

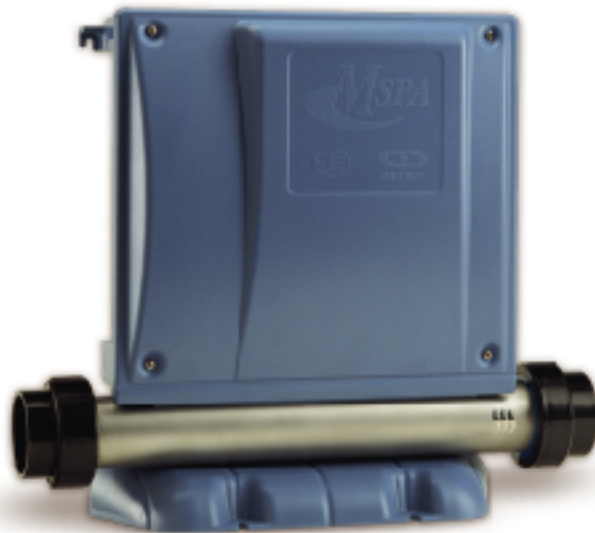
# MSPA-MP-CE METAPACK MSPA-MP-SR4-CE VERSION SERVICE MANUAL

• Gecko Electronics Inc. •

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Visual step-by-step guide to easily  
identify & correct technical problems!

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*Note: For spa repairs and troubleshooting with Pocket-tek technology, please refer to Pocket-tek User's Manual available from Gecko and at [www.pocket-tek.com](http://www.pocket-tek.com).*



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In an attempt to make this manual as useful as possible, it has been presented in two formats. Problem-solving solutions are described with Troubleshooting Flow Charts and also with Step-by-Step Procedures.

The two formats together should provide an overall complete explanation, with flow charts providing an overview of specific problems, and step-by-step procedures giving more detailed information.

**TO SUCCESSFULLY TROUBLESHOOT SPA PACK PROBLEMS, IT IS ESSENTIAL TO HAVE AN UNDERSTANDING OF THE OPERATION AND FEATURES OF THE SPA PACK BEING WORKED ON. CONSULT THE OWNER'S MANUAL, SUNRISE SPAS OR GECKO ELECTRONICS FOR DETAILS.**

### **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.

*All information given subject to technical modifications without notice.*

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## Tools & Parts

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

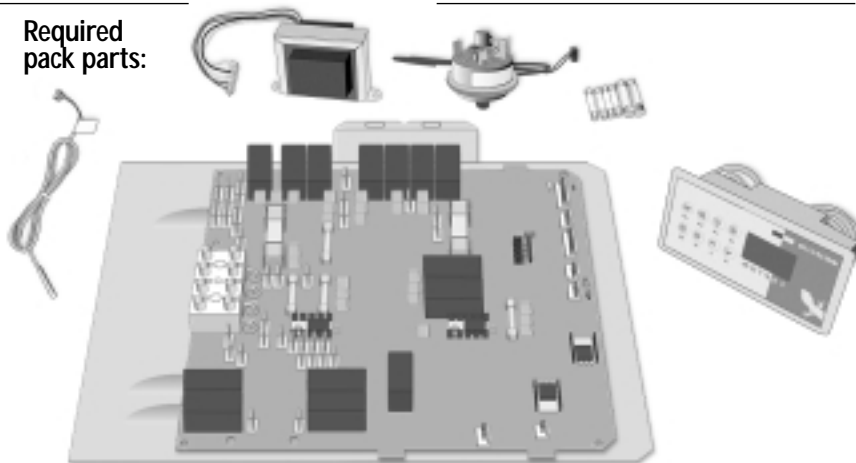
### Required tools:



Pliers  
Phillips & flat screwdrivers  
M8 (11/32") nut driver  
M6 (1/4") open end wrench

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

### Required pack parts:



Regulation sensor  
MSPA-MP-SR4-CE system  
board (or complete spa pack)

Transformer  
Pressure switch  
Fuses  
Top side control (keypad)

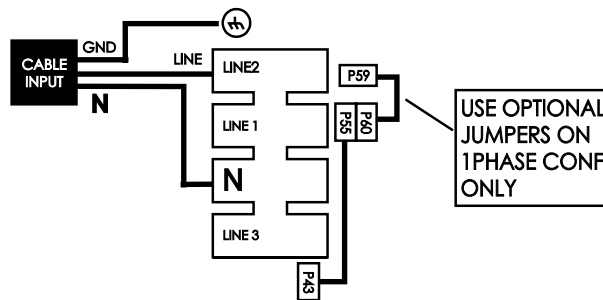
Gecko Electronics Inc. sells Professional Repair Kits that include everything needed for MSPA-MP Spa Pack servicing. For more information, go to the last page of this manual.

# Electrical Wiring

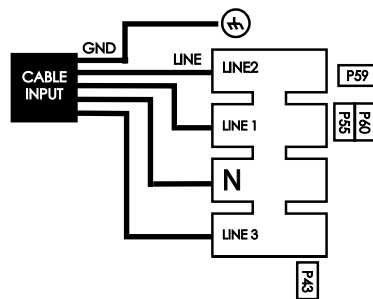
*Correct wiring of the electrical service box, GFCI box and pack terminal block is essential.*

- Make a visual inspection to check for signs of miswiring. Refer to wiring diagram on inside pack cover. Call an electrician if necessary.

**Input supply wiring 1 x 16A or 1 x 32A**  
Low level programming set for "Cu2" (16A) or "Cu1" (32A) and "In1"



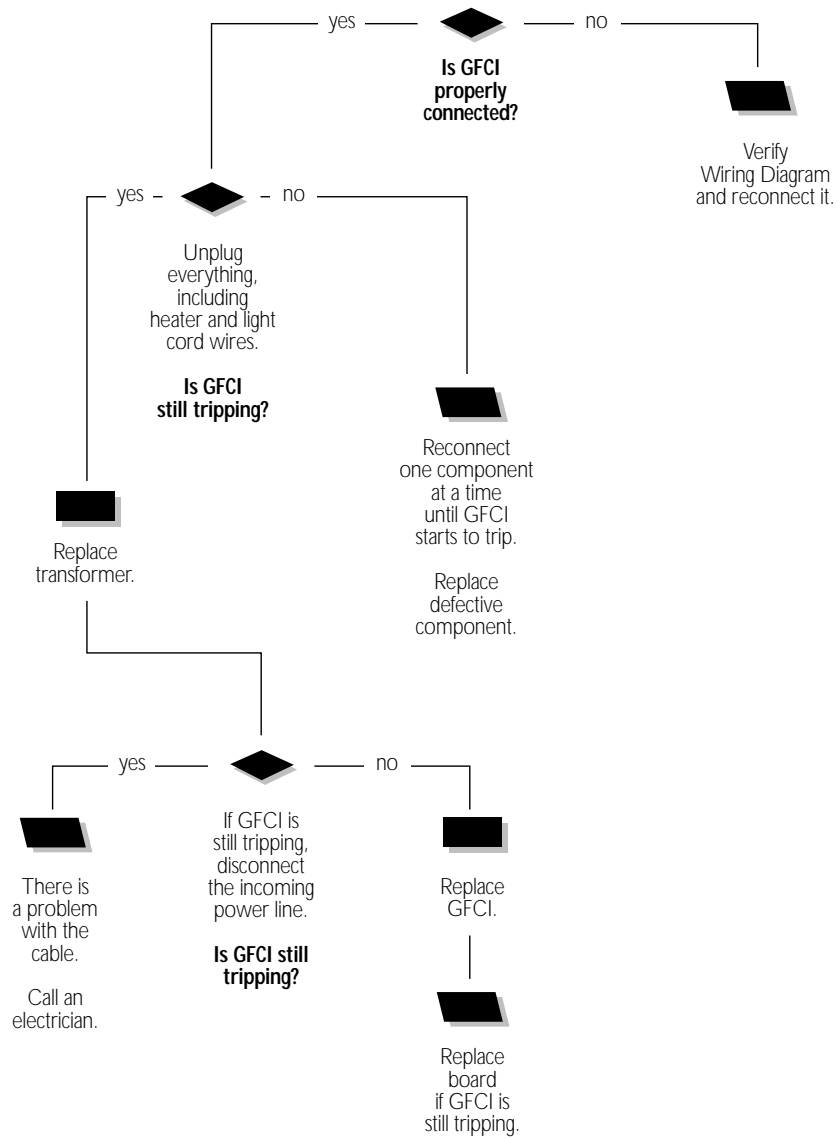
**Input supply wiring 3 x 16A**  
Low level programming set for "In3"



# GFCI Flow Chart

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

A Ground Fault Circuit Interrupter (GFCI) is an electrical safety protection device that guards against electrocution by monitoring and reacting to incoming and outgoing current levels. The spa may or may not be installed with a GFCI depending on local electrical standards and laws.



## GFCI Trips!

*If all connections are made, but nothing seems to be working, you probably have a power supply problem. Carry out the following tests to identify and correct the problem:*

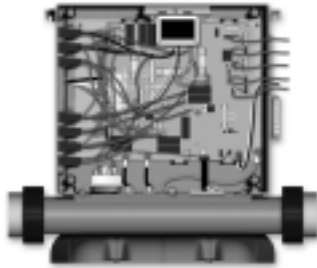
**Note that for new installations, GFCI trippings due to miswiring are common.**

**If breaker is wired properly, GFCI trippings may occur when total amount of current drawn by spa exceeds breaker rating. This is highly unlikely as each spa pack output is individually fused, and fuses will blow before GFCI trips.**

**A current leak to ground will also cause GFCI to trip. If any of the components is faulty and a leak occurs, 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.

If it stops tripping, reconnect one component at a time until GFCI starts tripping. Replace defective component.



- 3• If GFCI is properly connected, but still tripping, unplug all outputs, including heater and light cord wires.



- 4• If GFCI still trips, replace transformer.

## GFCI Trips!

*If GFCI continues to trip even after having replaced the transformer, carry out the following tests to correct the problem:*



- 1• Disconnect incoming power lines.

If GFCI still trips, there must be a cable problem.

**Call an electrician!**

- 2• If GFCI stops tripping.  
Replace GFCI.
- 3• If GFCI trips again, replace board. (Refer to "How to Replace the Board" section of this manual.)



# Low Level Programming

Certain system operating parameters can be configured from the keypad. This is normally done by Gecko or the spa installer, but may be done any time.

## Low Level Programming:

To access low level programming, press and hold **Light** key for 20 seconds, after which the first parameter code should appear on the display.

Use **Up** and **Down** keys to modify parameter values and **Light** key to change from one parameter to the next. You must go through all parameters to exit this mode. If you do not wish to change a parameter, simply press **Light** key to advance to the next parameter.

## List of parameter configurations

### 1- Jet Pump 1

Display: P1 x  
Value of x: 1 = single-speed  
2 = **two-speed**

*Note: If selecting Jet Pump 1 single-speed, circulation pump will automatically be selected and "CP x" will not be displayed during low level programming.*

### 2- Jet Pump 2

Display: P2 x  
Value of x: 0 = not installed  
1 = single-speed  
2 = **two-speed**

### 3- Blower

Display: BL x  
Value of x: 0 = not installed  
1 = single-speed  
2 = **two-speed**

### 4- Light

Display: LI x  
Value of x: 1 = single-intensity  
2 = **two-intensity**

### 5- Fiber box

Display: Fb x  
Value of x: 0 = **not installed**  
1 = combined with  
12 VAC light  
2 = On/Off

*Note: If fiber box is installed, light can be turned on or off only.*

### 6- Ozone

Display: O3 x  
Value of x: 1 = **always on**  
2 = on every 30 minutes

### 7- Circulation pump

Display: CP x  
Value of x: 0 = not installed  
1 = **installed**

### 8- Current limiting option

Display: Cu x  
Value of x: 1 = HC (High Current),  
heater will not start  
if more than 3 out-  
puts are on at the  
same time (Jet Pump 1,  
Jet Pump 2, circulation  
pump or blower)  
2 = **LC (Low Current)**

### 9- Input current mode

Display: In x  
Value of x: 1 = **single-phase**  
(depends on Cu x)  
3 = triple-phase  
(no restrictions)


*Note: Current configuration is ignored if Input Current mode is 3-phase (In 3).*

### 10- Temperature unit


Display: Tu x  
Value of x: 1 = Fahrenheit  
2 = **Celsius**

## Wrong Temperature Flow Chart


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



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 the probe.



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

If it is, replace probe with spare.



Replace board 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 in order to carry out the following steps. Power may 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.

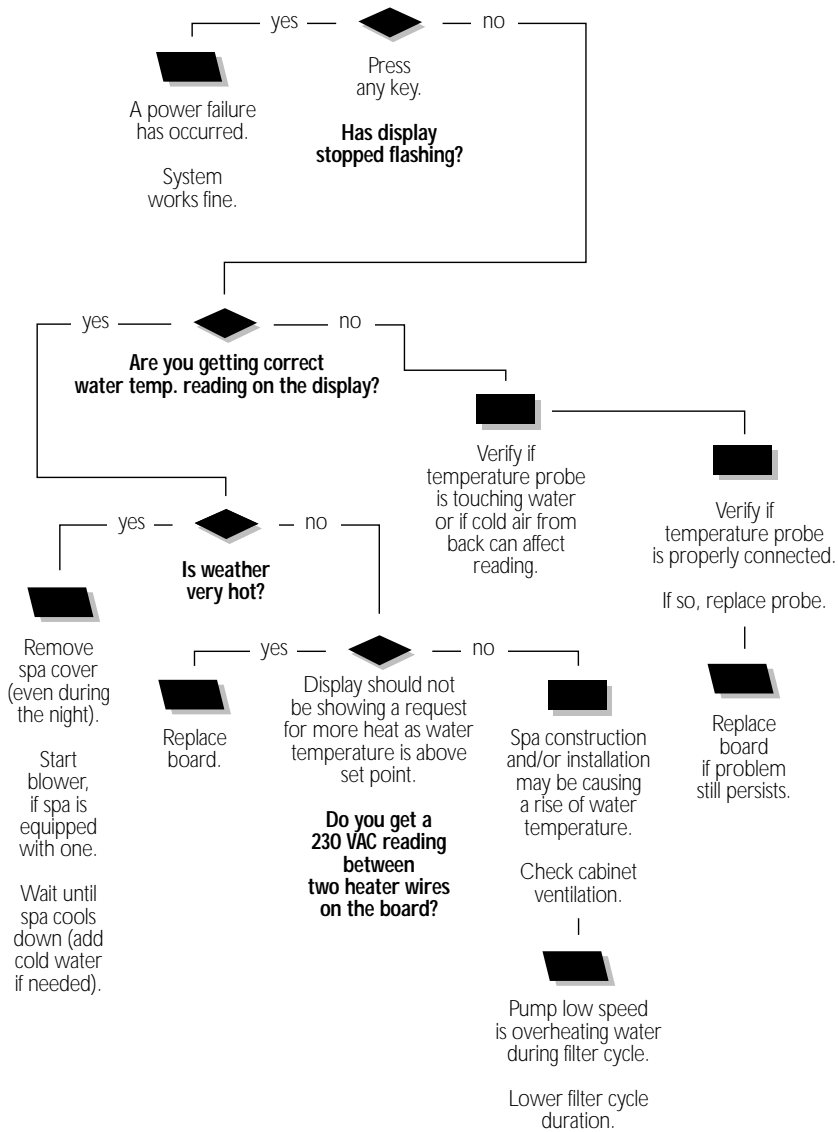
If wrong temperature is still displayed on keypad, replace probe with a spare and place probe head directly in spa water.

If problem is solved, replace probe.

- 4 • Replace board if problem persists.

# Display Flashing Flow Chart

On certain packs, if system detects temperature at 44°C 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 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.

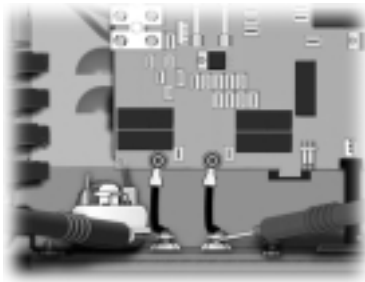
### If weather is very hot:

- 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• Display should not be showing a request for more heat as water temperature is above set point.



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

- 4• **If you do not read 230 VAC**, check cabinet ventilation first. If problem persists, pump low speed may be overheating water during filter cycle.

Enter Programming mode and shorten filter cycle duration.

- 5• **If you do read 230 VAC**, replace board.

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

## Display Is Flashing

*If digital thermometer water temperature reading is 44°C or higher and keypad display is not 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 board if display is still flashing.

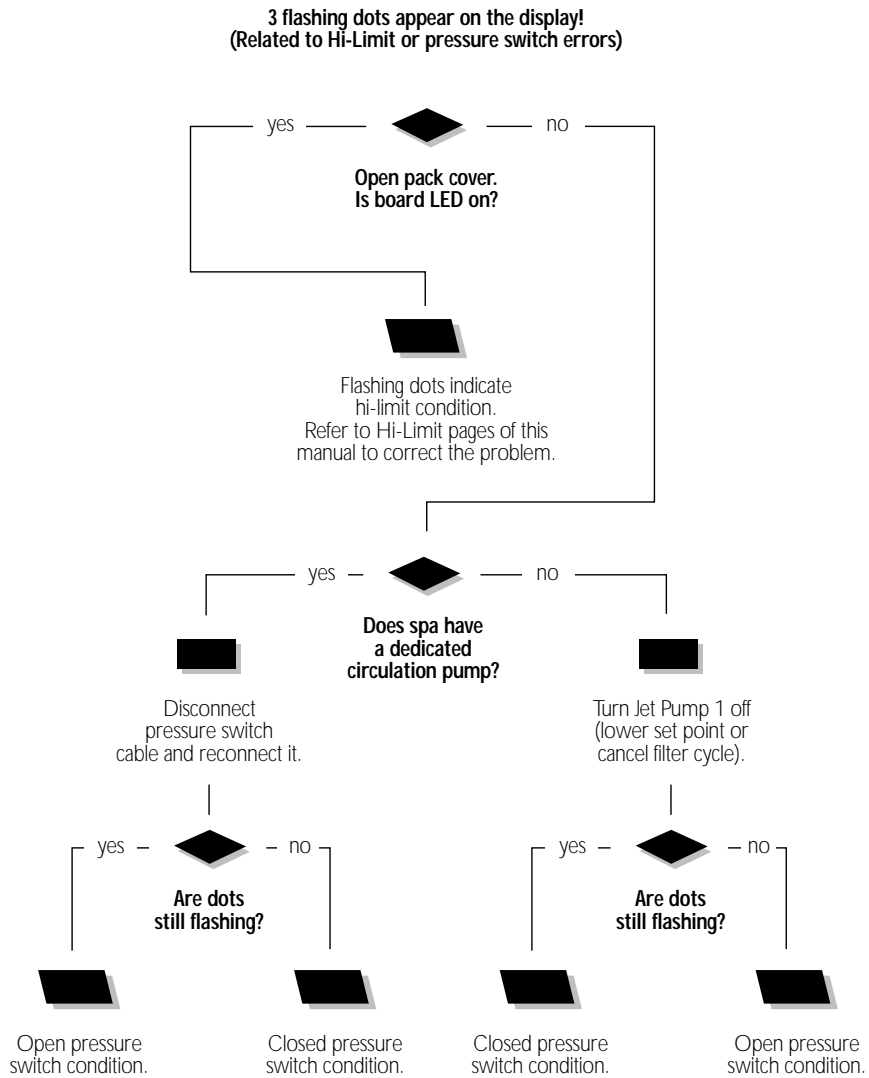
(Refer to "How to Replace the Board" section of this manual.)



# Flashing Dots Flow Chart

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

It is recommended that the service person verify low level programming and plug wiring against the wiring diagram before starting troubleshoot.





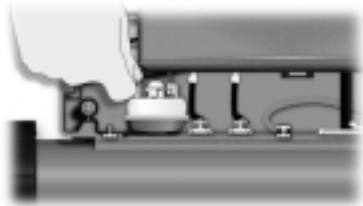
## Flashing Dots Displayed!

*If 3 flashing dots appear on keypad display, carry out the following tests to correct the problem:*



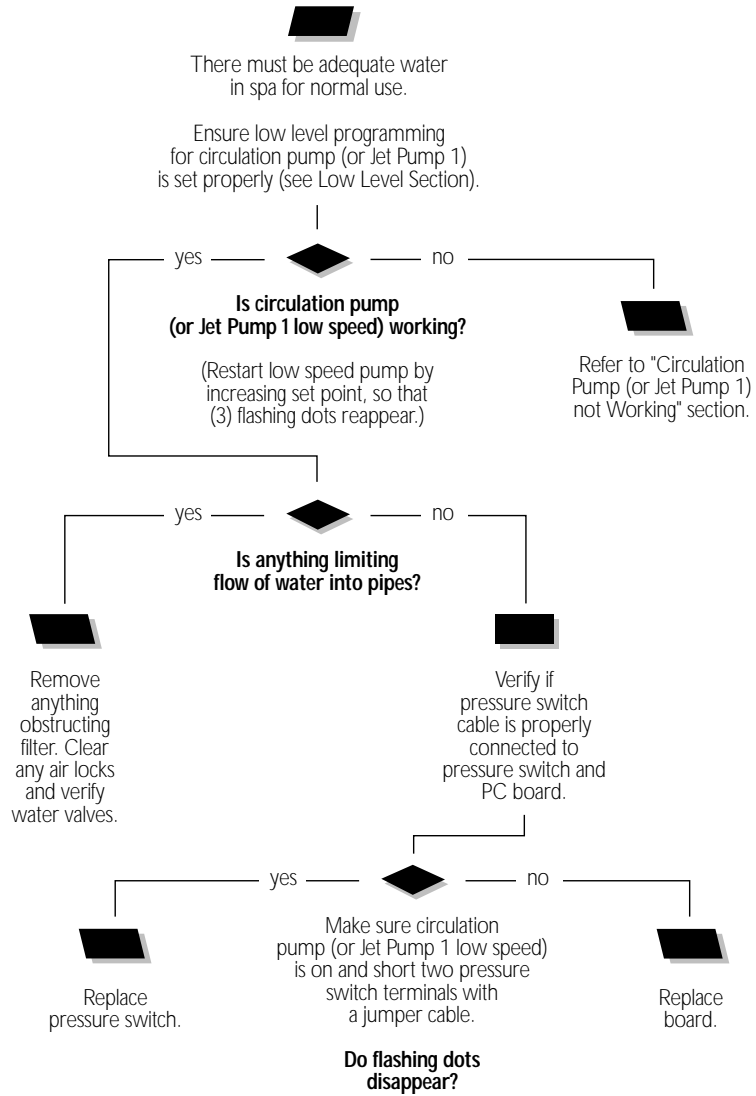
Flashing dots

- 1• Verify if board LED is on. If so, refer to Hi-Limit pages of this manual.
- 2• If not, check if the system is equipped with a circulation pump. If it is, disconnect pressure switch cable and reconnect it.
- 3• If flashing dots are still displayed, you have an open pressure switch condition. If not, you have a closed pressure switch condition.
- 4• If system is not equipped with a circulation pump, turn Jet Pump 1 off. Lower set point or cancel filter cycle.
- 5• If flashing dots are still displayed, you have a closed pressure switch condition. If not, you have an open pressure switch condition.



# Open Pressure Switch Flow Chart

If open pressure switch error condition occurs (problem with the pressure switch: jet pump is on but no water pressure detected), follow Trouble-shooting Flow Chart below to identify the problem:



## Open Pressure Switch Error Condition

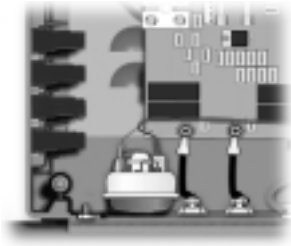
*Open pressure switch error condition indicates a pressure switch problem. If system does not detect any pressure when pump is manually or automatically turned on, an open pressure switch error condition will occur.*

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

**The heater will automatically shut down when an open pressure switch error condition occurs.**

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

- 1• Verify if circulation pump (or Jet Pump 1) is working. If pump is not working, refer to circ. pump (or Jet Pump 1) section of this manual.
- 2• Make sure low level programming for circulation pump (or Jet Pump 1) is set correctly (see Low Level Section).
- 3• Clean filter and check for air blockages, closed gate valves or anything that could be restricting water flow.
- 6• **If open pressure switch error condition disappears**, replace switch.
- 7• **If open pressure switch error condition persists**, the problem may be either with switch cable or board.
- 8• Replace board if open pressure switch error condition still persists.  
(Refer to "How to Replace the Board" section.)

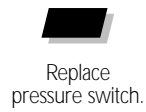


- 4• Verify if pressure switch cable is properly connected to pressure switch and PC board.
- 5• Ensure adequate water flow in the heater and short two pressure switch terminals with jumper cable.

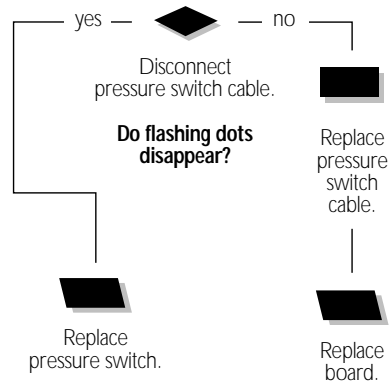
# Closed Pressure Switch Flow Chart

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

## CIRCULATION PUMP SYSTEM: 3 dots flashing - circ. pump running



## NON-CIRCULATION PUMP SYSTEM: 3 dots flashing - low speed pump off

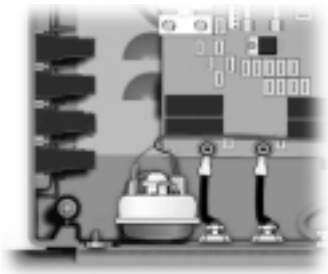


## Closed Pressure Switch Error Condition

*Closed pressure switch error condition indicates a pressure switch problem. If the system detects any pressure when jet pump is off, a closed pressure switch error condition will occur.*

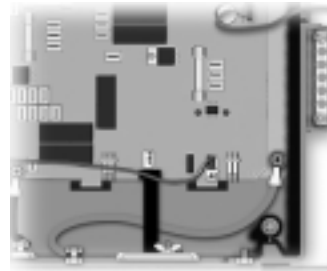
**Flashing dots must appear on keypad display and circulation pump must be turned ON (or Jet Pump 1 low speed must be turned OFF)!**

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



1• Disconnect pressure switch cable (if system is not equipped with a circulation pump).

2• If flashing dots disappear, replace pressure switch.



3• If flashing dots are still displayed, reconnect pressure switch cable.

4• Replace pressure switch if flashing dots still appear after reconnecting pressure switch cable.

5• Replace board if flashing dots do not reappear on keypad display. (Refer to "How to Replace the Board" section of this manual.)

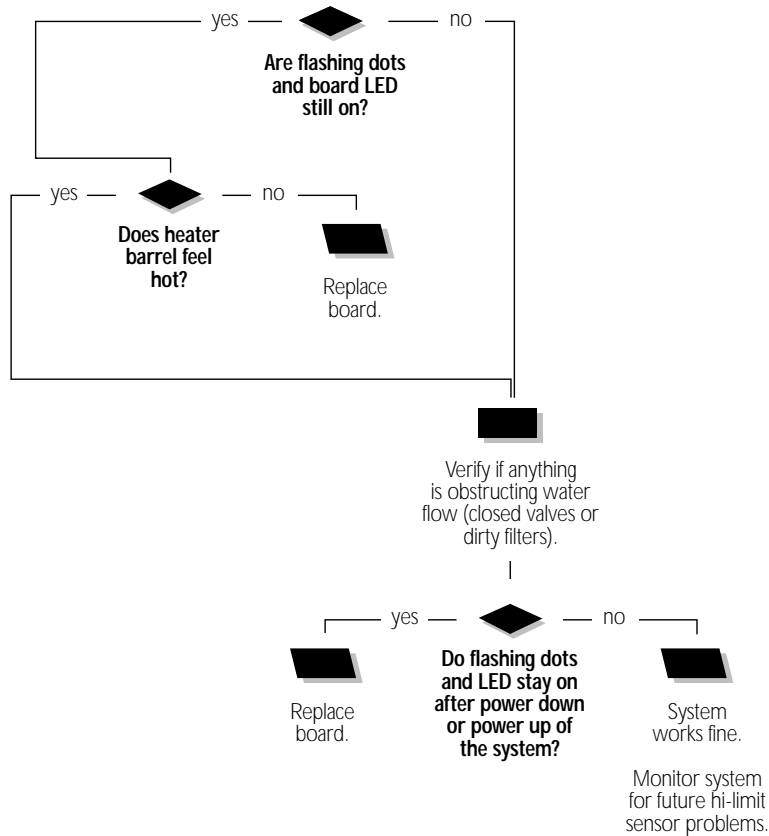
# Hi-Limit Flow Chart

If 3 flashing dots appear on keypad display and board LED is on (potential Hi-Limit sensor problem), follow Troubleshooting Flow Chart below to identify the problem:

The Hi-Limit error is related to the Hi-Limit sensor. This means that the system has shut the heater down because water temperature at the heater barrel has reached 48°C.

Turn GFCI off then on between each step to reset the system.

Replace board only if the hi-limit error condition is not removed by resetting GFCI after the initial (3) dots and board LED are seen, and (3) dots and board LED return.



## Hi-Limit Error Condition

The Hi-Limit error condition is related to the Hi-Limit sensor. Carry out the following tests to identify and correct the problem:

The Hi-Limit error is related to the Hi-Limit sensor. This means that the system has shut the heater down because water temperature at the heater barrel has reached 48°C.

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Replace board only if the hi-limit error condition is not removed by resetting GFCI after the initial (3) dots and board LED are seen, and (3) dots and board LED return.

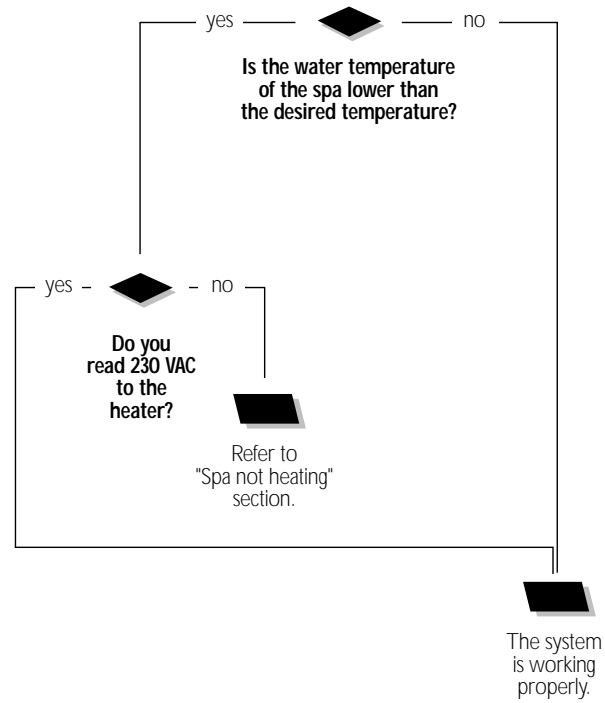


Flashing dots

- 1 • Check if flashing dots and board LED are displayed.
- 2 • If so, check if heater barrel feels hot.  
  
If it's hot, verify if anything is obstructing the flow of water (closed valves or dirty filter).
- 3 • If it's not, replace board.
- 4 • If flashing dots and board LED are not displayed, verify if anything is obstructing the flow of water (closed valves or dirty filter).
- 5 • Power your spa up or down.  
If flashing dots and LED are still displayed, replace board.

## Smart Winter Mode Chart

If jet pumps have started up on several occasions and "AFP" alternates with water temperature on display, follow this Troubleshooting Flow Chart to identify the problem:





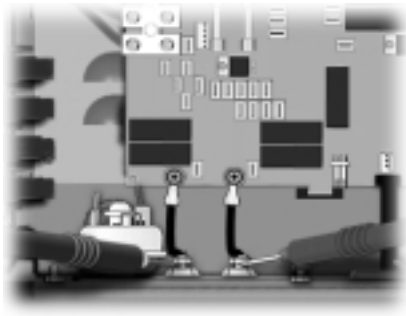
## Smart Winter Mode

*If jet pumps have started up several times and "AFP" alternates with water temperature on display, the system has detected water cold enough to freeze the pipes and has gone into the protective Smart Winter Mode.*



An irregularly flashing "Filter Cycle" indicator means that the system has stopped filtering after 3 hours because water temperature exceeds Set Point by more than 1°C. If the temperature cools down before the scheduled end of the cycle, filtering will resume for the remainder of the programmed cycle duration.

- 1 • With a digital thermometer, verify the temperature of the water.



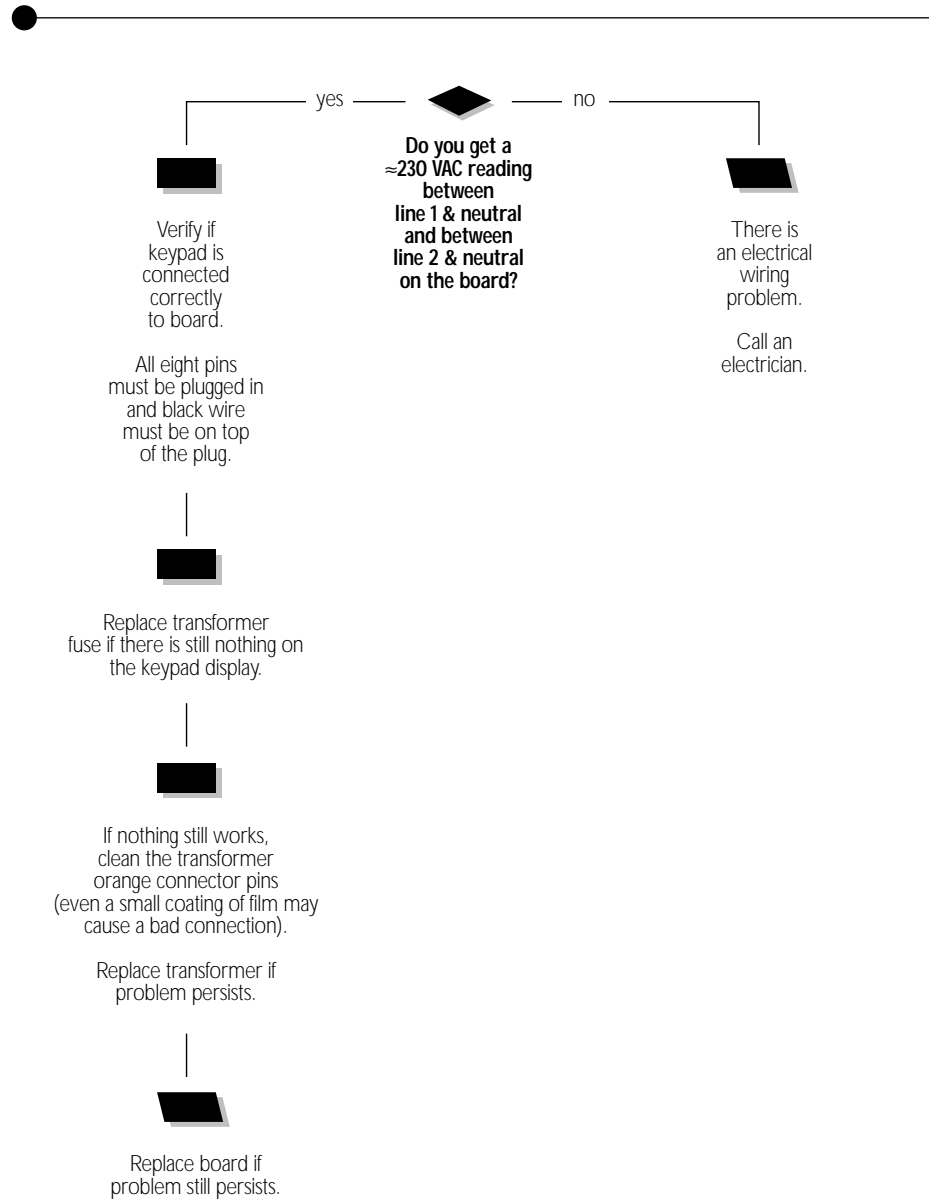
- 2 • If the water temperature is lower than the desired temperature, measure the voltage to the heater.

If your reading is approx.  $\approx 230$  VAC, Smart Winter Mode is working properly.

If you do not read  $\approx 230$  VAC, refer to the "Spa not heating" section of this manual.

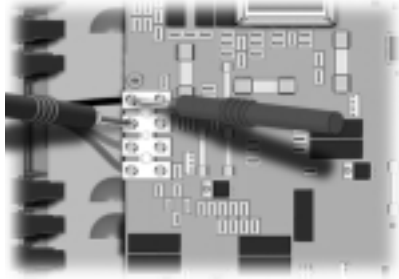
# "Nothing Seems to Work" Flow Chart

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



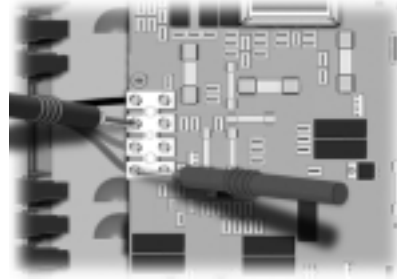
## Nothing Seems to Work!

*If everything is connected, but nothing seems to work, there is probably a power supply problem. Carry out the following tests to identify and correct the problem:*



- 1 • On the terminal block, measure voltage between line 1 and neutral.

You should get  $\approx 230$  VAC.



- 2 • Measure voltage between line 2 and neutral.

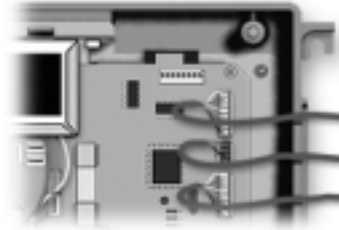
You should get  $\approx 230$  VAC.

- 3 • If you do not get good readings, this indicates an electrical wiring problem.

**Call an electrician!**

## Nothing Seems to Work!

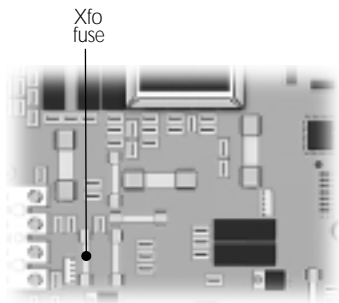
*If you are getting good voltage readings, but nothing seems to work, carry out the following tests to correct the problem:*



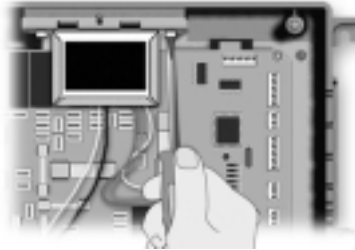
- 1 • Verify if keypad is correctly connected to the board.



- 3 • If nothing works, clean transformer orange connector pins. Even a small coating of film may cause a bad connection.



- 2 • Replace transformer fuse if nothing still seems to work.

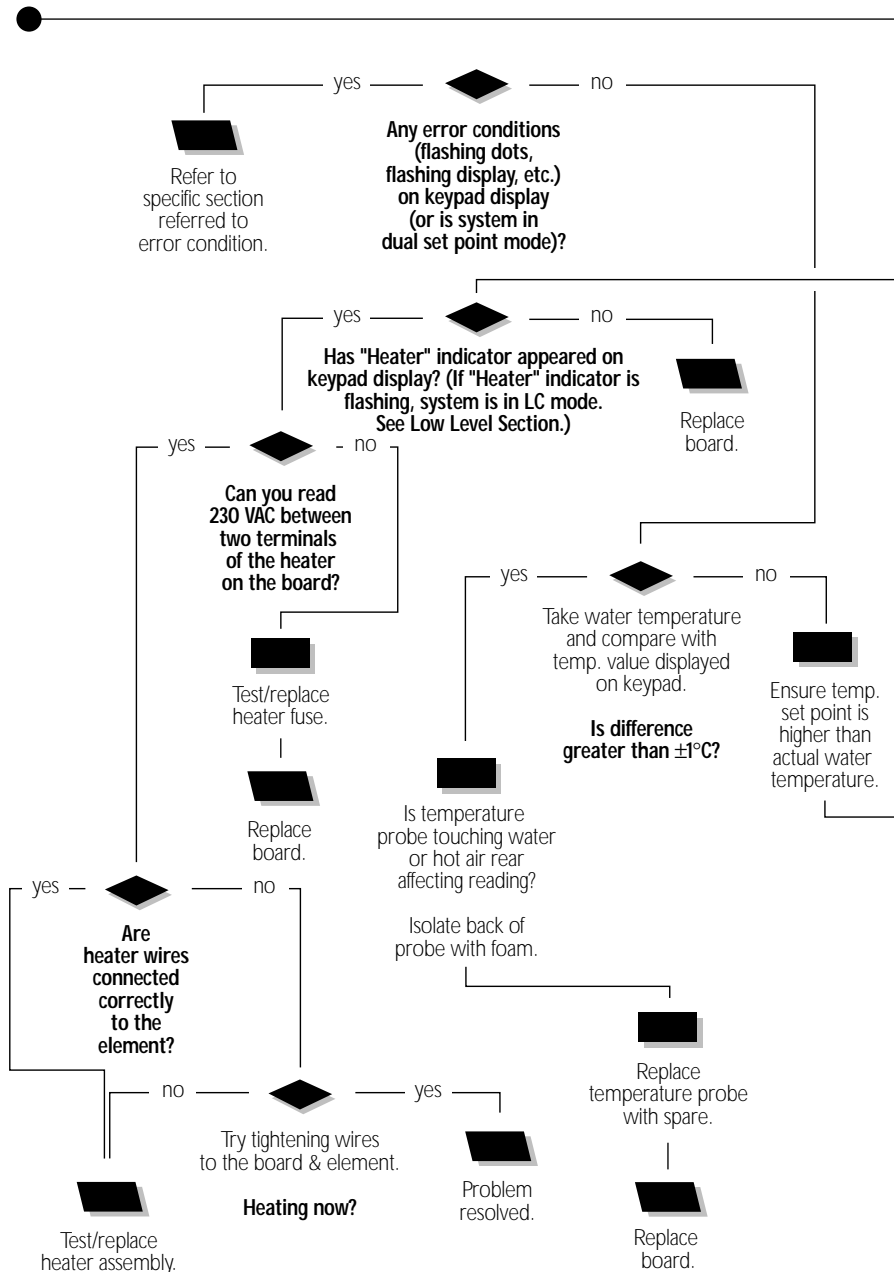


- 4 • Replace transformer if problem persists.
- 5 • If problem is still not solved, replace board. (Refer to "How to Replace the Board" section.)



# "Spa Not Heating" Flow Chart

If the spa does not seem to be heating the water, follow the 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• Check for an error condition on keypad display. If there is one, refer to section indicated by the error condition (or check if system is in dual set point mode).



- 2• If there is no error, use a digital thermometer to take water temperature and compare your reading with the temperature value on the keypad display.

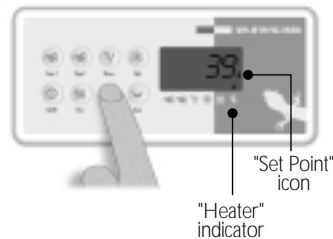
If values are different ( $\pm 1^{\circ}\text{C}$ ), verify if sensor is touching water or if hot air from rear could be affecting readings.



Use foam to isolate behind the probe.

- 3• Replace temperature probe with a spare one.
- 4• If spa is still not heating, replace the board.

- 5• If values are not different, try to increase temperature by raising temperature set point. Press **Heat** key to increase set point.



- 6• Verify if "Heater" indicator appears on the display.

"Heater" indicator lights up when heater is on. It will flash if more heat has been requested, but heater has not yet started or if system is in LC mode (see Low Level section).

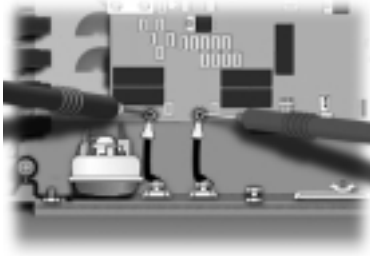
If "Heater" indicator appears on the display, refer to the **next** page.

If "Heater" indicator does not appear on the display, replace board.

## Spa Not Heating!

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

**If "Heater" indicator lights up on the display:**



- 1 • Remove plastic cover and measure voltage between two heater screws on the board.

Replace board if you are not getting a reading of  $\approx 230$  VAC.



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

If not, tighten wires to board and element.

- 3 • If problem persists, test/replace the heater assembly.

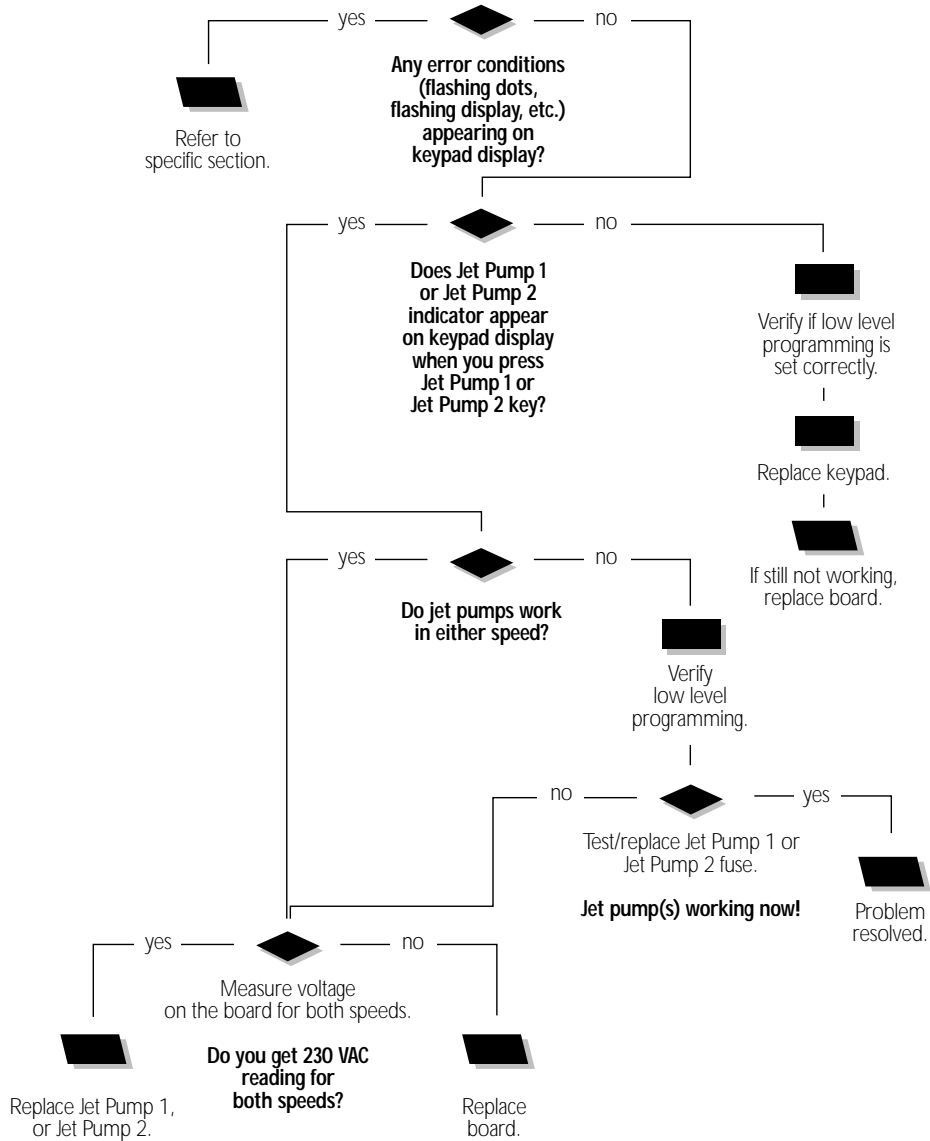




# Jet Pump Flow Chart

If Jet Pump 1 or Jet Pump 2 is not working, follow Troubleshooting Flow Chart below to identify the problem:

Jet Pump speeds and use are determined by spa specifications and Low Level Programming.



## Jet Pump 1 Does Not Work!

If Jet 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 jet 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 volts. This is normal.

It is important to measure voltage when jet pump is connected to pack. Power must remain On.



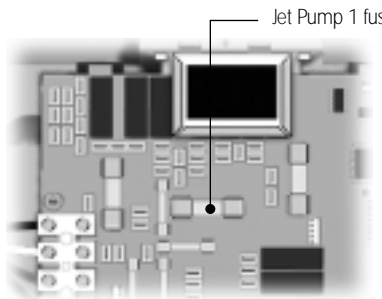
"Jet Pump 1" indicator



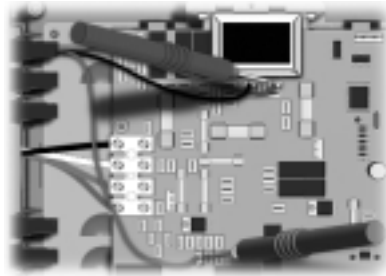
- 1• Check for an error condition on keypad display. If yes, refer to specific section.
- 2• Verify if "Jet Pump 1" indicator appears on keypad display when you press **Jet Pump 1** key.  
  
If "Jet Pump 1" indicator does not appear, check low level programming.
- 3• If "Jet Pump 1" indicator does not appear, use a spare keypad to verify if keypad is defective.  
  
If it is, replace keypad.  
  
If not, replace board.
- 4• If "Jet Pump 1" indicator appears on keypad display when **Jet Pump 1** key is pressed, verify if Jet Pump 1 works in any of the speeds.

## Jet Pump 1 Does Not Work!

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

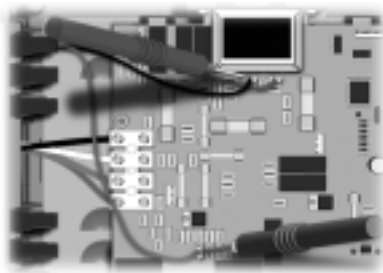


- 1• If Jet Pump 1 does not work in either speed, test/replace Jet Pump 1 fuse.
- 2• If replacing the fuse does not work, or if Jet Pump 1 works in one of two speeds, take voltage reading on the board for both speeds.



- 3• Turn Jet Pump 1 to high speed and measure voltage between blue and brown wire connectors:  
230 VAC pump: P48 & P65

- 4• If voltage is correct, replace Jet Pump 1.



Turn Jet Pump 1 to low speed and measure voltage between blue and black wire connectors:  
230 VAC pump: P48 & P37

- 5• If not, replace board.

## Jet Pump 2 Does Not Work!

If Jet Pump 2 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 get a reading of around 60 volts. This is normal.

It is important to measure voltage when pump is connected to the pack. Power must remain On.



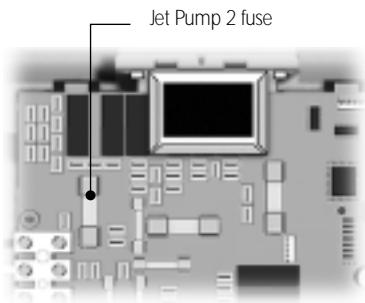
"Jet Pump 2" indicator



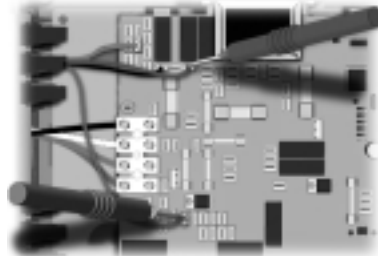
- 1 • Check for any error conditions on keypad display. If there are, refer to specific section.
- 2 • Verify if "Jet Pump 2" indicator appears on keypad display when you press **Jet Pump 2** key.  
  
If "Jet Pump 2" indicator does not appear, check low level programming first (see Low Level Section).
- 3 • If "Jet Pump 2" indicator does not appear, use a spare keypad to verify if spa keypad is defective.  
  
If it is, replace keypad.  
  
If not, replace board.
- 4 • If "Jet Pump 2" indicator appears on the display when you press **Jet Pump 2** key, verify if Jet Pump 2 is working.

## Jet Pump 2 Does Not Work!

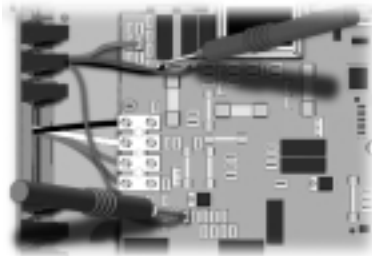
If Jet Pump 2 is not working, carry out the following tests to correct the problem:



- 1• If Jet Pump 2 does not work, test/replace Jet Pump 2 fuse.
- 2• If replacing the fuse does not work, or if Jet Pump 2 works in one of two speeds, take voltage reading on the board for both speeds.



- 3• Turn Jet Pump 2 to high speed and measure voltage between blue and brown wire connectors:  
230 VAC pump: P45 & P35
- 4• If voltage is correct, replace Jet Pump 2.



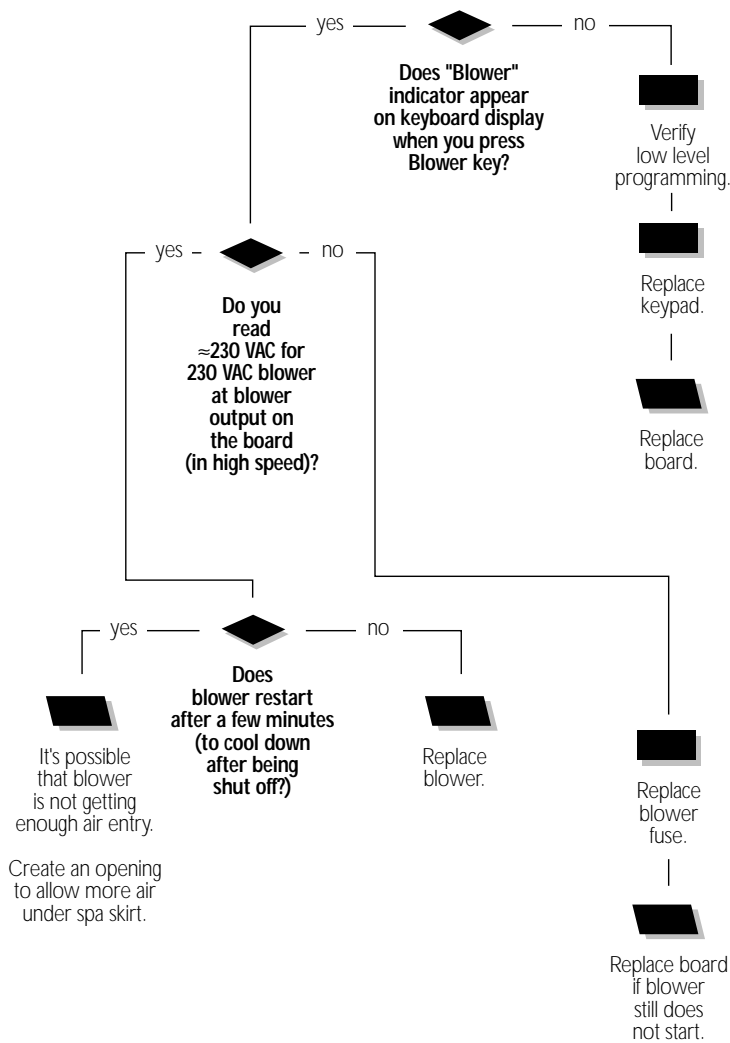
- 3• Turn Jet Pump 2 to low speed and measure voltage between blue and black wire connectors:  
230 VAC pump: P45 & P22

- 5• If not, replace board.



# Blower Flow Chart

If blower is not working, follow this Troubleshooting Flow Chart to identify the problem:





## Blower Does Not Work!

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

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

It is important to measure voltage when blower is connected to the pack. Power must remain On.



"Blower"  
indicator



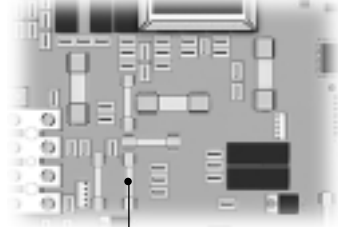
- 1• Verify if "Blower" indicator lights up on keypad display when you press **Blower** key. (triangular icon will flash when blower is in low speed).
- 2• Check if low level programming is set correctly.
- 3• If "Blower" indicator does not appear on keypad display, then replace keypad.
- 4• If "Blower" indicator still does not appear on keypad display, then replace the board.

## Blower Does Not Work!

If "Blower" indicator lights up on control display, but blower still is not working, carry out the following tests to correct the problem:



- 1• If indicator lights up on keypad while blower is in high speed, take voltage reading between blue and brown wire connectors:  
230 VAC blower: P80 & P76



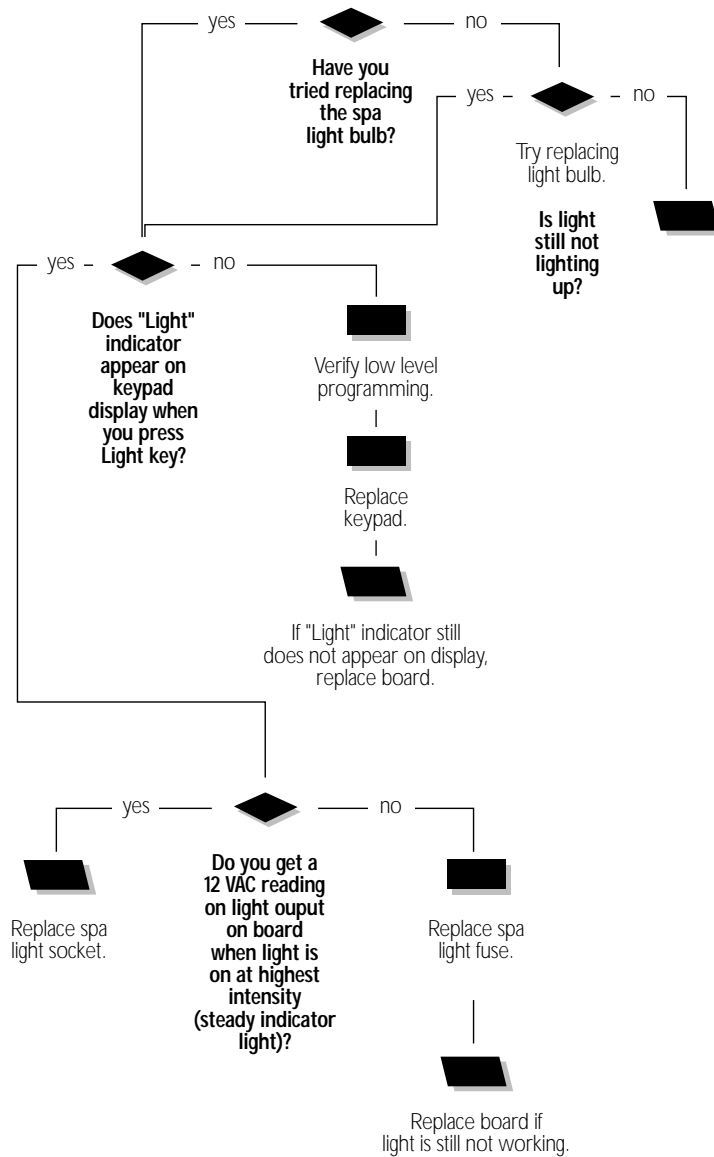
Blower fuse

- 2• Replace blower fuse if you do not get a high enough voltage reading.
- 3• Replace board if you still are not getting a voltage reading. (Refer to "How to Replace the Board" section.)
- 4• If you get good voltage reading, check if you can restart blower a few minutes after being turned off.  
  
Replace blower if it does not start after cool down period.
- 5• If blower does start up after cool down, it's possible that it is not drawing in enough air.
- 6• Enlarge the opening to allow more air into blower.



# Spa Light Flow Chart

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

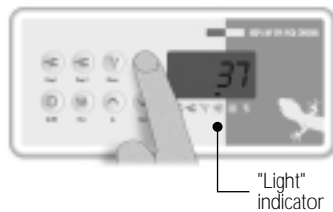


# Spa Light Does Not Work!

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

**It is important to measure voltage when light is connected to the pack. Power must remain On.**

- 1• The first step is to try replacing 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, (verify low level programming first) use a spare keypad to verify if spa keypad is defective.

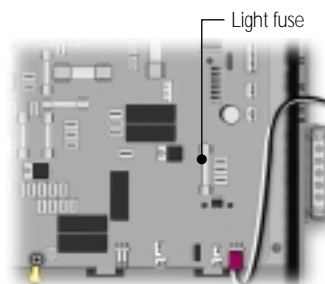
If it is, replace keypad.

If not, replace board.



- 4• If "Light" indicator appears, but light still is not working, make sure light is at highest intensity setting (indicator solid light, not flashing), remove plastic cover and measure voltage between opposite prongs of connector P14 on the board.

If you get  $\approx 12$  VAC, replace light socket.



- 5• If you are not getting a voltage reading, replace light fuse on the board.
- 6• If the problem persists, replace board. (Refer to "How to Replace the Board" section.)

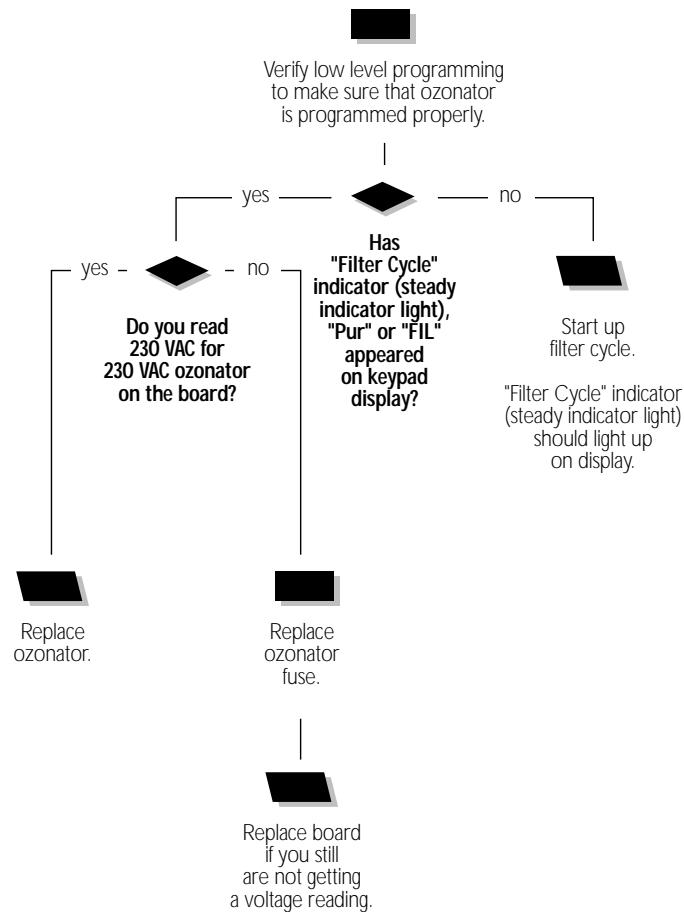
# Ozonator Flow Chart

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

If the water temperature exceeds the set point by more than 1°C for more than three hours, the system will cancel the filtration (note this feature is not available if the system is configured with a circulation pump).

If the user turns on a pump, blower or light during a filter cycle, the cycle will be interrupted and will only resume 40 minutes after last active output has been turned off (automatically or manually). This delay is to prevent excessive ozonator activation.

During this interval, "Filter cycle" indicator will flash in a different sequence (On: 1/2 sec., Off: 1/2 sec., On: 1/2 sec., Off: 1 1/2 sec.).



## 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, a "snubber" circuit is used 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 volts. This is normal.

It is important to take voltage reading with ozonator connected to the pack. Power must remain On.

N.B.: On new systems, if a pump, blower or light is turned on during filter cycle, the cycle will be interrupted and will resume only 40 minutes after the last active output has been turned off. This delay is to prevent excessive ozonator activation.

During this time, "Filter Cycle" indicator will flash in a different sequence (3 short, 1 long, 3 short, 1 long, etc.).

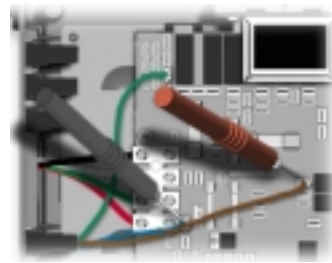
If the water temperature exceeds the set point by more than 1 °C for more than three hours, the system will cancel the filtration (note this feature is not available if the system is configured with a circulation pump).



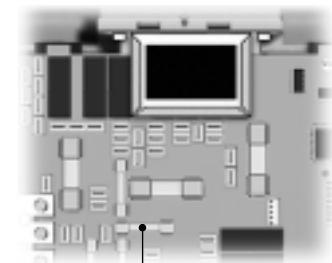
"Filter Cycle" indicator

1. Verify low level programming to make sure that ozonator is programmed properly.
2. Verify if "Filter Cycle" indicator (steady indicator light), "Pur" or "FIL" appears on keypad.

If not, start up a filter cycle (refer to MSPA-MP-CE User's Manual).



3. Measure voltage between ozonator blue and brown wire connectors:  
230 VAC ozonator: P46 & P30
4. Replace ozonator if you get a good voltage reading.

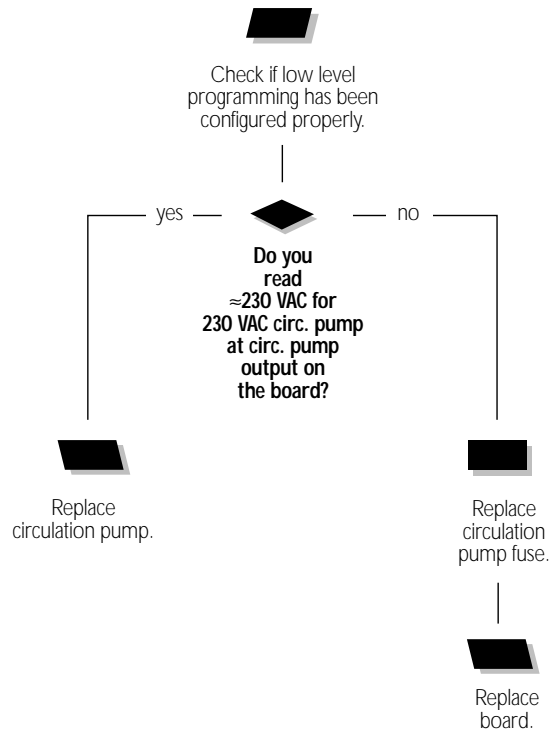


Ozonator fuse

5. Replace ozonator fuse if voltage reading is not high enough.
6. Replace board if you still do not get a voltage reading. (Refer to "How to Replace the Board" section.)

# Circulation Pump Flow Chart

If the circulation pump does not appear to be working, follow this Troubleshooting Flow Chart to identify the problem:





## Circulation Pump Not Working!

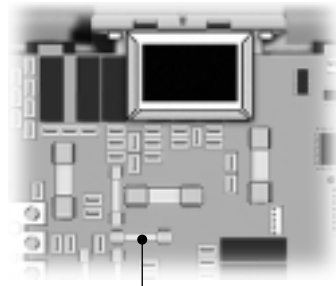
If your MSPA-MP has a defective circulation pump, carry out the following tests to correct the problem:

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

It is important to take voltage reading when circulation pump is connected to the pack. Power must remain On.



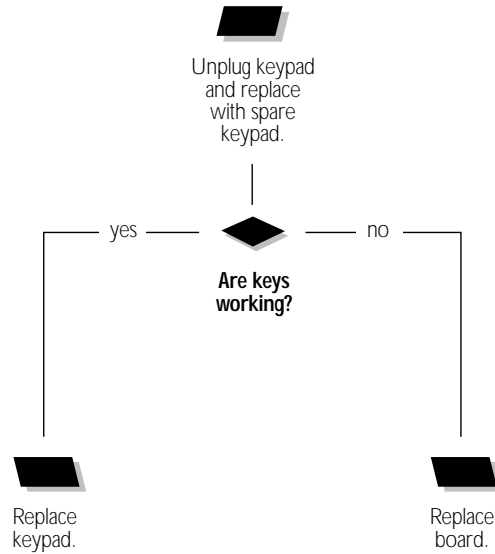
- 1 • Verify if low level programming is set properly.
- 2 • Remove plastic cover and take voltage reading between circulation pump's brown and blue wire connectors.  
230 VAC pump: P36 & P41



- 3 • If you do not get a voltage reading, replace board's circulation pump fuse.
- 4 • If problem persists, replace the board. (Refer to "How to Replace the Board" section.)

# Keys Flow Chart

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



## Keys Aren't Working!

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

---



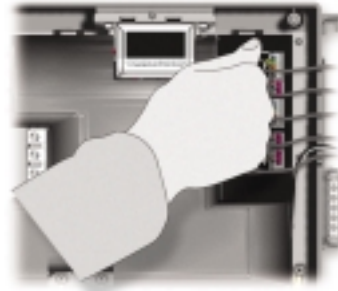
- 1 • Replace keypad with a spare keypad.
- 2 • Verify if keys respond correctly.
- 3 • If they do, replace keypad.
- 4 • If they do not respond, replace board.

## How To Replace The Board

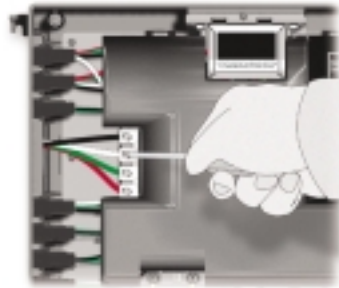
*When replacing the board, it is important to make sure to turn power off before proceeding.*



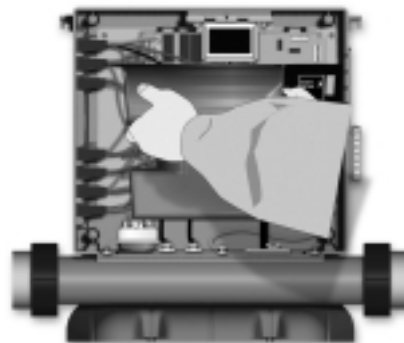
- 1 • Loosen 4 screws holding Spa Pack cover and remove.



- 3 • Unplug all connectors located in the upper right corner of the power box.



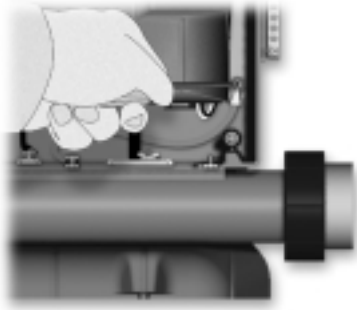
- 2 • Disconnect the breaker.  
Then disconnect power input cables.



- 4 • Insert the end of a flat screwdriver into the slots at the top of the plastic cover to remove black plastic cover protecting the circuit board.

Lift up the cover on both sides and remove it from the power box.

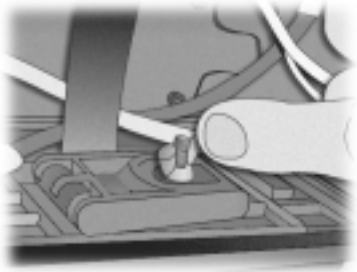
## How To Replace The Board



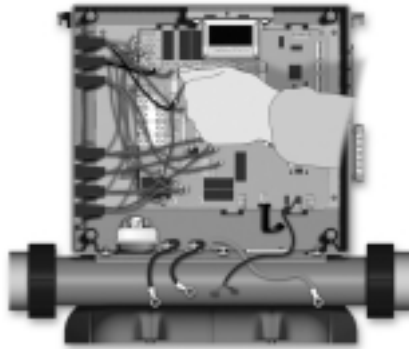
- 5• Disconnect ground cable.



- 7• Disconnect heater and pressure switch cables.

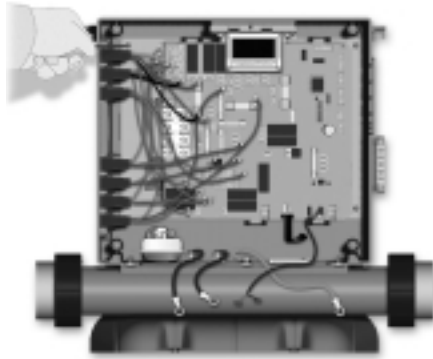


- 6• Remove wing nut, open plastic latch and carefully pull hi-limit rubber sensor out of place.



- 8• Disconnect J&J connectors from the board.

## How To Replace The Board



- 9• The circuit board is supported by a metal plate, with the entire assembly being held in place by 9 screws\* (one attached to ground wire). Remove screws.

\* There are 9 or 7 screws to remove, depending on the model.



- 10• Disengage the defective board/plate assembly (**Note:** transformer remains attached to board).

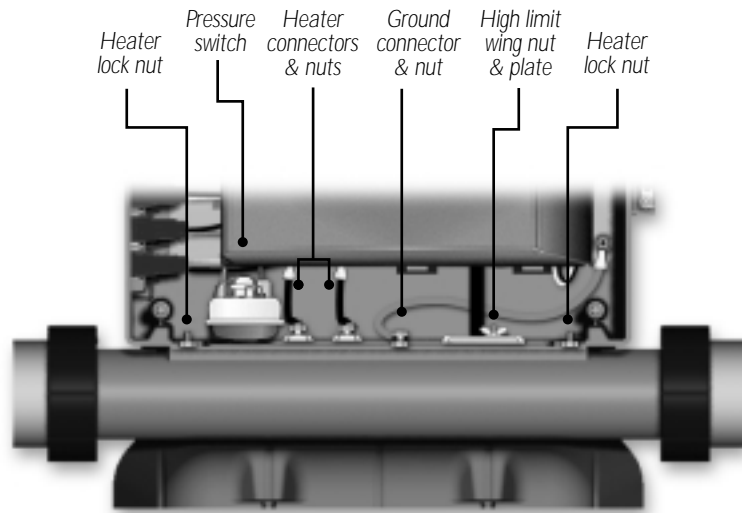
- 11• Correctly align replacement board/ metal plate assembly with original screw holes and reattach to board with 9 screws.
- 12• Use wiring diagram to re-connect all J&J connectors on the board.
- 13• Switch transformer from one plate to the other.
- 14• Re-connect heater and pressure switch cables.
- 15• Push hi-limit rubber sensor in place, tilt down hi-limit plastic latch and screw wing nut.
- 16• Re-connect ground cable.
- 17• Verify all connections. Reposition black plastic cover.
- 18• Re-connect all connectors located in the upper right corner of the power box.
- 19• Re-connect power input cables. Re-install Spa Pack cover and turn power back on.



## How To Replace The Heater

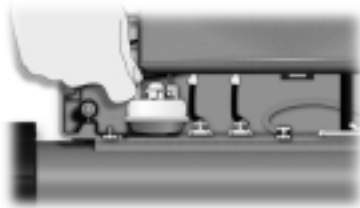
Follow instructions below to replace an MSPA-MP pack heater configured for standard **horizontal/front/bottom position**.

**Note:** Make sure to turn power to the pack off before proceeding.



**Important:** Before starting removal procedure be sure to:

- disconnect pack power input cables;
- ensure spa water valves are closed.



- 1• Use a pair of pliers to disconnect 2 wires (red and green) of cable connected to the top of pressure switch by pulling upwards (in no particular order).

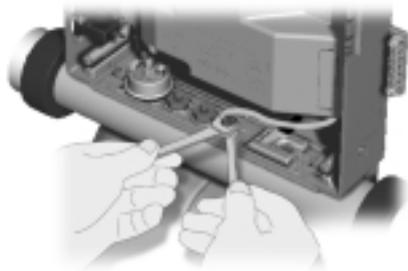


- 2• Using a 1/4" wrench to hold steady and a 3/8" wrench to carefully turn, loosen nuts securing 2 heater connectors to top of blue plastic support plate. Disengage heater wires. Be careful not to damage ceramic by twisting or bending.

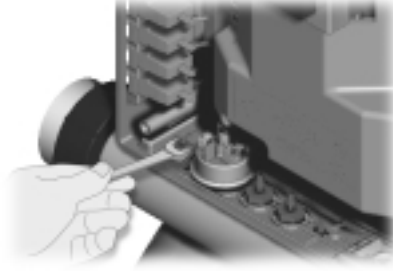


## How To Replace The Heater

Instructions to replace MSPA-MP pack heater configured for standard **horizontal/front/bottom** position.



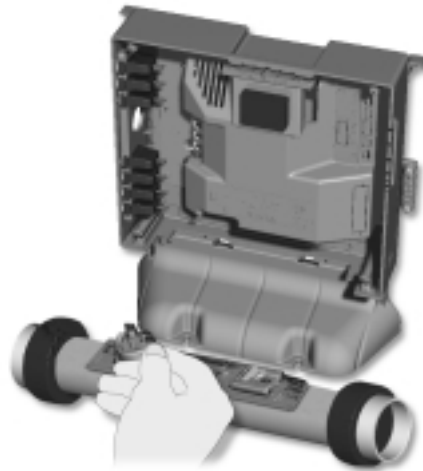
- 3• Use a wrench to loosen the two ground cable nuts (one on top of the other), and disengage ground wire (located immediately to the left of the high limit plate).



- 5• Remove two remaining nuts at opposite ends of blue plastic heater support plate, thus enabling you to free heater from spa pack.



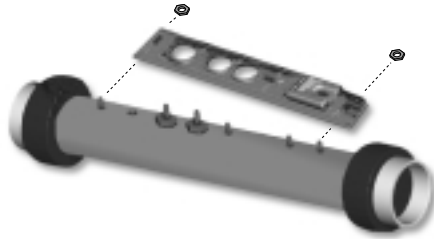
- 4• Unscrew the wing nut holding the high limit plate and release high limit rubber sensor from plate.



- 6• Remove pressure switch from plastic heater plate by turning counter-clockwise by hand.

## How To Replace The Heater

Instructions to replace MSPA-MP pack heater configured for standard **horizontal/front/bottom** position.



- 7• Remove two remaining jam nuts from each end of the support plate and remove plate from heater.
- 8• Finally, replace old heater with new one, and follow same procedure in reverse order to connect replacement heater to spa pack (start by mounting plate on new heater assembly and mount pressure switch using teflon tape).

### A few helpful hints when reconnecting:

- a) Do not turn wing-nut too tightly, just enough to hold rubber sensor in place.
- b) When reconnecting wires from heater to board, it is important to use two wrenches to hold nuts steady. Any bending or twisting may cause damage to ceramic.

Note: We recommend the use of an adjustable torque wrench (17 lb/in) to screw the top nut sufficiently. For more details, log on to:  
[www.metapacks.com/a\\_tn.htm](http://www.metapacks.com/a_tn.htm)  
(GTN 9906)

## How To Test a Fuse

*The best way to test a fuse is to do a comparative test. Simply viewing a glass fuse will not always confirm that it is burned out. A weak cartridge fuse will still test fine when checked with an ohmmeter.*



- 1• Select volts AC on your meter. If your meter is not autoranging, select range 0-300 volts.



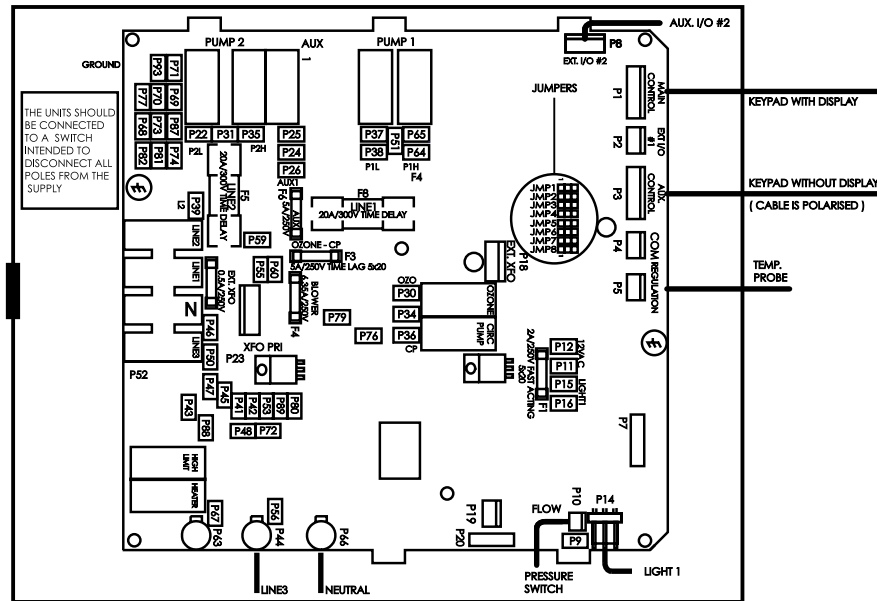
- 2• Using your probes, touch or connect the black probe to the neutral connection of the power supply terminal block.

- 3• Use the red probe to touch both sides of the suspect fuse. Make sure to touch to the fuse holder, not the fuse body. This confirms that the contact fuse body to fuse holder is good.
- 4• Compare the voltage readings when you contact both sides of the fuse holder. These should be the same or more than 5% difference.
- 5• A difference of more than 5% indicates a weak fuse. If one of the readings is zero (0), the fuse is open and must be replaced.

Note: When replacing a fuse, always use a fuse of the same current rating as the one being replaced. Injury to you and/or those using the spa could occur by overfusing a circuit.

# Wiring Diagram

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



<b>Jet Pump 1</b>		<b>Blower</b>		<b>Circulation Pump</b>	
Voltage	230 v	Voltage	230 v	Voltage	230 v
Green / Ground	P71	Green / Ground	P79	Green / Ground	P68
Black / Low Speed	P37	Brown / Line	P76	Brown / Line	P36
Brown / High Speed	P65	Blue / Neutral	P80	Blue / Neutral	P41
Blue / Neutral	P48				
<b>Jet Pump 2</b>		<b>Ozone</b>		<b>Light (24W max.)</b>	
Voltage	230 v	Voltage	230 v	Light 1	P14
Green / Ground	P93	Green / Ground	P87	Light 2 / 12 VAC	P12 P16
Brown / High Speed	P35	Brown / Line	P30		
Blue / Neutral	P45	Blue / Neutral	P46		
Black / Low Speed	P22				
<b>Auxiliary</b>		<b>Fiber Box</b>		<b>Heater (3 Kw)</b>	
Voltage	230 v	Voltage	230 v	Ground	GND
Green / Ground	P77	Green / Ground	P74	Line	P63
Brown / Line	P34	Brown / Line	P24	Neutral	P66
Blue / Neutral	P47	Blue / Neutral	P53		



## 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 power 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

*\* Gecko produces custom repair kits specific to the spa manufacturer's needs.*



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# MSPA-MP-SR4-CE SERVICE MANUAL

COMPLETE SERVICE GUIDE WITH  
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Low Level Programming

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