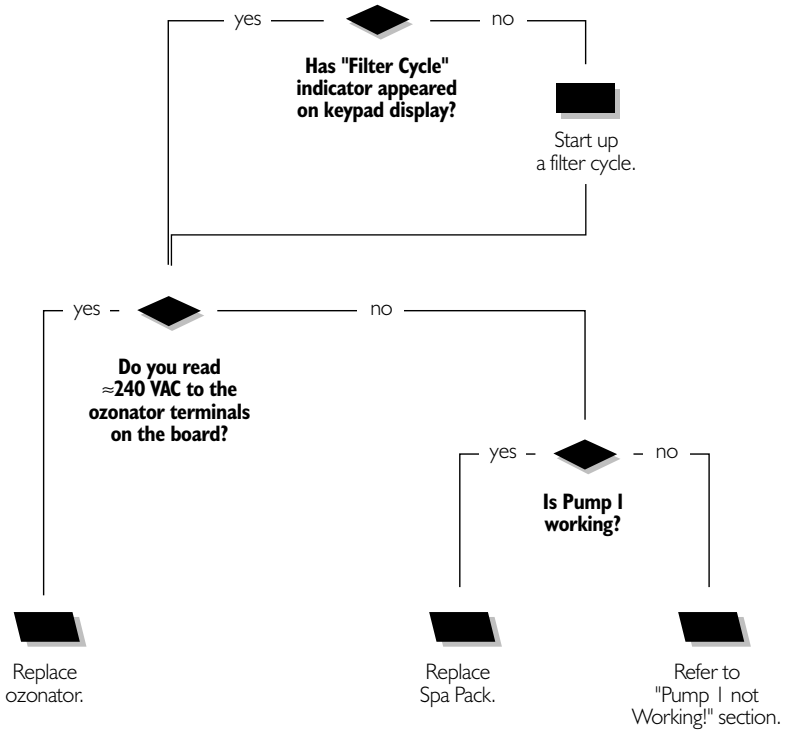


- 5 • If you are not getting a voltage reading, replace light fuse (F3) on the board.

- 6 • If problem persists, replace Spa Pack.

If ozonator is not working, follow Troubleshooting Flow Chart below to identify the problem:

Ozonator output will be shut down when Pump 1, Pump 2 or blower or light have been turned on manually.



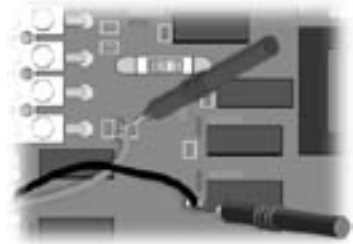
Ozonator Does Not Work!

If ozonator is not working, carry out the following tests to correct the problem:

To increase the life of the relay, we use a "snubber" circuit on the ozonator relay. With this type of circuit, if no ozonator is connected to an output and relays are open, the voltmeter will still get a reading of around 60 V. This is normal.

It is important to measure voltage when ozonator is connected to pack.

Ozonator output will be shut down when Pump 1, Pump 2 or blower or light have been turned on manually.



- 1 • Verify if "Filter Cycle" indicator appears on keypad display.
- 2 • If not, start up a filter cycle:

Press and hold **Light** key for 5 seconds.

The display will show the currently set filter cycle duration in hours.



Press **Light** key again. The filter cycle will start immediately.



- 3 • Measure voltage between blue and black wire connectors (P8 & P16) on the board.

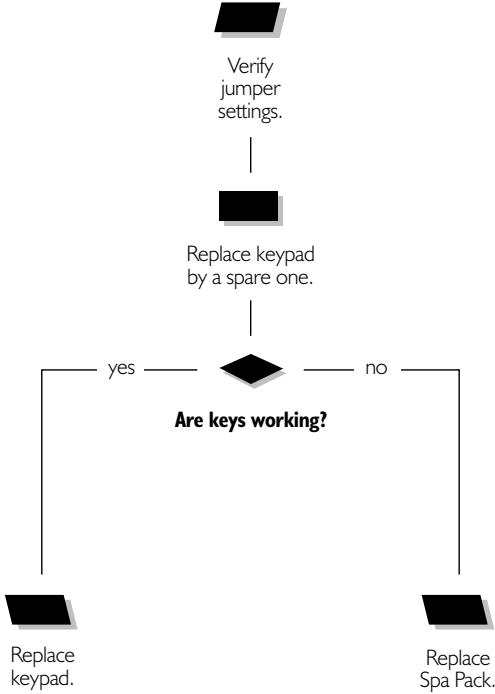
You should read ≈ 240 VAC.

- 4 • If voltage reading is correct, replace ozonator.
- 5 • Verify if Pump 1 is working.

If so, replace Spa Pack.

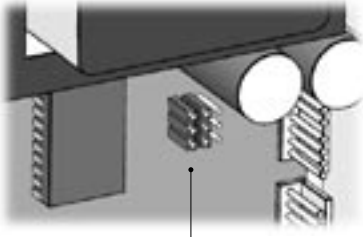
If Pump 1 is not working, refer to "Pump 1 not Working!" section of this manual.

If any of the keys on the keypad do not seem to be working, follow Troubleshooting Flow Chart below to identify the problem:



Keys Don't Work!

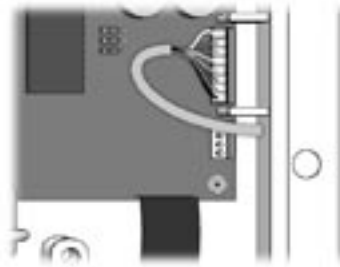
If any of the keys do not seem to be working, carry out the following tests to correct the problem:



Jumper location



- 1 • Verify that jumper JMP3 is set properly. An incorrect setting may cause a key not to respond.



- 2 • Replace spa keypad with a spare keypad.

- 3 • Verify if keys respond correctly.

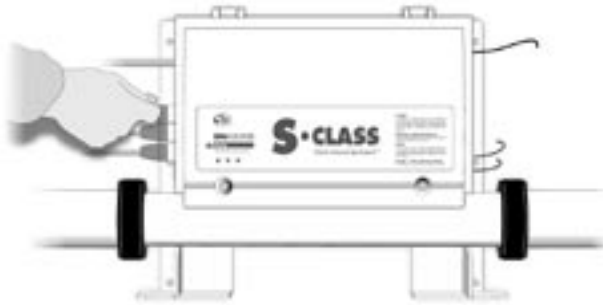
- 4 • If they do, replace keypad.

- 5 • If they do not respond, replace Spa Pack.

Replace The Spa Pack

When replacing an SC-CF Spa Pack, it is important to make sure to turn power off before proceeding.

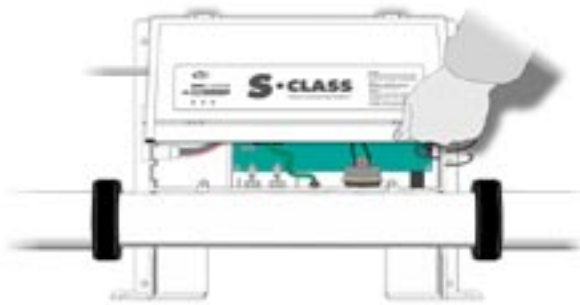
WARNING! Make sure to open the circuit at the GFCI in order to protect yourself against electric shock.



- 1 • Unplug Pump 1, Pump 2, blower and ozonator connectors.



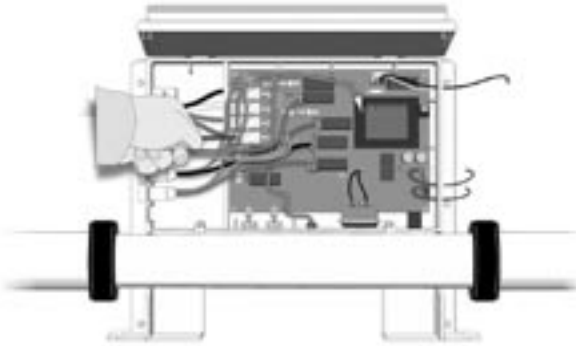
- 2 • Remove two screws from front pack cover.



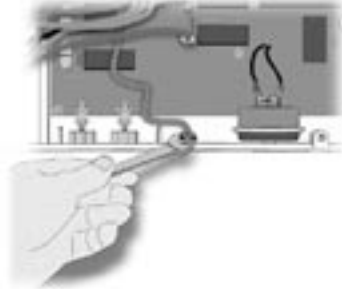
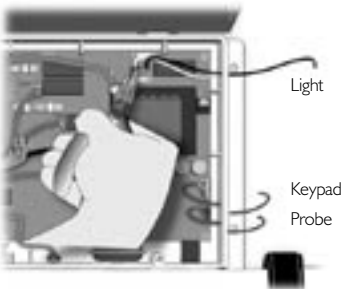
- 3 • Lift the Spa Pack cover.

Replace The Spa Pack

Make sure spa valves are closed in order to avoid water leakage!



- 4• Disconnect power input wires.



- 5• Disconnect light cables, keypad and temperature probe connectors.

- 7• Loosen the nut that fixes heater (i.e., the center nut) and release heater ground cable.



- 6• Disconnect then remove the two wires at the top of the pressure switch, then unscrew and remove the switch.

- 8• With wrenches, disconnect the two heating element nuts (remove only the two upper nuts). Do not touch the large nuts!



- 9• Slide the pack out of the heater barrel.
- 10• Check if hi-limit sensor is properly in place in its slot and slide new pack into position.
- 11• Reconnect heating element to the two heater blades by tightening the nuts firmly. Use wrenches to avoid damaging the contact pins of the heating element.
- 12• Reconnect heater ground cable and pressure switch cables.
- 13• Reconnect light cables, keypad and temperature probe.
- 14• Plug in Pump 1, Pump 2, blower and ozonator connectors.
- 15• Reconnect power input cables.
- 16• Close pack cover.

How To Adjust The Pressure Switch

When a voltmeter is available:

- 1 • Set voltmeter to " Ω " (while both probes are touching one another, voltmeter should beep to show there is continuity).
- 2 • Turn Pump 1 off.
- 3 • Do you have continuity on pressure switch?

If you have no continuity, go to step 4.

If you do have continuity, increase pressure switch setting by turning clockwise until voltmeter stops beeping. Then decrease another full turn.

- 4 • Turn Pump 1 on at low speed and wait a few minutes.

If (3) flashing dots do not appear, you have adjusted the pressure switch successfully.

If (3) flashing dots appear, decrease pressure switch setting by turning counter clockwise until voltmeter starts beeping (there is continuity). Then decrease another 1/4 of turn. Turn pump off.

The (3) flashing dots should not appear (restart procedure if (3) flashing dots appear).

- 5 • When adjustment procedure is completed, apply Loctite 425 to the adjustment screw to secure it in place.





When a voltmeter is not available:

- 1 • Turn Pump 1 off.
- 2 • Decrease the pressure switch setting to 0.5 P.S.I. or until three flashing dots are displayed.
- 3 • Start increasing pressure switch setting by very slowly turning adjustment screw clockwise until three flashing dots disappear. Then increase another full turn.
- 4 • Turn pump on at low speed for 30 seconds; there should be no flashing dots on display.
- 5 • Turn pump off and wait 30 seconds. You should not see the three flashing dots.
- 6 • If you see an error, restart the adjustment procedure.

If you are not able to adjust the pressure switch, change it.

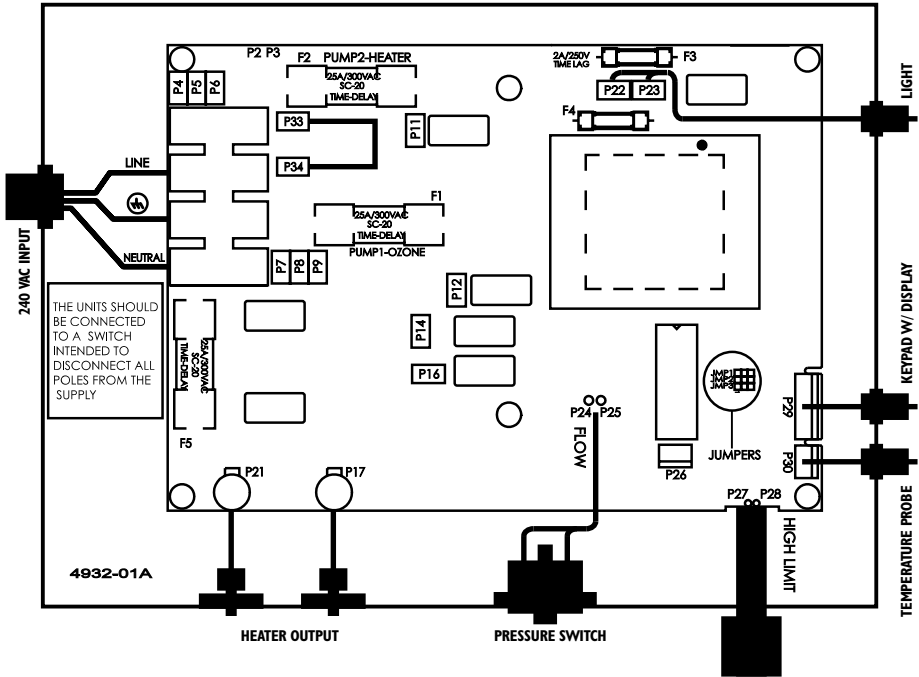
Parts List

We recommend that field service technicians keep the items marked with an asterisk (*) in stock.

Ref.	Part Number	Description	Suggested Retail U.S.	CDN
1	530AB0061	Tail-piece for 2" heater	5.39	7.33
1	530AB0042-P5	Gasket for 2" tail-piece (package of 5)	8.00	10.88
2	282CA0071	Nut for 2" heater	4.90	6.67 *
4	9920-400178	Light cord (option LS)	7.57	10.30 *
6	9920-400248	J&J mini-connector for pump 1 (CE)	7.26	9.88
6	9920-400282	J&J mini-connector for pump 2, single-speed (CE)	6.68	9.09
6	9920-400333	J&J mini-connector for pump 2, dual-speed (CE)	7.26	9.88
6	9920-400247	J&J mini-connector for ozonator (CE)	5.92	8.06
6	9920-400248	J&J mini-connector for blower (CE)	5.92	8.06
6	9920-400246	J&J mini-connector for circulation pump (CE)	5.92	8.06
12	530AA0171	In-line 2.0 kW heater	143.17	194.79
12	530AB0893	2.0 kW 240 V element for in-line heater	88.20	119.99 *
13	510AD0064	Pressure switch	28.41	38.67 *
19	282AD0038-P25	Ground screws (package of 25)	9.86	13.42
22	430AC0103-P10	Fuses for light (package of 10)	11.14	15.15 *
23	430AE0033-P10	Fuses for pump 1 (package of 10)	56.57	76.97 *
29	282AB0128	Screws for cover (package of 25)	7.68	10.45
30	9920-400342	10-foot temperature probe with grommet (CE)	22.20	30.16

Prices subject to change without prior notice.

The diagram below provides a general idea of SC-CF wiring, but it is important to note that it may not apply to all systems. The diagram including on inside power box cover is the one to be used as main reference for the spa you are servicing.



Pump 1

Voltage	230 V
Green / Ground	P4
Black / Low Speed	P14
Brown / High Speed	P12
Blue / Neutral	P7

Pump 2

Voltage	230 V
Green / Ground	P5
Black / Line	P11
Blue / Neutral	P9

Jumper Settings

See respective section

Heater

Line	P21
Neutral	P17
Green / Ground	Ground

Ozonator

Voltage	230 V
Green / Ground	P5
Black / Line	P16
Blue / Neutral	P8

Light Connector

White / 0 VAC	P23
Black / 12 VAC	P22

Professional Repair Kit

All you need in one case!



Gecko's professional repair kit contains all you need to service and repair Gecko's line of spa packs.

- Top side controls (keypads)
- Temperature probes
- Pressure switch cables
- Flow switches
- Elements
- Heater wires
- Transformer
- Ground lugs
- Grommets
- Standoffs
- Light cords
- Strain reliefs for light cord
- Plugs
- Fuse kits
- Screws



SPABUILDERS

Call 1.800.78.GECKO
to order or for more info!



120 V or 240 V power input



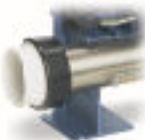
J&J or AMP connectors



Heater connectors



Easy access to probes & switches



Mounting feet for installation



COMPLETE SERVICE GUIDE WITH STEP-BY-STEP INSTRUCTIONS ON:

GFCI Troubleshooting



Jumper Selection



Understanding
& Correcting
Error Conditions



System Malfunctions



Part Replacement
Instructions



& More

SPA BUILERS

HEATING SYSTEMS

