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.
Tools & Parts

Tools, test equipment and components needed to carry out SSPA 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:

- Fuses
- Regulation sensor
- SSPA complete pack
- Pressure Switch
- Top side control (keypad)

Gecko Electronic Inc. sells Professional Repair Kits that include everything needed for SSPA power spa pack servicing. For more information, go to the last page of this manual.
SSPA 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 SSPA systems equipped with one of the following keypads. Please note that the TSC-9 model is used throughout this manual to illustrate specific actions.

**SSPA-MP (only)**

![TSC-35 Keypad (7" • 3 1/4")](image)

**SSPA**

![TSC-19 Keypad (7" • 3 1/4")](image)

![TSC-18 Keypad (5" • 2 1/2")](image)

![TSC-9 Keypad (2" • 4 1/2")](image)
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.

For 240 VAC systems:

- Electrical Box
- GFCI
- Pack Terminal Block

For 120 VAC systems:

- Pack Terminal Block
If GFCI trips, follow this Troubleshooting Flow Chart to identify the problem:

1. Is GFCI properly connected? [yes, no]
   - yes: Go to next step.
   - no: If GFCI is still tripping, disconnect incoming power line.

2. Is GFCI still tripping? [yes, no]
   - yes: Replace GFCI.
   - no: Go back to step 1.

3. Is spa pack a 120 VAC system? [yes, no]
   - yes: Replace Spa Pack if GFCI is still tripping.
   - no: Change Jumper #1 position.

4. Is Jumper #1 in LC position? [yes, no]
   - yes: Go to next step.
   - no: Change Jumper #1 position.

5. Is GFCI still tripping? [yes, no]
   - yes: If GFCI is still tripping, disconnect incoming power line.
   - no: Go back to step 4.

6. Unplug everything including the two blades of the heater & light cord.

7. Is GFCI still tripping? [yes, no]
   - yes: If GFCI is still tripping, disconnect incoming power line.
   - no: Reconnect one component at a time until GFCI starts tripping.

8. Verify Wiring Diagram and reconnect it.

9. There is a problem with the cable. Call an electrician!
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.

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.

There are different GFCI models on the market. Note that illustrations are generic only.

For 120 VAC systems:

1. Verify if Jumper #1 is set in the LC position. If it is not, set Jumper #1 in the LC position.

Refer to page 10 for more information on jumpers.

For 240 VAC systems:

1. Verify if GFCI is properly connected.

Important connections:
- Neutral of GFCI must be connected to neutral bus.
- Neutral from spa must be connected to breaker.

2. If it is not, verify GFCI wiring diagram and reconnect it.
If GFCI Trips!

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

1. If GFCI is properly connected, but still tripping, (or Jumper #1 is set in LC mode for 120 VAC systems), unplug all outputs including the two blades of the heater and light cord.

2. If GFCI still trips, replace Spa Pack.

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

3. If problem is not solved yet, disconnect incoming power lines.

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

   Call an electrician!

4. If GFCI stops tripping, replace GFCI.

5. If GFCI trips again, replace Spa Pack.
Jumper Positions

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

To access jumpers, first remove SSPA 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. Jumper 1: Current Limiting Option

   Jumper 1 is used to limit amount of current drawn when the 2 pumps are on.
   - Position 1 (HC): System turns heater off when the two pumps are on at high speed.
   - Position 2 (LC)*: System turns heater on when one pump is on at high speed. The “Heater” icon flashes on display indicating that more heat is requested, but heater is not allowed to start.

2. Jumper 2: Temperature Unit

   Jumper 2 is used to select the temperature unit.
   - Position 1: Temperature will be displayed in Fahrenheit degrees.
   - Position 2: Temperature will be displayed in Celsius degrees.

3. Jumper 3: Pumps

   - Position 1: Single-pump.
   - Position 2: Dual-pump (or blower).

* Mandatory for 120 VAC systems

Position 1

Position 2

Jumpers

To change a setting, simply pull cover off and replace in desired position.
If 3 flashing dots appear on keypad display, follow Troubleshooting Flow Chart below to identify the problem:

3 flashing dots appear on the display! (FLO, FLC or HL errors)

- **Remove pack cover.**
- **Is board LED on?**
  - yes
  - no

  Flashing dots indicate an hi-limit (HL) condition. Refer to HL pages of this manual to correct the problem.

- **Turn off pump that heats water (circulation pump or Pump 1).**

- **Are dots still flashing?**
  - yes
  - no

  - It's an FLC problem. Refer to FLC pages of this manual to correct the problem.
  - It's an FLO problem. Refer to FLO pages of this manual to correct the problem.
On SSPA-N E packs, if system detects temperature at 112°F or higher, the display will start flashing. Follow Troubleshooting Flow Chart below to identify the problem:

- **A power failure has occurred.**
  - **System works fine.**
  - **Has display stopped flashing?**
    - **Press any key.**
      - **Are you getting correct water temperature reading on the display?**
        - **Replace board if problem still persists.**
        - **Verify if temperature probe is properly connected.**
          - **If so, replace probe and reset breaker.**
          - **Remove spa cover (even during the night).**
            - **Start blower, if spa is equipped with one.**
              - **Wait until spa cools down (add cold water if needed).**
    - **Lower filter cycle duration.**
      - **Replace board if problem still persists.**
      - **Pump is overheating water during filter cycle.**
        - **Lower set point below actual water temperature.**
          - **"Heater" indicator on keypad display should disappear.**
            - **Do you get a 240 VAC reading between two heater wires on the board?**
              - **Verify if temperature probe is touching water or if cold air from back can affect reading.**
                - **If so, replace probe and reset breaker.**
                - **Press any key.**
                  - **Has display stopped flashing?**
On SSPA-N.E 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! MSPA-1 probe does not work on an SSPA spa pack. Probe wires should be in this order:

Black
Green
Red

PIN # 1
PIN # 4

Press any key after each step to reset the system.

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.
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:

Make sure circulation pump parameter is set correctly (depending on your system configuration).

There must be adequate water in spa for normal use.

Is pump working when you try to start it from keypad?

Remove anything obstructing filter. Clear any air locks and verify water valves.

Is anything limiting flow of water into pipes?

Verify if pressure switch cable is properly connected to pressure switch.

Lower Set Point at 60°F and turn pump off. Short two pressure switch terminals with a jumper cable.

Does FLC error condition persist?

Replace Spa Pack.
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. FLO error condition may occur 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.

Make sure circ. pump parameter is set correctly (depending on your system configuration).

1. Verify if pump is working.
   If pump is not working right, refer to “Pump does not Work” section.

2. Clean filter and check for air blockages, closed trap valves or anything that could be restricting water flow.

3. Verify if pressure switch cable is properly connected to pressure switch.
4. If problem has not been solved, lower Set Point at 60° by pressing on Down arrow key and turning pump off; then short two pressure switch terminals with jumper cable.

5. An FLC error condition should occur.

   FLC error condition identifies pressure switch as source of problem.

   Try readjust pressure switch. If this isn't possible, replace switch.

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

6. If FLC error condition does not occur, problem may be either with switch cable or board.

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

- Disconnect pressure switch cable on pressure switch.
- Does FLO error condition occur when pump is on?
  - yes: Adjust pressure switch.
  - no: Replace pressure switch if FLC error condition persists when you start or stop pump.
- Replace Spa Pack.
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 started, adjust pressure switch or replace it.
   (Refer to “How to Adjust the Pressure Switch” section of this manual.)

2. Replace Spa Pack if FLO error condition does not occur.
If Prr error condition occurs (potential regulation sensor problem), follow Troubleshooting Flow Chart below to identify the problem:

Note that water temperature must be over 35° F to operate spa.

Press any key after each step to reset the system.

Make sure to use the right probe!
MSPA-1 probe does not work on an SSPA spa pack.
Probe wires should be in this order:

Black
Green
Red

Press any key after each step to reset the system.

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 Spa Pack if problem persists.
**Prr Error Condition**

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

**Note:** Make sure to use the right probe! MSPA-1 probe does not work on a SSPA spa pack.

1. Verify if regulation probe 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 Prr error condition still persists, replace probe with a spare and place probe head directly in spa water.
   - If problem is solved, replace probe.

Note that water temperature must be over 35°F in order to carry out the following steps. Press any key after each step to reset the system. Power may remain On.
If HL error condition occurs (potential hi-limit probe problem), follow Troubleshooting Flow Chart below to identify the problem:

Press any key after each step to reset the system.

- Take water temperature with a digital thermometer.
- Are you getting correct water temperature reading on the display?
  - Yes: Lower Set Point below actual water temperature. "Heater" indicator on keypad display should disappear.
  - No: Pump is overheating water during filter cycle. Lower filter cycle duration.
- Is weather very hot?
  - Yes: Remove spa cover (even during the night). Start blower, if spa is equipped with one. Wait until spa cools down (add cold water if needed).
  - No: Replace Spa Pack.
- Is water temperature 119°F or higher?
  - Yes: Verify if temperature probe is touching water or if cold air from back can affect its reading.
  - No: Verify if temperature probe is properly connected.
    - Yes: Replace SPA Pack if HL error condition still persists.
    - No: Verify if anything is obstructing water flow (closed traps or dirty filters).
      - Yes: Verify if Hi-Limit probe is properly connected. Try to clean pins and reconnect probe.
      - No: If HL error condition persists, replace Spa Pack.
HL Error Condition

The HL error condition is related to the Hi-Limit sensor.

Steady message: Means system has shut down heater because water temperature at the heater has reached 119°F.
Blinking message: Means except for the Smart Winter Mode, system has shut down because water temp. in the spa has reached 112°F.

Press any key between each step to reset the system.
Power may remain On.

1. Take water temperature with digital thermometer.

2. If reading is below 110°F:
   a. Check if heater barrel feels hot.
      If it's hot, verify if anything is obstructing water flow (closed valves or dirty filter).
   b. If HL error condition persists, replace Spa Pack.

3. If reading is 110°F or higher:
   Proceed to following page if keypad display shows correct temperature.
   Proceed to page 22 if keypad doesn't show correct temperature.
HL Error Condition

If digital thermometer water temperature reading is 119°F or higher and keypad display indicates correct temperature, carry out the following tests.

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.

   The "Heater" indicator should disappear from keypad display.

3. Remove plastic cover. With a voltmeter, read 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.

   Shorten filter cycle duration.

To shorten filter cycle duration:

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

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

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

6. If you do read 240 VAC, replace Spa Pack.
If digital thermometer water temperature reading is 119°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 HL error condition still persists.
If nothing seems to work, follow Troubleshooting Flow Chart below to identify the problem:

For 240 VAC systems:

- Do you read ≈ 240 VAC between line 1 & line 2, ≈ 120 VAC between line 1 & neutral, ≈ 120 VAC between line 2 & neutral on the board?

  - Yes: Verify if keypad is connected correctly to board.
    - All eight pins must be plugged in and black wire must be on top of the plug.
    - Replace Spa Pack if there is still nothing on keypad display.
  - No: There is an electrical wiring problem. Call an electrician.

For 20 VAC systems:

- Do you read ≈ 20 VAC between line 1 & neutral?
  - Yes: Is there a jumper cable connected between line 2 & neutral?
    - Yes: There is an electrical wiring problem. Call an electrician.
    - No: Replace Spa Pack if there is still nothing on keypad display.
  - No: There is an electrical wiring problem. Call an electrician.
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 240 VAC systems:**

4. If you do not get good readings, this probably indicates an electrical wiring problem.

   **Call an electrician!**

1. On the terminal block, measure voltage between line 1 and line 2.

   You should get ≈ 240 VAC.

**For 120 VAC systems:**

4. If you do not get good readings, this probably indicates an electrical wiring problem.

   **Call an electrician!**

2. Measure voltage between line 1 and neutral.

   You should get ≈ 120 VAC.

1. Measure voltage between line 1 and neutral.

   You should get ≈ 120 VAC.

3. Measure voltage between line 2 and neutral.

   You should get ≈ 120 VAC.

2. Verify that there is a jumper cable connected between line 2 and neutral.
Nothing Works!

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.

2. If nothing works, replace Spa Pack.
If the spa does not seem to be heating the water, follow Troubleshooting Flow Chart below to identify the problem:

Any error messages (FLO, FLC, 3 flashing dots, etc.) on keypad display?
- No
  - Refer to specific section referred to error message.
- Yes
  - Ensure temp. Set Point is higher than actual water temp.

Has “Heater” indicator appeared on keypad display?
- No
  - Take water temp. and compare with temp. value displayed on keypad.
  - Is difference greater than ±2°F?
    - Yes
      - Replace temp. probe with spare.
    - No
      - System works fine.
  - Is temp. probe touching water or hot air rear affecting reading?
    - Yes
      - Isolate back of probe with foam.
    - No
      - Replace Spa Pack.

Do you get a 240 VAC reading between the two heater terminals on the board?
- No
  - Are heater nuts connected properly to the element?
    - Yes
      - Try tightening nuts to element.
    - No
      - Replace element.
  - Is temp. probe touching water or hot air rear affecting reading?
    - Yes
      - Isolate back of probe with foam.
    - No
      - Replace Spa Pack.

Still not heating?
- No
  - Replace Spa Pack.
- Yes
  - System works fine.
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 message on keypad display. If there is one, refer to section indicated by the error message.

2. If there is no message, 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.

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

   If values are different (±2°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.
If "Heater" indicator appears on the display, but spa is still not heating, carry out the following tests to correct the problem:

1. Remove plastic cover and measure voltage between the two heater screws on the board. Replace board 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 nuts to the element.

3. If problem persists, replace the element.

If "Heater" indicator lights up on the display:
If Pump 1 is not working, follow Troubleshooting Flow Chart below to identify the problem:

1. Have any error messages (FLO, FLC, 3 flashing dots, etc.) appeared on keypad display?
   - yes: Refer to specific section indicated by error message.
   - no: Verify if Jumper #3 is set properly.

2. Does "Pump 1" indicator appear on keypad display when you press Pump 1 key?
   - yes: Replace keypad.
   - no: If still not working, replace Spa Pack.

3. Is Pump 1 working in either speed?
   - yes: Replace Pump 1 fuse.
   - no: Pump 1 still not working!

4. Measure voltage on the board for both speeds.
   - yes: Do you get a 240 VAC reading (or 120 VAC for a 120 VAC pump) for both speeds?
     - yes: Replace Pump 1.
     - no: Replace Spa Pack.
   - no: Replace Pump 1.
Pump 1 Does Not Work!

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

1. Check for an error message on keypad display. If there is one, refer to specific section indicated by error message.

2. Also, verify that Jumper #3 is set properly for 1 or 2 pumps (refer to page 10 for more info).

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, verify if pump works in either speed.

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 volts. This is normal.

It is important to measure voltage when pump is connected to pack. Power must remain On.
Pump 1 Does Not Work!

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

1. If Pump 1 does not work in either speed, replace Pump 1 fuse.

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.

3. Turn Pump 1 to low speed and take voltage reading between white and black wire connectors:
   240 VAC pump: P14 & P18
   120 VAC pump: P7 & P14
   Your reading should be:
   ≈ 240 VAC for a 240 VAC pump
   ≈ 120 VAC for a 120 VAC pump

4. If voltage is as it should be, replace Pump 1.

5. If not, replace Spa Pack.
If Pump 2 or blower does not work, follow Troubleshooting Flow Chart below to identify the problem:

For SSPA Dual-Pump Systems only!

- Have any error messages (FLO, FLC, 3 flashing dots, etc.) appeared on keypad display?
  - yes
    - Refer to specific section indicated by error message.
  - no
    - Verify if Jumper #3 is set properly.

- Does "Pump 2" or "Blower" indicator appear on keypad display when you press Pump 2 or Blower key?
  - yes
    - Replace keypad.
  - no
    - If still not working, replace Spa Pack.

- Is Pump 2 or blower working?
  - yes
    - Replace blower fuse.
  - no
    - Pump 2 still not working!

- Measure voltage on the board.
  - yes
    - Do you get a 240 VAC reading (or 120 VAC for a 110 VAC pump)?
      - yes
        - Replace Pump 2 or blower.
      - no
        - Replace Spa Pack.
  - no
    - Replace Spa Pack.
If Pump 2 or blower does not work, carry out the following tests to correct the problem:

For SSPA Dual-Pump Systems only!

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 volts. This is normal.

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

1. Check for an error message on keypad display. If there is one, refer to specific section indicated by error message.

2. Also, verify that Jumper #3 is set properly for 2 pumps (refer to page 10 for more info).

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

1. If Pump 2 or blower does not work even when indicator is on, replace Pump 2 or blower fuse.

2. If replacing the fuse is not effective, take voltage reading on the board.

3. If voltage is as it should be, replace Pump 2 or blower.

4. If not, replace Spa Pack.

Turn Pump 2 or blower on and take voltage reading between white and black wire connectors:
- 240 VAC pump or blower: P11 & P17
- 120 VAC pump or blower: P9 & P11

Your reading should be:
- ≈ 240 VAC for a 240 VAC pump or blower
- ≈ 120 VAC for a 120 VAC pump or blower
If spa light does not appear to be working, follow Troubleshooting Flow Chart below to identify the problem:

1. Have you tried replacing the spa light bulb?
   - Yes: Replace spa light fuse.
   - No: Try replacing light bulb.

2. Does "Light" indicator appear on keypad display when you press Light key?
   - Yes: Replace keypad.
   - No: If still not working, replace Spa Pack.

3. Do you get a 12 VAC reading on light output on board?
   - Yes: Replace spa light socket.
   - No: Replace spa light fuse.

4. If still not working, replace Spa Pack.

Replace spa light bulb.
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, remove plastic cover and measure voltage between two light wires on the board. If you get ≈12 VAC, replace light socket.

5. If you aren't getting a voltage reading, replace light fuse on the board.

6. If problem persists, replace Spa Pack.
If the 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 have been turned on manually.

- Has “Filter Cycle” indicator appeared on keypad display?
  - yes
  - no

- Start up a filter cycle.
  - yes
  - no

- Do you read 120 VAC for a 120 VAC ozonator (or 240 VAC for 240 VAC) on the board?
  - yes
  - no

- Replace ozonator.
  - yes
  - no

- Replace Spa Pack if you still aren’t getting a voltage reading.
  - yes
  - no

- Refer to “Pump 1 does not Work!” section.
If ozonator isn’t 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 volts. This is normal. It is important to take voltage reading when ozonator is connected to pack. Power must remain On.

Please take note that ozonator output will be shut down when Pump 1, Pump 2 or blower have been turned on manually.

1. Verify if “Filter Cycle” indicator appears on keypad.

2. If not, start up a filter cycle.

3. Measure voltage between ozonator black and white connectors:
   - 240 VAC ozonator: P16 & P19
   - 120 VAC ozonator: P16 & P8
   You should read ≈240 VAC (≈120 VAC for a 120 VAC ozonator).

4. Replace ozonator if you get a good voltage reading.

5. Check if Pump 1 is working.
   - If so, replace Spa Pack.
   - If Pump 1 is not working, refer to “Pump 1 does not Work!” section.
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-35 keypad with SSPA-MP spa pack. TSC-18, TSC-19 or TSC-9 keypad with SSPA-1spa pack. Also refer to Jumper Section (p. 10) to see if outputs are set correctly.

- Is Jumper #3 set properly for 1 or 2 pumps?
  - yes
  - no
    - Unplug spa keypad and replace with spare keypad.
    - Are keys working?
      - yes
      - no
        - Replace keypad.
        - Replace Spa Pack.
Keys Don’t Work!

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

Make sure to use the proper keypad: TSC-35 keypad works with a SSPA-MP spa pack. TSC-1B, TSC-19 or TSC-9 keypad works with a SSPA-1spa pack. Also refer to Jumper Section (p. 10) to see if outputs are set correctly.

1. Verify that Jumper #3 is set properly for 1 or 2 pumps (refer to page 10 for more info.)

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

1. Unplug Pump 1, Pump 2 (or blower) and ozonator connectors.

2. Remove 2 screws from front pack cover.

3. Lift the Spa Pack cover.
When replacing an SSPA spa pack, it is important to make sure to turn power off before proceeding.

4. Disconnect power input cables.

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

6. Disconnect pressure switch cable.

7. Disconnect heater ground cable.

8. With wrenches, free the board blades by removing the 2 heater nuts.
When replacing an SSPA spa pack, it is important to make sure to turn power off before proceeding.

9. Slide the pack out of the heater barrel.

10. Check if high-limit sensor is properly in place in its slot and slide new pack into position.

11. Connect heater to the board blades. It is important to hold both nuts when tightening. If you bend or twist the end of the element, you may damage it.

12. Reconnect heater ground cable and pressure switch cables.

13. Reconnect light cables, keypad and temperature probe.

14. Plug in Pump 1, Pump 2 (or blower) and ozonator connectors.

15. Reconnect power input cables.

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 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 1/4 of turn.

4. Turn pump on at low speed and wait a few minutes.
   - If FLO does not appear, you have adjusted the pressure switch successfully.
   - If FLO appears, 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.
   - FLC should not appear (restart procedure if FLC appears).

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 on at low speed.

2. Increase the pressure switch setting to 4 PS.I. or until FLO message is displayed.

3. Start decreasing pressure switch setting by very slowly turning adjustment screw counter clockwise until FLO message disappears. Then, decrease another 1/4 of turn.

4. Turn pump on at high speed for 30 seconds; there should be no FLO message.

5. Turn pump off and wait 30 seconds. You should not see an FLC message.

6. Turn pump to low speed for 30 seconds. You should not see an FLO message.

7. If you see an FLO or an FLC message, restart the adjustment procedure.
   
   If you are not able to adjust the pressure switch, change it.

8. When adjustment procedure is completed, apply Loctite 425 to the adjustment screw to secure it in place.
We recommend that field service technicians keep the items identified with an * in stock.

<table>
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<tr>
<th>Ref.</th>
<th>Part Number</th>
<th>Description</th>
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The wiring diagram below provides a general idea of SSPA-1 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.
The wiring diagram below provides a general idea of SSPA-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.
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- Flow switches
- Elements
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- Grommets
- Standoffs
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- Strain reliefs for light cord
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