

Micro-SPA Power Spa Pack SERVICE MANUAL

• by Gecko Electronics Inc. •

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



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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.

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.



Tools & Parts

Tools, test equipment and components needed to carry out Micro-SPA power spa pack service calls.

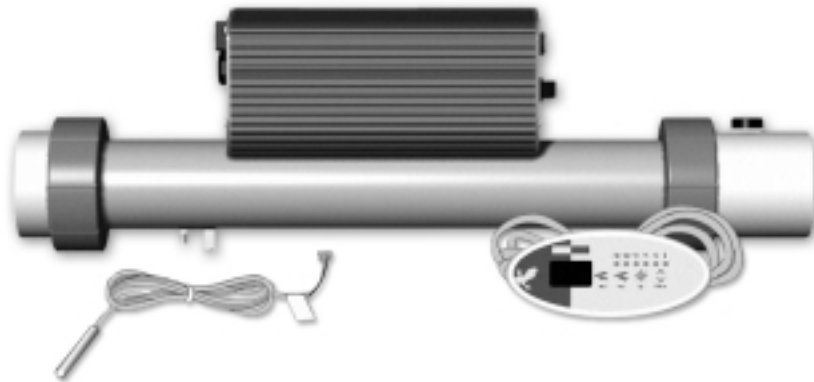
Required tools:



*Pliers
Phillips & flat screwdrivers
11/32" nut driver
1/4" open end wrench*

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

Required pack parts:



*Regulation sensor
Micro-SPA complete pack
Top side control (keypad)*

Gecko Electronic Inc. sells Professional Repair Kits that include everything needed for Micro-SPA power spa pack servicing. For more information, go to the last page of this manual.

Keypads

Micro-SPA single- and dual-pump systems are available with a selection of keypads.

All the procedures and instructions described in the next pages are applicable to Micro-SPA systems equipped with one of the following keypads. Please note that the TSC-9 model is used throughout this manual to illustrate specific actions.



TSC-9 Keypad (2" • 4 1/2")

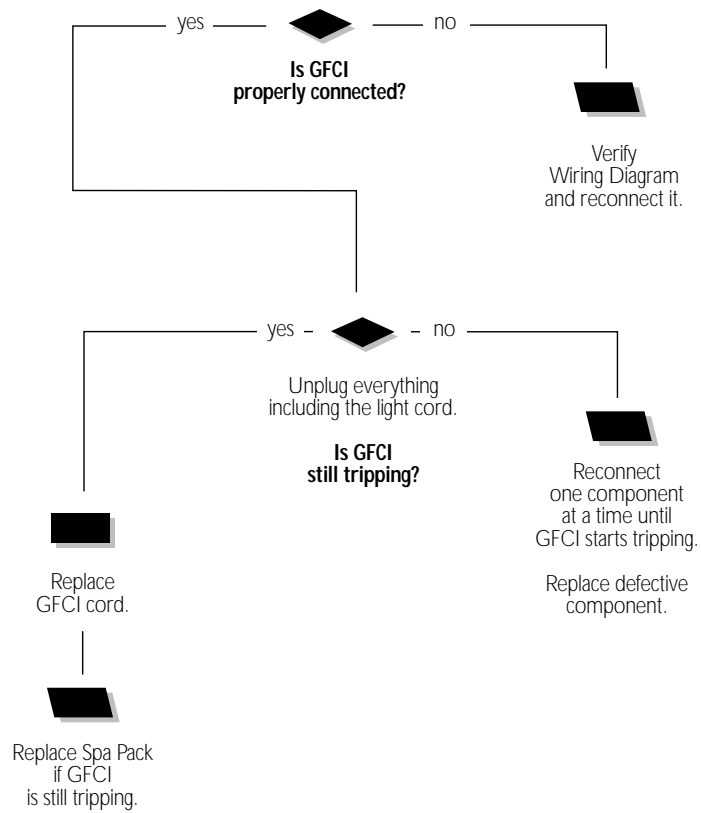
Electrical Wiring

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

-
- 1 • Carry out a visual inspection to check for signs of miswiring. Refer to supplied wiring diagrams.
Call an electrician if necessary.

GFCI Flow Chart

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

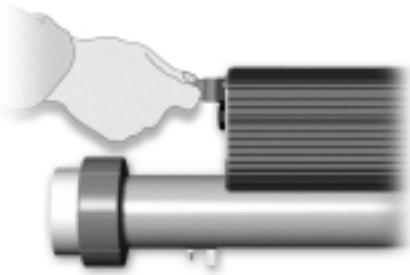


GFCI Trips!

If all connections are made, but nothing seems to be working, you probably have a power supply problem. If GFCI continues to trip even after having replaced the transformer, carry out the following tests to 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.

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



- 1• If GFCI is properly connected, but still tripping, unplug all outputs the light cord.
- 2• If GFCI still trips, replace GFCI cord. Replace Spa Pack if problem persist.

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

Low Level Programming

Some Micro-SPA spa pack parameters can be modified by changing the Low Level Programming.

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- Current limiting option

Display: HC or LC

Value of x: **HC = High Current breaker.**

LC = Low Current breaker.

2- Pump speed configuration

Display: SPx

Value of x: 1 = 1 speed

2 = 2 speed

3- Temperature unit

Display: Tux (TuC)

Value of x: **F = Fahrenheit**

C = Celsius

4- Light

Display: L1 or L2

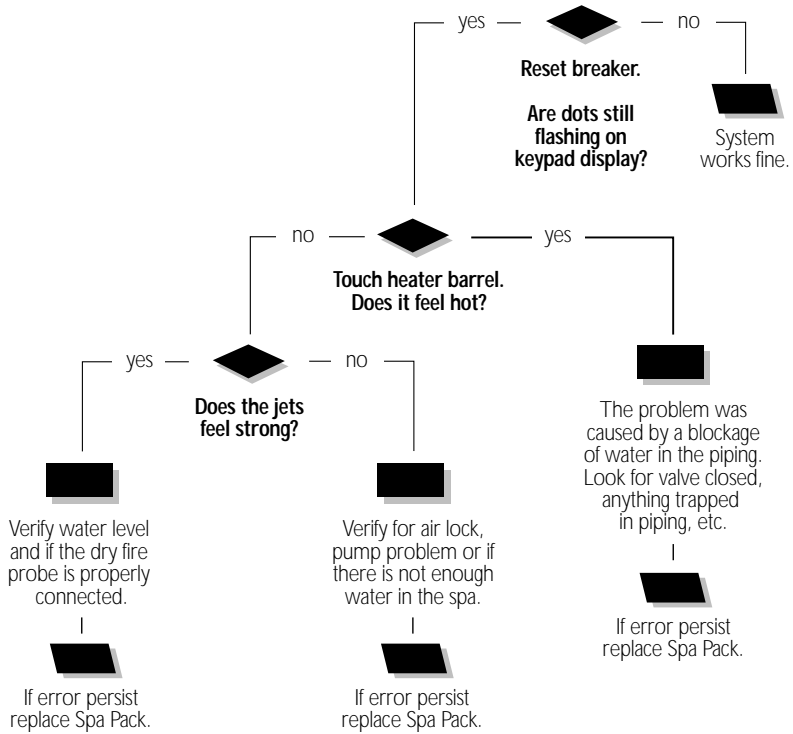
Value of x: L1 = 1 intensity

L2 = 2 intensity

Flashing Dots Flow Chart

If 3 flashing dots appear on keypad display, follow Troubleshooting Flow Chart below to identify the problem. If spa is equipped with a pressure switch, refer to page 13.

3 flashing dots appear on the display!



Flashing Dots Displayed

If 3 flashing dots appear on keypad display, follow the troubleshooting chart below to identify the 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• Shut power off and power your spa up again to reset the system. If error persist, verify if Pump 1 is working. If pump is not working right, refer to pump section of this manual.
- 5• If so, verify water level and if the dry fire probe is connected properly.
- 6• If condition still persist replace spa pack.



- 7• If you do not have adequate water flow coming out the jets check for air locks, pump problems or insufficient water level in the spa.
- 8• If condition still persist replace spa pack.

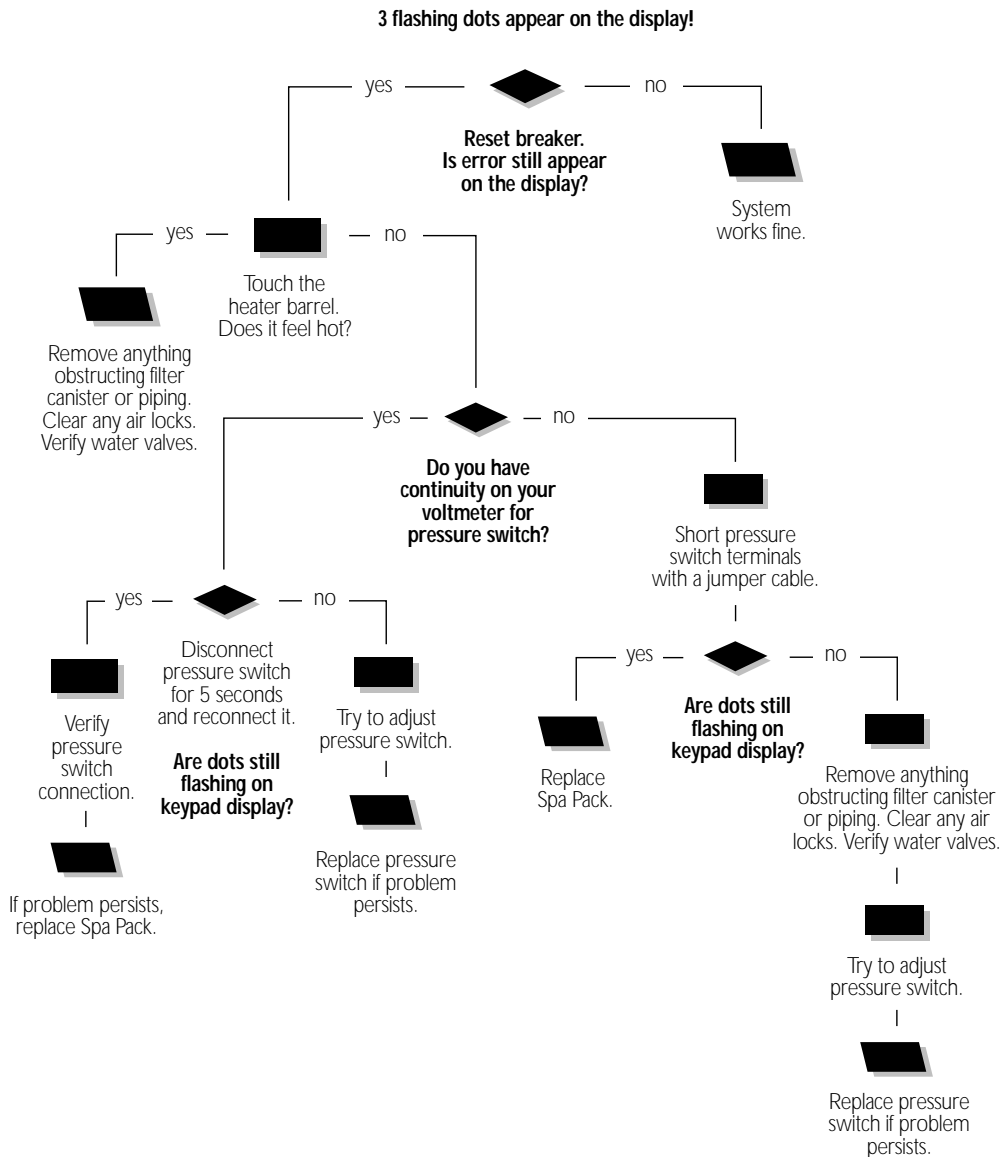
- 2• If Pump 1 is working properly, turn it on by pressing **Pump 1** key (or start pump 1 by increasing the set point).

Check if heater barrel feels hot. If so, shut system off and remove any obstructions in the piping ie: dirty filter, clogged jets, etc. Clear any air locks and verify water valves.

- 3• If condition still persist after power up replace spa pack.
- 4• However if the error code is still present and the heater is at a normal temperature: check the flow of water coming out the jets and make sure the flow is strong.

Flashing Dots Flow Chart

Note: for spa equipped with a pressure switch only.
If 3 flashing dots appear on keypad display, follow Troubleshooting Flow Chart below to identify the problem.



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 an error condition if spa filter is dirty or if something restricts flow of water in the piping.

The heater will automatically shut down when error condition occurs.

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

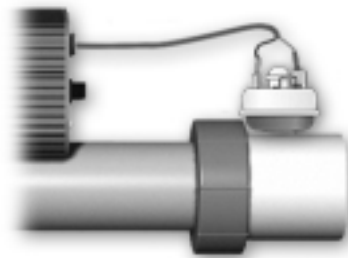
- 1• Shut power off and power your spa up again to reset the system. If error persist, verify if Pump 1 is working. If pump is not working right, refer to pump section of this manual.



- 2• If Pump 1 is working properly, turn it on by pressing **Pump 1** key (or start pump1 by increasing the set point). Check if heater barrel feels hot.

If so, shut system off and remove any obstructions in the piping ie: dirty filter, clogged jets, etc. Clear any air locks and verify water valves.

- 3• If heater is at a normal temperature: with Pump 1 working, test continuity on the pressure switch.
- 4• If you detect continuity, go to step # 10.



- 5• If you do not detect continuity, verify if pressure switch is properly connected to pressure switch.
- 6• Ensure adequate water flow in the heater and short the two pressure switch terminals with a 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 the 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.)

Flashing Dots Displayed

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



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

Remove metal cover and replace cable.

- 9• Replace spa pack if error condition still persists. (Refer to "How to Replace Spa Pack" section.)



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

Disconnect pressure switch cable for 5 seconds and reconnect it.

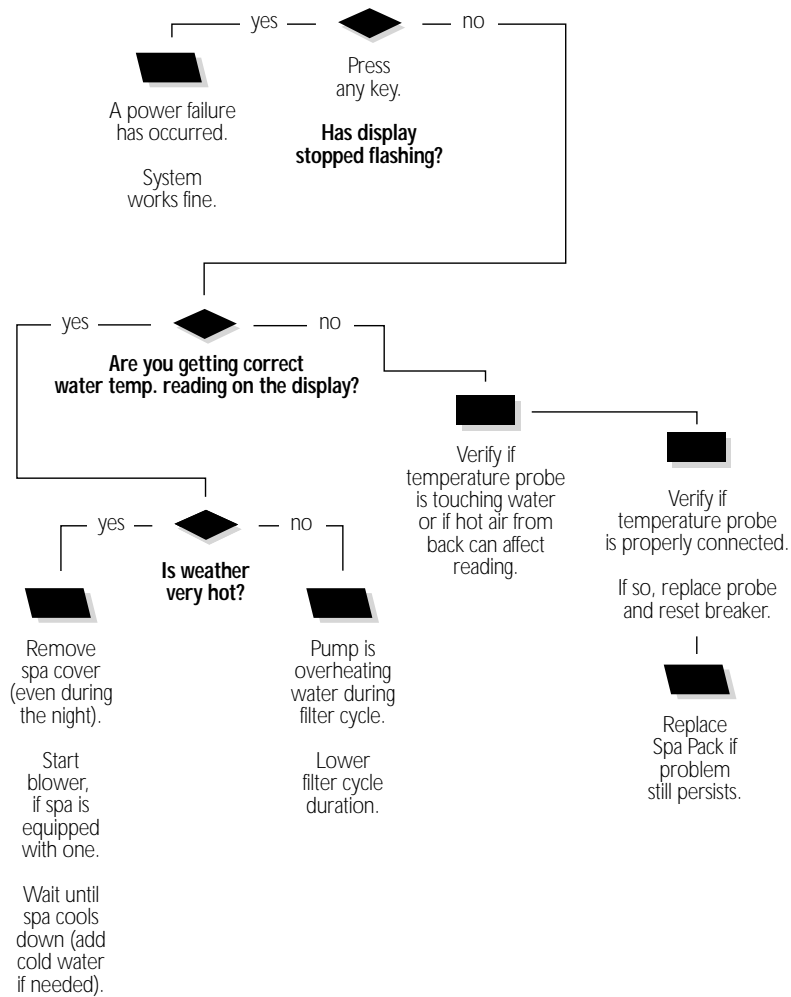
If error condition disappears, adjust pressure switch, if it is a new installation (less than two years) or replace it.

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

- 11• Verify pressure switch connection and replace spa pack if error condition still persists. (Refer to "How to Replace Spa Pack" section of this manual.)

Display Flashing Flow Chart

On Micro-SPA 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).
- 3 • Enter Programming mode and shorten filter cycle duration.
- 4 • Remove spa cover. With a voltmeter, read the voltage between the two heater wires on the board.

If hot weather is not a factor:



- 2 • Lower set point below current water temperature.
"Heater" indicator should disappear from keypad display.

Display Is Flashing

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 hot air from the back could be affecting readings.

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

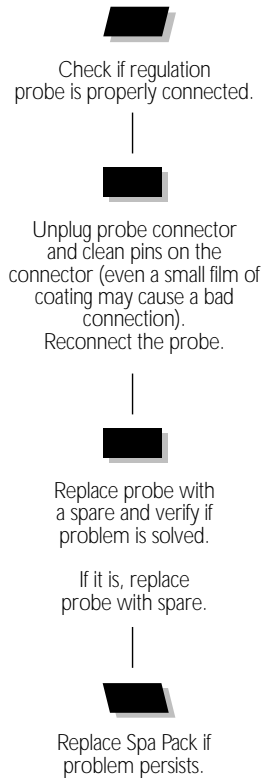


- 2• Make sure temperature probe is properly connected.
If it is, replace probe.
- 3• Replace spa pack if display is still flashing.

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

Wrong Temperature Flow Chart

On Micro-SPA 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:



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 pins on the connector. Even a small film of coating may cause a bad connection.

- 3 • Reconnect the probe.

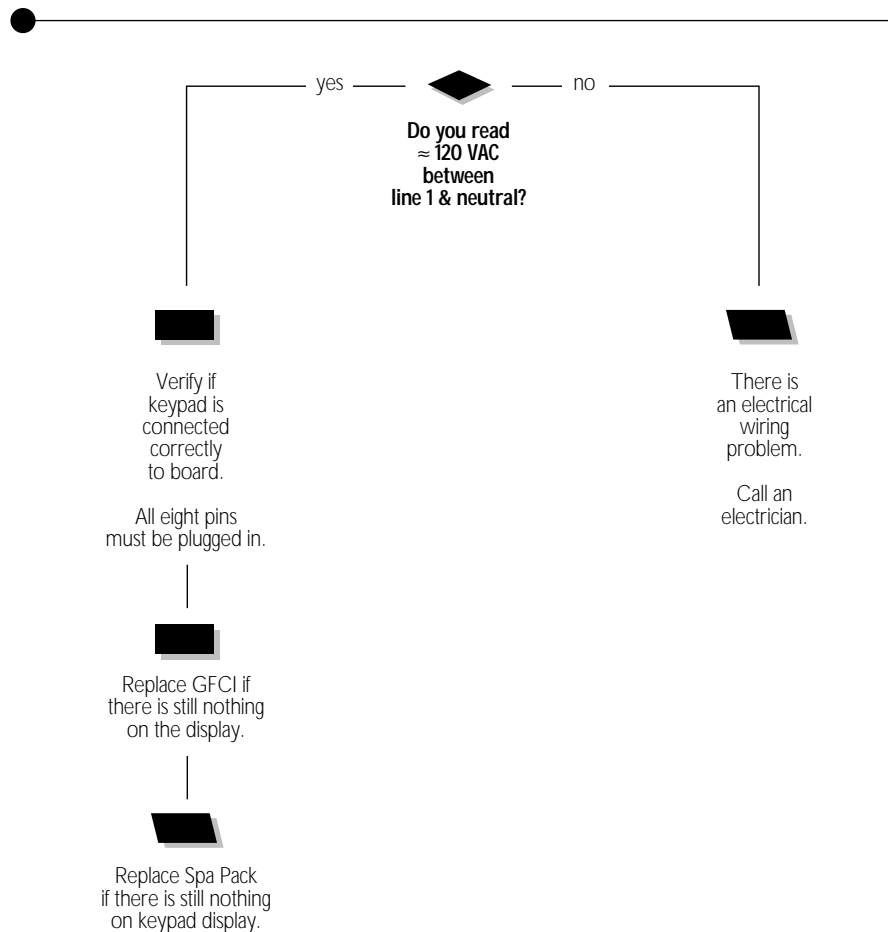
If wrong temperature is still displayed, replace probe with a spare and place probe head directly in spa water.

If problem is solved, replace probe.

- 4 • Replace spa pack if problem persists.

"Nothing Seems to Work!" Flow Chart

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



Nothing Works!

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:

For 120 VAC systems:



- 1 • Measure voltage between line 1 and neutral.
You should get ≈ 120 VAC.
- 2 • If you do not get good readings, this probably indicates an electrical wiring problem.

Call an electrician!

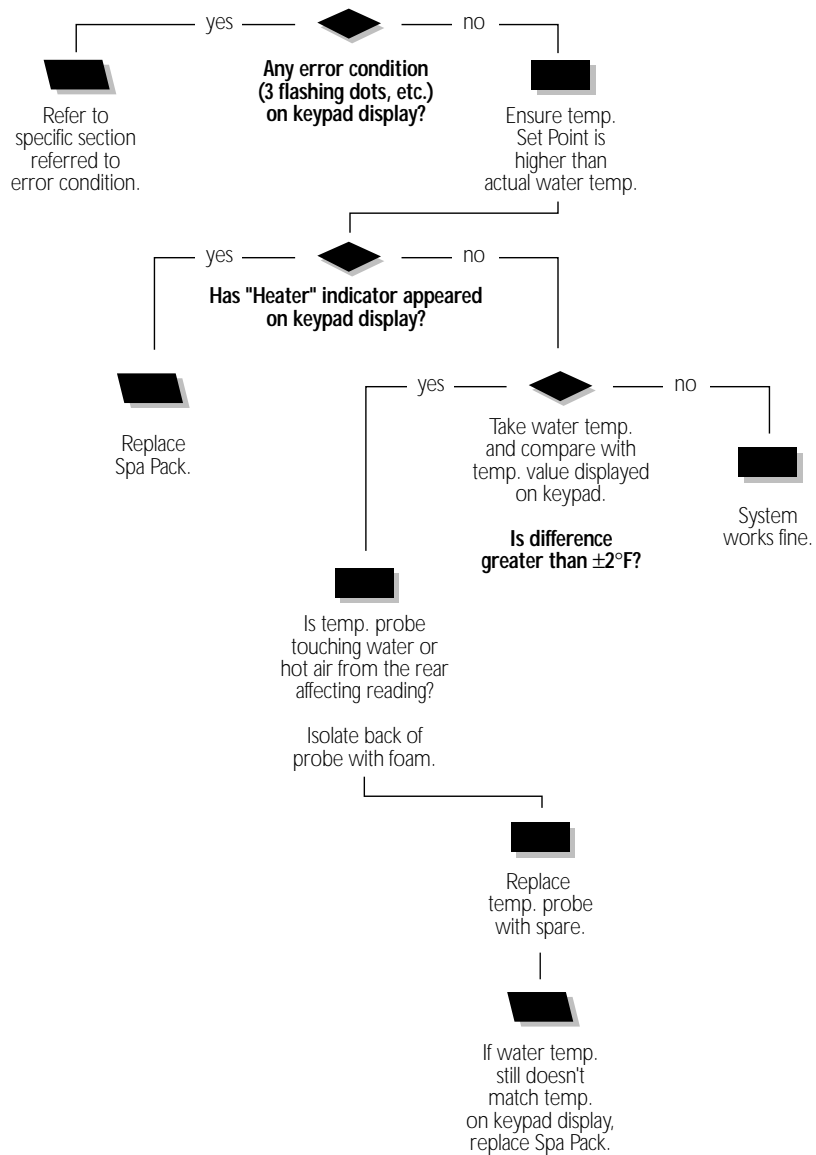
If you are getting good voltage readings, but nothing seems to work, carry out the following tests to correct the problem:



- 1 • Verify if keypad is correctly connected to the side of the Micro-SPA.
- 2 • If nothing works, replace GFCI cord.
- 3 • If nothing works, replace Spa Pack.

"Spa Not Heating" Flow Chart

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

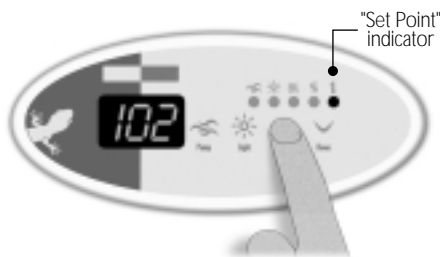


Spa Not Heating!

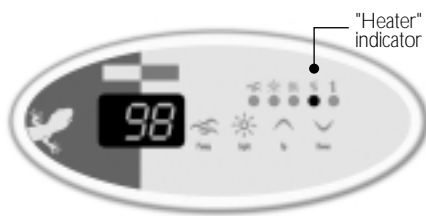
If the spa does not appear to be heating the water, carry out the following tests to correct the problem:



- 1• Check for an error condition on keypad display. If there is one, refer to section indicated by the error condition.



- 2• If there is no error condition, try to increase temperature by raising temperature Set Point. Press **Up** arrow key to increase Set Point.



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

"Heater" indicator will be on when heater is on. It will flash if more heat has been requested, 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 ($\pm 2^{\circ}\text{F}$), verify if sensor is touching water or if hot air from rear could be affecting readings.

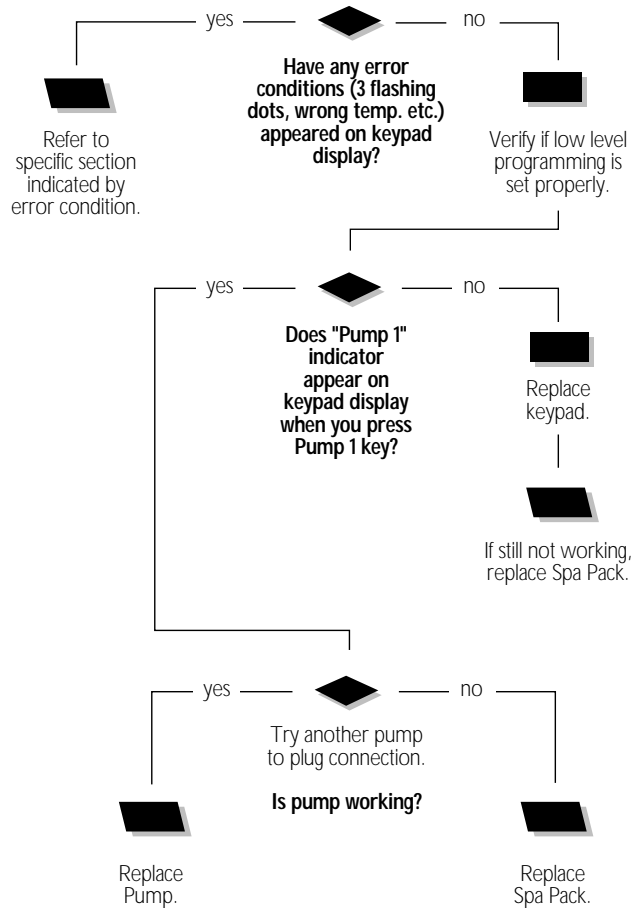
- 5• If so, use foam to isolate behind the probe.



- 6• If not, replace temperature sensor with a spare one.
- 7• If spa is still not heating, replace Spa Pack.
- 8• If "Heater" indicator lights up on the display, but the spa is still not heating, replace Spa Pack.

Pump 1 Flow Chart

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



Pump 1 Does Not Work!

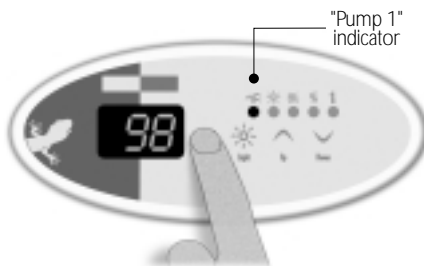
If Pump 1 is not working, carry out the following tests to correct the problem:

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 120 volts. This is normal.

- 1• Check for a wrong temp. on keypad display. If so, refer to specific section.



- 2• Also, verify that Low level is set properly. Access it by pressing **Light** key for 20 seconds (see page 10).



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



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

If it is, replace keypad.

If not, replace Spa Pack.

- 5• If "Pump 1" indicator appears when **Pump 1** key is pressed, try to connect another pump to plug.

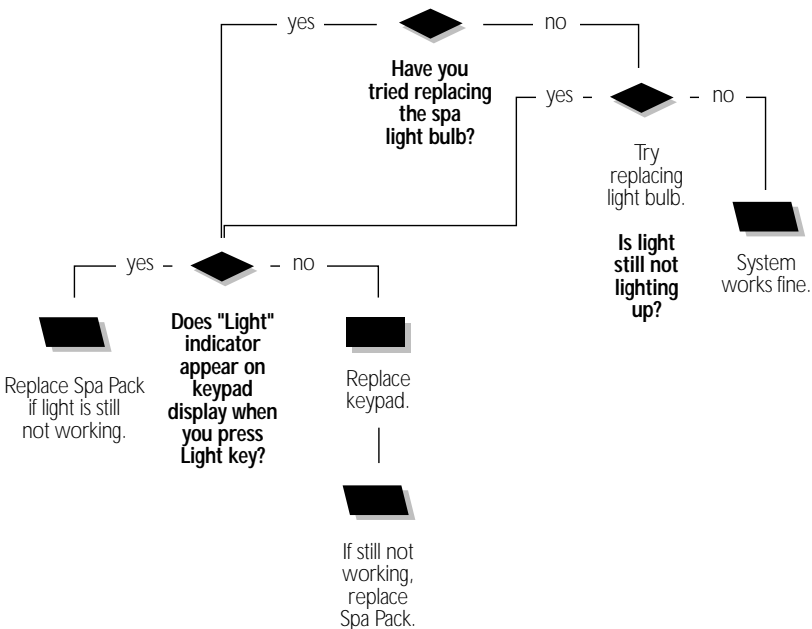
Pump does not work in either speed:

- 6• If Pump is working replace pump.

- 7• If Pump is not working 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:

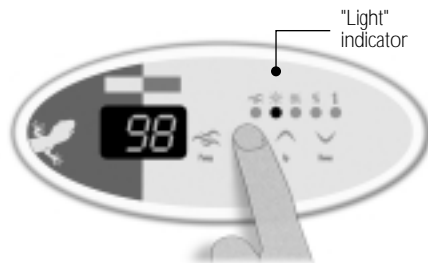


Spa Light Does Not Work!

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

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

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



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

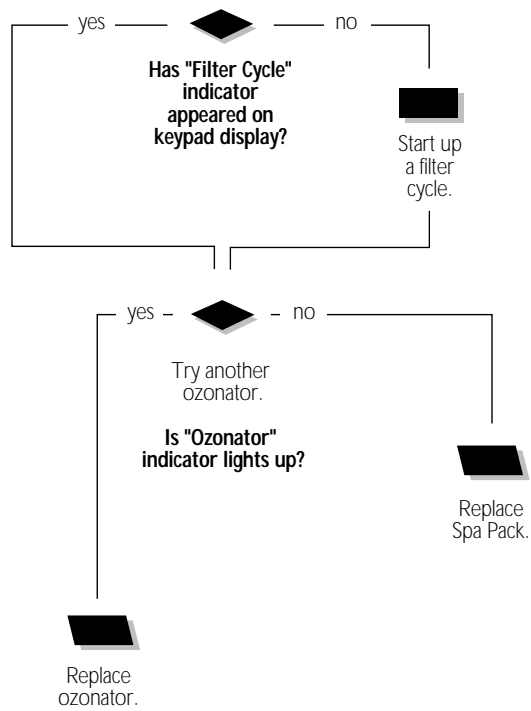


- 3• If "Light" indicator doesn't appear, use a spare keypad to verify if spa keypad is defective.
If it is, replace keypad.
If not, replace Spa Pack.
- 4• If "Light" indicator appears, but light still isn't working, replace Spa Pack.

Ozonator Flow Chart

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

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

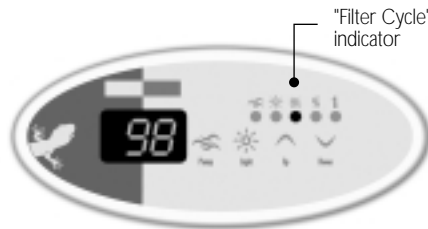


Ozonator Does Not Work!

If ozonator isn't working, carry out the following tests to correct the problem:

If an accessory (pump or light) is used manually, the Filter cycle is suspended (ozonator and pump go off*) the time the accessories are used. Once all accessories are turned off (whether manually or by the built-in timer), the Filter cycle remains suspended for an extra 40 minutes. Finally, when a "Filter cycle" indicator flashes On/Off for 1/2 second.

* The pump stays on if there is a need for heat or started manually.



1• Verify if "Filter Cycle" indicator appears on keypad.

2• If not, start up a filter cycle.

Press and hold **Light** key for 5 seconds. The display will show a value that represents the filter cycle duration in hours.



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



3• Try another ozonator if ozonator does not start-up.

4• If ozonator start-up replace ozonator.

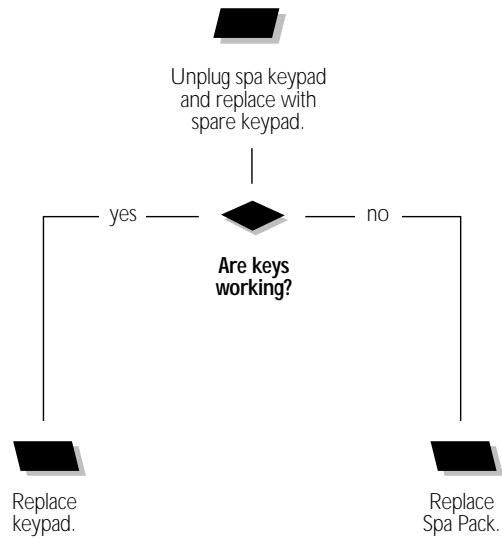
Replace Spa Pack.

If Pump 1 is not working, refer to "Pump 1 does not Work!" section.

Keys Flow Chart

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

**Make sure to use the proper keypad: TSC-9 or 18 keypad is used
Also refer to Low level programming section.**



Keys Don't Work !

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

If an accessory (pump or light) is used manually, the Filter cycle is suspended (ozonator and pump go off*) the time the accessories are used. Once all accessories are turned off (whether manually or by the built-in timer), the Filter cycle remains suspended for an extra 40 minutes. Finally, when a "Filter cycle" indicator flashes On/Off for 1/2 second.

* The pump stays on if there is a need for heat or started manually.



- 1 • Also, verify that Low level is set properly. Access it by pressing **Light** key for 20 seconds (see page 10).

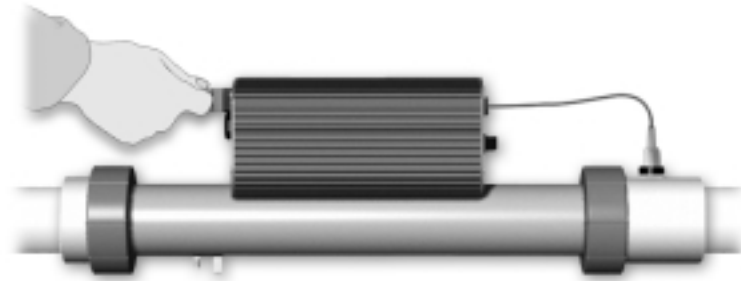
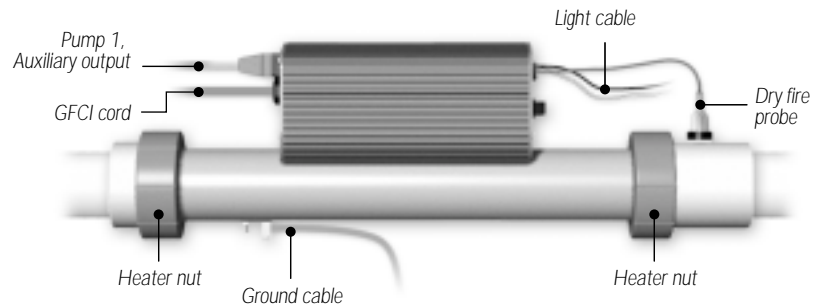


- 2 • Replace spa keypad with a spare keypad.

- 3 • Verify if keys respond correctly.
- 4 • If they do, replace keypad.
- 5 • If they do not respond, replace Spa Pack.

How To Replace The Spa Pack

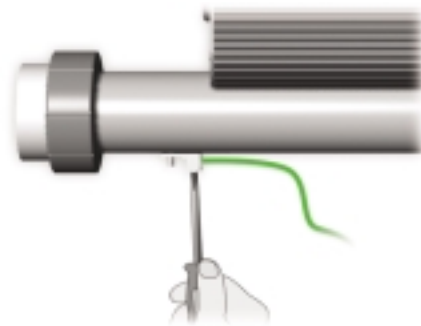
When replacing an Micro-SPA spa pack, it is important to make sure to turn power off before proceeding.



- 1 • Disconnect GFCI cord.
Unplug Pump 1, and ozonator connectors.



- 3 • Disconnect light cables into light socket, keypad, temperature probe and dry fire probe.



- 4 • Disconnect heater ground cable.

How To Replace The Spa Pack

When replacing an Micro-SPA spa pack, it is important to make sure to turn power off before proceeding.



- 5• Unscrew heater nut and replace Spa Pack.
- 6• Plug in Pump 1, Pump 2 (or blower) and ozonator connectors.
- 7• Reconnect light cables, keypad and temperature probe.
- 8• Reconnect GFCI cord.

How To Adjust The Pressure Switch



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, decrease 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.

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.





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



Call 1.800.78.GECKO
to order or for more info!

Micro-SPA SERVICE MANUAL



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

- GFCI Troubleshooting
-
- Low Level Programming
-
- Understanding
& Correcting
Error Condition
-
- System Malfunctions
-
- Part Replacement
Procedure
-
- & More



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