INTRODUCTION
The following policies and procedures will make your business dealings with us more enjoyable, profitable, and efficient. If you do not understand any part of this manual, please contact Dealer Services at 800.275.0888 for clarification. Adherence to these policies and procedures will aid in the elimination of errors and in the orderly transfer of goods and services.

ORDER PROCEDURES
All orders may be submitted by fax to 503.838.2531 or 800-938-8976, placed by phone at 800.275.0888 between 7:00 a.m. - 5:00 p.m. P.S.T., or emailed to service@marquiscorp.com.

Customers with approved credit are offered net 30 terms on all parts. Customers without approved credit or those who do not have an account have the options of C.O.D., credit card pending, or prepay with a check. Upon request, each dealer receives one annual stocking discount of 25% up to $5000.00

SHIPPING AND BACK ORDERS
Please specify how you would like your order shipped. The options are next day, 2nd day or 3rd day Federal Express, or UPS ground service. Fax, email, or mail will be used to notify all customers if a part is out of stock. Any part not in stock will be placed on back order and shipped as soon as possible. You will not need to call to reorder a back ordered item. If you do not need the part, please call and cancel the back order.

You will receive email notice when parts have shipped.

PROCEDURES FOR DEALERS STOCKING PARTS
*Dealer uses part out of their inventory to repair spa and does not need a replacement.

If part does need to be replaced to stock inventory follow procedure above. (Phone, fax, or email RMA list of parts to Marquis Spas Customer Service.)
PROPER PACKAGING TECHNIQUES

1. Fill or line bottom of box with protective material.
2. Wrap parts individually in bubble wrap or other protective material.
3. Place original of RMA sheet in box for reference. Make a copy for your records.
4. Fill rest of the box with packing peanuts and seal.
5. Write the RMA number on the outside of the box on the bottom of the address label.

NOTE: To ensure parts arrive undamaged, please do not exceed weight ratings of the box being used.

It is imperative that these processes are followed to ensure safe arrival to Marquis Spas. Make sure that the box you are using will not break apart during shipping. Also, make sure you have securely taped the box with packing tape. Parts received in any other manner are subject to invalidation by Marquis Spas Warranty Department.

NOTE: Customers will be contacted to ensure satisfaction with spa repair

RETURN GOODS CREDIT (NON-WARRANTY)

All new parts returned are subject to a 20% restocking fee. Goods returned for credit must be in new, salable condition and MUST be identified with the original invoice number. Credit will be issued at the prices in effect at the time of original purchase. Any costs incurred to return goods to new condition will be added to the restocking charge. Parts may not be returned for the sole purpose of depleting inventory.
CAUTION: Cord access locations are approximations. Marquis Spas will not be liable if damage is done to spa when drilling holes.
Cord access holes are also located in the middle of the radius at the two front corners.
CAUTION: CORD HOLE LOCATIONS ARE APPROXIMATIONS MARQUIS SPAS WILL NOT BE LIABLE IF DAMAGE IS DONE TO THE SPA WHEN DRILLING CORD HOLES

Cord holes are also located in the middle of the radius at the two front corners.
Caution: CORD HOLE LOCATIONS ARE APPROXIMATIONS MARQUIS SPAS WILL NOT BE LIABLE IF DAMAGE IS DONE TO THE SPA WHEN DRILLING CORD HOLES

2010 Resort

Cord Access Location from the bottom 18 1/2" in from the left side & 5 1/2" in from the front side

Door Opening 45"

Cord Access Location from the bottom 35 1/2" in from the right side & 3" in from the front side

Cord holes are also located in the middle of the radius at the two front corners.
2010 Mirage

CAUTION: CORD HOLE LOCATIONS ARE APPROXIMATIONS MARQUIS SPAS WILL NOT BE LIABLE IF DAMAGE IS DONE TO THE SPA WHEN DRILLING CORD HOLES

Access for 120-volt cord 4" from the bottom right of the door

Cord Access Location 16 3/4" in from the left side & 5 1/2" in from the front side

2010 Promise

Door Opening 45"

Cord Access Location 34 1/2" in from the right side & 3 1/2" in from the front side

Cord holes are also located in the middle of the radius at the two front corners.
2010 Rendezvous

Door Opening 38"

Access for 120-Volt cord
14” from the bottom
right of the door

NOTE: Cord hole locations are
approximations Marquis Spas will not be
liable if damage is done to the spa when
drilling cord holes
NOTE: Cord hole locations are approximations Marquis Spas will not be liable if damage is done to the spa when drilling cord holes.

Access for 120-Volt cord 4" from the bottom right of the door
2010 All Models

**STANDARD FEATURES**
- SmartClean™ with dual or single Vortex skimmer(s)
- Glacier acrylic interior
- Western Red Cedar exterior with polysheet spa bottom
- Full foam insulation

**OPTIONS**
- Signature Series
- Ultimate Series

**OWNER’S PROTECTION PLAN**
- Ten years on the spa structure
- Seven years on the spa surface
- Five years on the spa plumbing, major equipment, skirting and durabase
- Two years on the ozonator, and infra red sensors
- One year factory-installed parts
ELECTRICAL
BASIC ELECTRICITY INFORMATION

ELECTRIC POTENTIAL (VOLTS)

When protons are concentrated in one part of a conductive material, and electrons in another part, the positively charged protons attract the negatively charged electrons and there is a difference in potential. This difference in potential is the source that forces the electrons through the material. The difference in potential is also called the voltage potential or electromotive force (EMF).

The volt (V) is the unit of measure of voltage (electromotive force). In some formulas, the letter E represents electromotive force (volts). Electromotive force is provided by a source of electrical power, usually household power lines wired to a main service panel board.

The kilovolt (kV) is a larger voltage unit equal to 1000 volts. The millivolt (mV) is one-thousandth the size of a volt. The microvolt is one-millionth the size of a volt.

Voltage is provided as either direct current (DC) or alternating current (AC). We often come in contact with items providing electricity rated in volts, such as household outlets providing electrical service (120 volts AC or VAC) and batteries (12 VDC in an automobile, 1.5 VDC in a D battery cell).

In many spa installations, AC current is connected to 120 VAC or 240 VAC heaters, blowers, ozone generators, and pumps, and to transformers that convert 120 VAC or 240 VAC to 12 VDC for spa lights or relay coils, or to 5 VDC for the system electronics.

PRESSURE AND VOLTS—HOW THEY RELATE

Electrical potential and electromotive force (EMF) is the same thing. Potential is a kind of electrical pressure. Compare it to the pressure in a spa water circuit, like the pressure created by a 2 horsepower pump. Water pumped by a 2 horsepower pump has a greater potential for doing work than water pumped by a 1 horsepower pump. Water in a 2 horsepower pump has two times the potential for doing work as water in 1 horsepower pump.

Water increases in potential as it is pumped toward the jets. But, when it passes through the jets, it loses potential. The pump works on the water to increase its potential; the water then gives up this potential when it does the work of pressurizing the jets.

In a water circuit, the potential energy of the pumped water is measured in terms of pressure, or pounds per square inch (psi). In an electric circuit, the electrical potential, or EMF, is measured in volts. In the electrical circuit, when current passes through a load, it does some kind of work. In the process, it gives up, or loses, some of its EMF, or potential. In a complete circuit, the voltage, or potential, provided by the source equals the potential lost going through the rest of the circuit. This loss of potential in the circuit is called voltage drop.

ELECTRIC CURRENT (AMPS)

The flow of electrons, or electric current, can be measured only in a closed circuit, where a conductor (such as a wire) provides a path for movement. Just as water cannot flow through broken pipes, if there is a gap anywhere in the circuit, electricity cannot flow. For current to flow, the circuit must be complete, or closed.

When source voltage is connected with a closed circuit of wire conductor (like copper wire) to a motor or other electrical device, the electrons will flow. The standard rate-of-flow unit for electrons is the ampere or amp. This represents the number of electrons flowing each second past a given point in the conductor. In some formulas, the letter I represents “intensity” of electron flow (amps).
BASIC ELECTRICITY INFORMATION (continued)

Theory defines the direction of electron flow as from negative to positive in the circuit, or from the negative pole of the source voltage to the positive pole. If the poles of the source voltage retain the same charge, the voltage is called DC Voltage because it drives a direct current in only one direction, to the positive pole. However, if the poles rapidly and continuously change charge (from negative to positive and back again), the source drives an alternating current that passes first toward one pole, then toward the opposite pole. This is called AC Voltage.

RATE OF FLOW AND AMPS

Compare the electrical circuit again to a water circuit. Water pressure, measured in psi, is compared to electrical potential, measured in volts. The water’s rate of flow (in gallons per minute, GPM) is comparable to the electrical current. The rate of flow of electrical current is measured in amps.

The more pressure (volts), the greater the flow rate (amps). This means that if we double the pressure (volts), we double the current (amps). For example, a 240 volt source will drive twice as many amps through a circuit as a 120 volt source.

RESISTANCE (OHMS)

Resistance is opposition to the flow of electric current. There is some resistance in every material. The unit of measure of resistance is the ohm (indicated by the Greek letter 0). In electrical calculations, the abbreviation for resistance is R.

- One kilohm = 1kΩ = 1000 ohms

When electricity flows in a material, resistance is what uses up electrical potential (volts). Too much resistance causes heating, overheating, or even a fire in the conductor.

RESISTANCE AND OHMS

The comparison with water is useful again. In the water circuit, the friction created in the pipes and heater, and by pressurizing the jets, is the resistance (or head), which is measured in feet of head. In an electrical circuit, resistance is measured in ohms.

SERVICE WIRE SIZE AND CIRCUIT PROTECTION FOR PERMANENTLY CONNECTED SPAS

<table>
<thead>
<tr>
<th>Equipment Maximum Operating Current in Amperes</th>
<th>Wire Size – Copper (minimum 140 degrees F/60 degrees C at 0-2000 V)</th>
<th>Circuit Protection Rating in Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-12 Amps</td>
<td>14 AWG</td>
<td>15 Amps</td>
</tr>
<tr>
<td>12-16 Amps</td>
<td>12 AWG</td>
<td>20 Amps</td>
</tr>
<tr>
<td>16-20 Amps</td>
<td>10 AWG</td>
<td>25 Amps</td>
</tr>
<tr>
<td>20-24 Amps</td>
<td>10 AWG</td>
<td>30 Amps</td>
</tr>
<tr>
<td>24-28 Amps</td>
<td>8 AWG</td>
<td>35 Amps</td>
</tr>
<tr>
<td>28-32 Amps</td>
<td>8 AWG</td>
<td>40 Amps</td>
</tr>
<tr>
<td>32-36 Amps*</td>
<td>6 AWG</td>
<td>45 Amps</td>
</tr>
<tr>
<td>36-40 Amps</td>
<td>6 AWG</td>
<td>50 Amps</td>
</tr>
<tr>
<td>40-48 Amps</td>
<td>4 AWG</td>
<td>60 Amps</td>
</tr>
<tr>
<td>48-56 Amps</td>
<td>4 AWG</td>
<td>70 Amps</td>
</tr>
<tr>
<td>56-64 Amps</td>
<td>3 AWG</td>
<td>80 Amps</td>
</tr>
</tbody>
</table>

- Ampere ratings for wire size based on NEC Table 310.16
- Circuit protection requirements based on 125% of equipment maximum operating current.
- Wire gauge given for ambient temperature of 86 degrees F/30 degrees C. Higher ambient temperatures may require different wire type or gauge.

*Most Marquis Spas
ELECTRICAL TESTING

CAUTION: Be careful to handle and connect meters in the proper way. Be sure meters are insulated for the type of work being performed. Wire meters correctly, and do not use them beyond their specifications, or they can be dangerous to you and the equipment you are testing.

TYPES OF TEST METERS

Electric circuits may be tested for proper operation by a variety of testing meters. Test meters are often used to locate common problems in an electric circuit. One of the simplest test meters is a polarity meter, used to test household electrical service receptacles for proper polarity. Many kinds of meters are on the market to test for volts, amps, ohms, and watts.

Multimeters or combination meters allow you to perform a variety of tests using only one meter. Some meters work electromechanically (analog) and show test readings with a dial and pointer. Others use solid-state electronics and have digital readouts. The spa technician will make frequent use of the voltmeter and continuity tester (a type of ohmmeter) and will also find use for a clamp-on ammeter, ohmmeter, and meters or scales that test millivolts and milliamps.

WARNING: Follow safety precautions listed previously. For example, don’t use your spa test meters to test your home TV or microwave oven. Internal transformers in home appliances may step their voltage up as high as 5,000 volts. This voltage could discharge right through you.

IMPORTANT: Electric meters are not waterproof-do not drop into spa.

VOLTOMETER TESTS

Most Important All Purpose Test Meter
Voltmeters are always connected in parallel with the circuit turned ON.

Always take proper safety precautions when using a voltmeter, especially when testing line voltage circuits.

Hold only the insulated probe handles, make sure you are not grounded, and do not accidentally place the test probes on the wrong terminals.

Be sure to begin testing in the proper voltage range. Start high if you’re not sure.
WIRING CHECK PRECAUTIONS

When working in a system box, always be aware it may contain high voltage. Always keep your fingers and hand tools away from any wiring or circuit board when power is on.

- Touching anything in these areas can result in serious injury.
- All service calls, no matter how minor, should include a complete wiring check, beginning with the housebreaker.
- Marquis Spas only run on single-phase electrical service. Three-phase power will not supply proper voltage to the system.
- Three-phase power may overheat the pumps and cause the Ground Fault Circuit Interrupter (GFCI) to trip.
- Make sure the power is off before you touch any wiring.

Check for Loose Connections or Damaged Wires

- Once the power is off, carefully examine all wires for cuts or defects.
SYSTEM BOX WIRE GAUGE CHECK

- When inspecting the wiring for any control system, note connections for incoming wires are clearly labeled at the main terminal block.
- 30A service: minimum eight gauge copper wire
- 50A service: minimum six gauge copper wire
- These wires must connect to the housebreaker box, through the local disconnect, to the main terminal block. The wiring diagram inside the system box shows the main terminal block as TB1.

IMPORTANT!
Using non-copper wire can be dangerous, and can also be the cause of a spa’s malfunction. If non-copper wire is used at any point, we do not recommend servicing the spa until a qualified electrician replaces it with the proper gauge copper wire.

IMPORTANT!
This service must be single-phase. Any abnormal voltage reading requires an electrician. Do not attempt to fix these types of problems yourself. High voltage can seriously injure or kill.

GFCI WIRING CHECK
If a GFCI has recently been installed, the majority of tripping problems can be attributed to incorrect wiring of the GFCI. A clear understanding of the correct configuration is essential. All 240-volt Marquis Spas require a 120/240-volt 50amp load neutral GFCI breaker.

IMPORTANT!
The National Electrical Code states that a service disconnect breaker box (a GFCI can be used for this purpose) must be located at least five feet from the spa and should be conveniently located near the equipment bay. If it is not in plain sight, keep disconnect padlocked when in the off position.

PRECAUTIONS
Effective January 1994, a GFCI is required for spa installations. Prior to that, a GFCI had not been required for spa installations. If the spa you are servicing was not installed with a GFCI, strongly urge your customer to improve safety and comply with current standards by installing one.

IMPORTANT!
Remember, high voltage is still accessible in the main breaker box although you have turned off the spa breaker.

GFCI LINE-IN WIRING CHECK
1. Locate the proper circuit breaker and turn it off.
2. Remove the cover from the housebreaker box.
3. Check the main service amperage rating to the breaker box.
   TIP: Typically, a house circuit requires at least a 100-amp service when spa is installed.
   1. From the circuit breaker, locate the red load wire and the black load wire.
   2. From the GFCI neutral bar, locate the white load neutral wire and the green ground wire.
   3. Be sure there are no other appliances on the spa circuit. If there are, the service must be re-wired to supply the spa only.
   4. Make sure all four wires exit the housebreaker box via conduit, routed to the GFCI breaker box.
   - The black wire should be connected to the GFCI line-in 1.
   - The red wire should be connected to the line-in 2.
• The white load connects to the neutral buss bar.
• The green ground wire should be attached securely to the ground buss bar inside the GFCI box.

From the GFCI box there should be four wires running to the spa; line 1, line 2, neutral and ground. These wires should be connected to the GFCI as follows:
• Red wire line 1 should be connected to line 1 load on the GFCI
• Black wire line 2 should be connected to line 2 load on the GFCI
• White neutral wire is connected to the load neutral on the GFCI
• GREEN GROUND IS CONNECTED TO THE GROUND BUSS BAR IN THE GFCI BOX

VOLTAGE CHECKS
Testing the incoming voltage to the spa is one of the first things you must do and it is very crucial in your troubleshooting process. Many issues can be attributed to low/high voltage from overheating pumps to topside panels displaying odd things.

The following is the proper procedure for testing 240V & 120V spas:

1. 120-Volt Spa
   - Line 1 + Neutral = 120-Volts
   - Line 1 + Ground = 120-Volts
   - Neutral + Ground = 0 Volts

2. 240-Volt Spa
   - Line 1 + Line 2 = 240-Volts
   - Line 1 + Neutral = 120-Volts
   - Line 1 + Ground = 120-Volts
   - Line 2 + Neutral = 120-Volts
   - Line 2 + Ground = 120-Volts
   - Neutral + Ground = 0 Volts

These steps must be followed to ensure the spa has proper power, ground and neutral. If you get any anomalous readings do not proceed and call and electrician.

TIP: It is also a good idea to do the checks under peak load conditions (peak load is with all the components operating i.e. pump(s), heater, light, etc.). Under peak load the voltage should only drop 2-4 volts. If it drops more than that it is a sign of a loose connection, bad wires or improper installing of the wiring to the spa.

Voltage Checks – Breaker Box/GFCI
When checking for proper voltage, please keep in mind the acceptable voltage range is ±10% of the recommended voltage. Acceptable voltage when 120V is specified as the desired voltage is between 108V and 132V. Acceptable voltage when 240V is specified as the desired voltage is between 216V and 264V.
**BREAKER BOX VOLTAGE CHECK**

- Set your multi-meter for AC Volts (300V minimum).
- Make sure the GFCI is off.
- Carefully turn on the spa circuit breaker.
- At the housebreaker box, probe the spa circuit breaker between the black and red wires. Your meter should read 240V.
- Probe the black and green ground wires. You should also see 120V.
- The voltage between the white load neutral wire and the green ground wire should be approximately 0V.
- Disconnect box. Wiring ground and neutral together is the second most common mistake.

**TIP:** If you read voltage between 40-70 volts between neutral and ground you have a defective ground.
PEAK LOAD CHECK

It is important to check the voltage again under peak load conditions. To reach peak load, the heater, light, and all pumps (high-speed) must be on.

TIP: Voltage drop between house-breaker and the spa should not be more than 5 volts. If it is there is a problem in the wiring to the spa.

AMPERAGE CHECKS

Testing the amperage of a component is the best way to ensure said component is working within parameters.

Heater:

To test the heater amperage, clamp your amp meter around one of the heater wires or if they are not accessible you can clamp around one of the incoming power wires (line 1 or Line 2). With the heater on you should see the following readings:

- 4KW heater: 18 amps
- 5.5 KW heater 23 amps

These numbers are only approximate. The incoming voltage will affect these numbers. As long as you are close, the heater is okay.

Pump:

To test the pump amperage first look at the data label on the side of the motor and it will indicate what the amp reading should be for high and low speed.

The easiest way to get the amperage reading is by making sure the heater is off and clamping your amp meter around line 1 coming into the spa. Again, the incoming voltage will affect your reading. As long as it is within a couple of tenths, the motor is okay.

TIP: Make sure to test the amperage on the end components before leaving the spa to ensure the work you performed resolved the problem.

GFCI TRIP TEST LABEL

This spa is equipped with a mandatory Ground Fault Circuit Interrupter (GFCI) Trip Test to assure proper function. Carefully read and follow the instructions below.

AUTOMATIC TEST: At 24 hours after startup, the spa will trip the GFCI to test it. Be sure to notify and train the customer to reset the GFCI once it has been tripped. This completes the Trip Test. Refer to additional information below.

MANUAL TEST: The installer can cause the GFCI Trip Test to occur sooner by initiating it with a button sequence.

1. Press TEMP+, then JETS 1, then SPA LIGHT.
2. Press TEMP+ repeatedly until GFCI is displayed, then press JETS 1. The GFCI should trip within several seconds and the spa should shut down. Reset the GFCI to complete the test. If it does not trip, manually shut down the power and verify that a GFCI breaker is installed and that the circuit, GFCI and spa are wired correctly. Verify the function of the GFCI with its own test button. Restore power to the spa and repeat the GFCI Trip Test.

After passing the GFCI Trip Test, subsequent GFCI trips will indicate a ground fault or other unsafe condition requiring the prompt attention of the spa to be drained and refilled.

If the GFCI is tripped by the test, reset the GFCI and the spa will operate normally from that point. You can verify a successful test by navigating to the GFCI item as described above, pressing JETS 1 and then pressing the TEMP+ button until you see G.R.P. code that signifies GFCI Status - Passed. The system will exit this menu in 30 seconds if no buttons are pressed.

Warning: The GFCI Trip Test does NOT take the place of training the customer to locate, test and reset the GFCI on a regular basis to verify its function.

This label may be removed after the GFCI Trip Test has been successfully completed.
TROUBLESHOOTING

MARQUIS SPAS
TROUBLESHOOTING

We have revised the 2007 troubleshooting guide to make it easier to follow. The problem is listed at the top of the page. We give the explanation to the problem and follow with possible causes. The possible causes are listed in order of probability with explanation(s) of how to test that possibility.

As when troubleshooting any spa the most important thing to check is the incoming voltage. This must be done on every troubleshooting call and it is the first thing you should do. We explain how to do this on the following pages.
GFCI TRIPS OFF INSTANTLY

Ground Fault Circuit Interrupters (GFCI) breakers are required on all spas since 1994. The purpose of a GFCI breaker is to protect the user if there is a failure and voltage goes to ground. The GFCI should be tested once a month. You can test them by pushing the test button on the GFCI breaker. When pressed the GFCI breaker should trip and shut off power to the spa.

If the spa does not have a GFCI breaker do not attempt any repairs to the spa and inform the owner that the spa is not installed to code.

Now that we know what a GFCI is and why it trips the following are the causes for a GFCI trip and they are listed in order of probability. Before check the following you will need to check all connections in the system and look for any signs of water intrusion in the system. One of those may be the issue.

NOTE: If it is a new installation it would be extremely rare for the spa to have a problem, it is most likely an improperly wired GFCI breaker.

1. GFCI breaker is not wired properly
   - Touching or changing the breaker box is not recommended. A licensed electrician is the only one that should alter anything in the breaker box.
   - You can open the breaker box and look to see if it is wired properly. If you see that it is improperly wired call an electrician.

2. Heater
   - Insure there is no power to the spa by checking voltage at the terminal block.
   - Disconnect the two copper leads to the heater (this can be done at the boards or heater side whichever is easier).
   - Turn on the breaker.
   - If the breaker holds with the heater disconnected you will need to install a new heater.
3. **Pump**
   - Insure there is no power to the spa by checking voltage at the terminal block.
   - Unplug the pump from the system (if the spa has multiple pumps try them one at a time).
   - Turn on the breaker.
   - If the breaker holds with the pump unplugged you will need to install a new pump.

4. **Ozonator**
   - Insure there is no power to the spa by checking voltage at the terminal block.
   - Unplug the ozonator from the system.
   - Turn the breaker back on.
   - If the breaker holds with the ozonator unplugged you will need to replace the ozonator.

**GFCI TRIPS INTERMITTENTLY**
This is the hardest thing to troubleshoot in a spa. The reason is if it is not tripping when you are in front of the spa technically there is nothing wrong at that time.

1. **Heater**
   - If the heater is causing the GFCI to trip intermittently you will need to heat up the heater above normally operating temperatures. The easiest way to accomplish this is by closing one of the slice valves while the heater is on. Leave the heater on until the spa shuts it down.
   - If the breaker trips during this process it is most likely a defective heater and you will need to replace it.

2. **Pump**
   - If the pump motor is the problem the reason it will trip intermittently is heat related.
   - You will need to heat the motor above normal operation temperatures. The easiest way to accomplish this is by running the pump in high speed for 2-3 cycles (colder ambient temperatures may require longer cycles) and then turn the pump off (make sure the spa door is on during this process). The pump will be at its hottest a few moments after you turn it off. If the spa has multiple pumps do this test on each of them separately.
   - If the breaker trips during this process it is most likely you have a defective pump and you will need to change it.

3. **Ozonator**
   - If the ozonator is the problem it is most likely water intrusion.
   - Inspect the ozone tubing and ozonator carefully for any signs of water backing up into the ozonator.
   - If you see signs of water you will need to replace the ozonator and the check valve in the ozone tubing.

4. **Spa Light**
   - This could be the problem if the spa light is getting wet. Check all of the components for moisture.

If none of the above processes exposes the problem it may not be a spa issue. You could have a defective GFCI breaker, loose connection with the GFCI breaker or wire issues from the GFCI breaker to the spa.
TOPSIDE PANEL DOES NOT FUNCTION

Some of the issues you can have with a topside panel are: button(s) do not work; LED is out; LCD display is blank or reading Greek. No matter what the issue is the troubleshooting is the same.

The following, listed in order of probability, are the possible causes:

1. **Loose Connection**
   - Inspect the panel connection to the PC board. Unplug and plug it back in. When unplugged look for any signs of moisture or corrosion. (NEVER PLUG IN PANEL OR UNPLUG PANEL WITH THE POWER ON)
   - Inspect the cable for damage. If it is damaged you will have to replace the panel. The cable cannot be replaced.

2. **Defective Topside Panel**
   - To test for this you need another panel that you know is good. Turn the power off to the spa and plug in another good panel and test operations.
   - If everything functions properly replace the panel

3. **Defective PC Board**
   - To test the board you will do the same test as Defective Topside Panel.
   - After you plug in the good panel and you still have the same issues, you will need to replace the PC board.

**NOTE:** Ballast fired ozonators can cause strange anomalies with panel display from reading Greek to causing a diagnostic code. If you are having odd panel problems and the spa has a ballast ozonator, unplug and reset the power to the spa and see if the problems go away. If they do you will need to get a new ozonator from Marquis Spas that is solid-state fired.
ROUND REMOTE CONTROL TROUBLESHOOTING

Round Remote does not function
The round wireless remote only works line-of-sight, so first make sure the remote is lined up with the IR receiver on the spa.

The following, listed in order of probability, are the possible causes:

1. **Defective Round Remote**
   - There are two ways to determine if the remote is the issue.
   - Try another remote that you know works. If it will operate the pump(s) then the remote is the issue and needs to be changed.
   - This method requires a digital camera. A digital camera can see IR light so all you need to do is turn on your camera (camera phones work great for this) and point the remote at the camera and touch a button. If it is working it will look like someone is turning a flash light. If you do not see the light the remote is the issue and needs to be changed.

2. **Loose Connection**
   - The IR receiver has a cord that goes back to the PC board. Unplug and plug it back in to insure a good connection.

3. **Defective IR Receiver**
   - All that you need for this test is another IR receiver that you know works.
   - Plug it into the PC board and see if the round remote works now.
   - If it works properly the IR receiver is the issue and needs to be replaced.

4. **PC Board**
   - All that you need for this test is another IR receiver that you know works.
   - Plug it into the PC board and see if the round remote works now.
   - If the remote still does not operate then the PC board is the issue and needs to be replaced.
PUMP CYCLING
When we say a pump is cycling the motor is switching between high and low speed or on and off by itself. When troubleshooting the issue it is a simple matter of figuring out if the motor is cycling on its own or if the system is telling it to cycle.

The following are the most probable causes for this and they are listed in order of probability.

1. **Topside Panel**
   - While the pump is cycling unplug the topside panel. If the cycling stops the panel is defective or has a bad connection.
   - Check the connections and/or replace the panel.

2. **PC Board**
   - While the pump is cycling unplug the topside panel and the pump. If the pump relay on the PC board still continues to click on and off you will need to replace the PC board.

3. **Pump**
   - While the pump is cycling and with the topside panel unplugged test voltage at the pump and see if the power from the board is cycling. If it is not then the pump is the issue and needs to be replaced.

NOTE: In rare cases ballast fired ozonators and radio frequencies can interfere with the spa operations and pump cycling is one thing that can happen.

PUMP SURGING/CAVITATING
When a pump is surging it is gaining and losing water flow, but the motor continues to operate normally. If the motor is turning on and off or switches speeds on its own that is cycling. These are two different issues and will be troubleshot in two different manners.

It is not uncommon for a pump to retain some air when it is turned off. This comes from the air being drawn into the jets, getting sucked in the filters, and then into the pump. If this happens when the pump is turned back on it may take a few seconds to work the air out.

The following is the potential causes for a surging pump and they are listed in order of probability.

1. **Low Water Level**
   - Fill spa to 2/3 up on the skimmer fins.

2. **Air in the Plumbing**
   - On fresh fill it can take a few minutes for the spa to push all the air out of the plumbing. Putting the pump into high speed will help this go faster.
   - If running the pump does not get the air out you will need to loosen the suction side union on the pump. With the pump running in high-speed loosen the suction side union on the pump until water drips out then tighten back it up. This can take a few attempts.

3. **Dirty Filter(s)**
   - Install new filters

4. **Turbidity**
   - High turbidity can cause excess air in the plumbing/pump and can cause a pump to cavitate. The only resolution for this is to add fresh water.

5. **Plumbing Leak on the Suction Side**
• If the spa has a leak on the suction side it can draw in air and cause the pump to surge/cavitate.
• With the pump off look for any signs of leaking on the suction side of the plumbing in the equipment area. Repair as needed.

PUMP(S) DOES NOT FUNCTION
There can be several issues with the pump motor: completely dead, no low speed, no high speed, only one speed operates, and loud noise.

The key thing to remember when troubleshooting a pump motor is that it is an electrical item so therefore it must have proper voltage to operate.

The following are potential causes for pump motor issues and they are listed in order of probability.

1. **Blown Fuse**
   • With the power off remove the fuse(s) and do a continuity check on the fuse. If the fuse is defective replace it. If the fuse blows immediately after powering up, the spa has a defective motor or a wire has come loose at the motor.
   • If the spa runs fine and there is not an issue with the spa, it may have been lightening, a power surge or bad fuse.

2. **Bad Connection**
   • Check all connections at the motor.
   • Unplug the pump cord at the PC board and check to see if any pins in the plug are out. Repair or replace.

3. **Defective Pump Motor**
   • To determine if the motor is defective you will need to check voltage to it. The easiest way to do this is by unplugging the pump/motor from the PC board and probing the pins on the board. YOU CANNOT USE A DIGITAL METER FOR THIS TEST – IT MUST BE AN ANALOG METER.
   • Check the side of the motor to find out what voltage the motor is. That is the voltage you should read for the low and high speed.
   • Low speed is the white and black wires.
   • High speed is the white and red wires.
   • If you are getting proper voltage the issue is a defective pump/motor.
   • Replace the pump/motor.

4. **Defective PC Board**
   • To determine if the PC board is the issue you will need to unplug the pump from the board and probe the plug on the board for proper voltage.
   • Check the side of the motor to find out what voltage the motor is and that is the voltage you should read for the low and high speed.
   • Low speed is the white and black wires.
   • High speed is the white and red wires.
   • If you are not getting the correct voltage from the PC board the board is defective.

**NOTE:** YOU MUST HAVE AN ANALOG METER FOR THE VOLTAGE CHECKS. USING A DIGITAL METER WILL GIVE YOU VOLTAGE READINGS ON BOTH SPEEDS ALL THE TIME.
THE OZONATOR IS NOT FUNCTIONING

The first thing you need to do to troubleshoot an ozonator is insure that it is on. The ozonator only operates during filter cycles so, unless you know when the filters cycles are, you cannot test the ozonator. We have engineered a way to test the ozonator outside of the filter cycles.

A few seconds after the spa is powered up the topside panel will display “PR”. When PR is displayed the Settings button will function as will an on/off switch for the ozonator.

Now that we know how to turn on the ozonator the following are the possible causes for the ozonator not to function and they are listed in order of probability.

NOTE: You need an analog meter to test the ozonator.

1. **Ozonator**
   - Unplug the ozonator from the PC board and test for 120-volts at the board (use an analog meter for this test).
   - If you do have 120-volts the ozonator is defective and you will need to replace it.

2. **PC Board**
   - Unplug the ozonator from the PC board and test for 120-volts at the board (you will have to use an analog meter for this test).
   - If you do not have 120-volts the PC board is defective and you will need to replace it.

NOTE: The ozonator is a non-serviceable part so you cannot change the bulb.
SPA DOES NOT HEAT (HEAT INDICATOR LIGHT IS NOT ON)

When the heat indicator is not on that means something is telling the board to not heat.

The following listed in order of probability for this issue:

1. **The spa temperature setting is below the actual water temperature**
   • Adjust the temperature setting above the water temperature

2. **The spa heat modes are set to not allow the spa to heat**
   • Adjust heat mode to the Standard mode

3. **Check the topside panel for any diagnostic code.**
   • Refer to the code in the troubleshooting guide

4. **With no diagnostic code and spa set correctly**
   • Replace the PC board

**NOTE:** THE HEATER INDICATOR IS EITHER A RED LIGHT (4-BUTTON PANEL) OR THE SCROLLING THERMOMETER (10-BUTTON PANEL).

SPA WILL NOT HEAT (HEAT INDICATOR IS ON)

When spa the will not heat but the heat indicator is on the correct information is being supplied to the PC board to heat. So this tells us the set temperature is above the spa temperature and all the sensors are working correctly.

There are only three things that can be the problem in this situation. They are listed below, as well as how to test them.

1. **Heater**
   • With your voltmeter test voltage across the two heater terminals (120-volts spa should have 120-volts and 240-volts should have 240-volts).
   • If you have proper voltage double check with an amp meter to insure the spa is not heating.
   • If you have proper voltage and no amperage the heater is defective.

2. **Connection**
   • With your voltmeter test voltage across the two heater terminals
   • If you do not have voltage, test for voltage at the PC board where the two copper straps from the heater attach.
   • If you have voltage you have a bad connection.
   • Check for a loose screw.

3. **PC Board**
   • With your voltmeter test for voltage at the two heater terminals.
   • If you do not have voltage, test for voltage at the PC board where the two copper straps from the heater attach.
   • If you still do not have voltage then the PC board is defective.

**NOTE:** The approximate amp draw for the heaters is listed below:

- 5.5KW: 23 Amps
- 4KW: 18 Amps
- 1KW: 8 amps
SPA LIGHT WILL NOT TURN ON
A spa can have up to three lights and use incandescent and/or LED type bulbs. The troubleshooting is the same for both types.

The following are the possible causes and they are listed in order of probability:

1. **Light Bulb**
   - Install a new light and see if it functions properly. If yes, problem solved.
   - If an LED light is showing any colors the problem is a defective LED, not the bulb.

2. **Fuse (The 3-Amp Fuse)**
   - Turn off the power to the spa and remove the light fuse from the board and test it for continuity.
   - If there is no continuity through the fuse you will need to replace it.
   - If it blows again there is an issue with the wiring harness for the light and it needs to be replaced.

**TIP:** Do not use 12-v incandescent replacement bulbs. They could blow the circuit board.

3. **Topside Panel**
   - You will need another topside panel. Check to see if the light button on the topside panel works.
   - If the test panel will operate the light then you need to replace the panel.

4. **PC Board**
   - If you still cannot get the light to come on then the PC board needs to be replaced.

**SPA IS COMPLETELY DEAD**
If the spa has no functions at all the following are the possible reasons and they are listed in order of most probable.

1. **Incoming Voltage**
   - Test the incoming voltage as stated on page 22.
   - If you are not getting proper voltage to the spa you will need to call an electrician.

2. **Blown Fuse**
   - With the power off to the spa remove the 20, 25 or 30-amp pump fuse from the system and test it for continuity.
   - If the fuse does not have continuity you will need to replace it.
   - If the fuse blows again you have a motor issue or the wires going to the motor are damaged. Inspect and replace as necessary.
   - Still with power off, remove the fuse labeled F4 on the PC board and test it for continuity.
   - If it does not have continuity you will need to replace it.
   - If the fuse blows again you will need to replace the PC board as the transformer is most likely defective.

3. **PC Board**
   - After confirming voltage and fuses are functioning properly, replace the PC board.
TEST MODE
With the implementation of the M-7 technology in the entire 2005 product, the spas have advanced diagnostic capabilities and the feature to be able to read what temperature each sensor is reading (test mode). This will aid in your troubleshooting. Knowing what each sensor is reading will help in almost every diagnostic code to determine the issue. There are a few steps to get into this test mode and it is different with the two equipment systems we use.

VS SYSTEM
The first equipment system is called the VS system. We use this in all the Hideaway, Everyday, Limited Series and the Marquis Quest.

To engage the test mode you will need to move dipswitch #1 to the on position and then touch the light button. At this point the display will start alternating the temperature for each sensor. It will distinguish each sensor with “A” and “B”.

To exit, move the dipswitch 1 back to the off position.

EL SYSTEM
The other system we use is the EL system. It is used in the Destiny, Reward, and Epic.

NOTE: Follow these steps exactly or you can disable the timeouts on the pumps and light and override the high limits! If you do change them they will default back to the factory settings in eight hours.

To engage the test mode you will need to move dipswitch #1A (blue dip switch). You will see the words “test mode” in the topside panel display. Press temp+/jet1/light. At this point the topside will display (tst). Then touch jet1 again and the topside will display (abn). Touch jets once again and the (n) will flash. Touch temp+ to change the (n) to a (y). You are telling the system that yes; you want to read what each sensor is reading.

After telling it yes, you will need to touch jet1 and then the light button twice. At this point the display will start alternating the temperature for each sensor.

There is a four second timeout so, if you do not touch the buttons fast enough, the display will revert to temperature display.

After you move the dipswitch touch these buttons in this sequence:

- Temp+/jet1/light/jet1/jet1/temp+/jet1/light/light.

To exit the test mode move dipswitch 1A back to the off position.
DIAGNOSTIC CODES: 2000-2010
Marquis spas utilize two different control panels – 10-button and 4-button. All the diagnostic
codes are basically the same except the 10-button panel displays three characters and the 4-
button panel displays two characters.

9 & 10-BUTTON PANEL
- EPIC, REWARD and DESTINY
  Three-character LED display

4-BUTTON PANEL
- ALL MODELS
  Two-character LED display
TOPSIDE PANEL DISPLAYS, “SNA” or “SNB”, “SA” or “SB”

This indicates one of the sensors is non-functional. Sensors A and B are determined by where they are plugged into the PC board.

The following are the potential causes for this code and they are listed in order of probability.

1. **Loose Connection**
   - Inspect the sensor connection at the PC board, unplug and reinsert them.

2. **Damaged Sensor**
   - Replace the sensor, do not attempt a repair.

3. **Defective Sensor**
   - Reverse the sensors where they plug into the PC board and see if the opposite sensor code is reading non-functional. If yes, the sensor is defective.

4. **Defective PC Board (THIS IS EXTREMELY UNLIKELY)**
   - Reverse the sensors where they plug into the PC board. If the same sensor still reads non-functional then the PC board is defective.
THE TOPSIDE DISPLAYS “SNS” or “SN”

This indicates that the sensors are not reading the same temperature when the heater is off. The system looks for a difference and if the sensors get a 2°F differential with the heater off SNS or SN will be displayed.

The following are the potential causes for this code and they are listed in order of probability.

1. **Fresh fill with very cold source water**
   - No corrective action is required. It should clear itself.

2. **Defective Sensor (THIS IS EXTREMELY UNLIKELY)**
   - Test the spa water temperature with a digital thermometer (record temperature).
   - Put the spa in the test mode (refer to page 37).
   - Compare the two sensor readings with the temperature you took with your digital thermometer.
   - Make a note as to which sensor is reading off (A or B).
   - Reverse the sensors where they plug into the board. If the opposite sensor is reading off now the sensor is defective.

3. **Defective PC Board (THIS IS EXTREMELY UNLIKELY)**
   - Test the spa water temperature with a digital thermometer (record temperature).
   - Put the spa in the test mode (refer to page 37).
   - Compare the two sensor readings with the temperature you took with your digital thermometer.
   - Make a note as to which sensor is reading off (A or B).
   - Reverse the sensors where they plug into the PC board. If the same sensor still reads off then the PC board is defective.
TOPSIDE PANEL DISPLAYS “HFL” OR “HL”
This indicates that there is at least a 6 degrees F difference between the sensors during a heating cycle. The following are the potential causes for this code and they are listed in order of probability.

1. **Defective Pump**
   - Test pump refer to page 32.

2. **Low Water Level**
   - Fill spa to 2/3 un the skimmer

3. **Closed Slice Valve**
   - Open slice valve and insert clip to insure they will not close again

4. **Clogged Pump Impeller**
   - Remove front housing to the pump and inspect and clean impeller

5. **Defective Sensor** (THIS IS EXTREMELY UNLIKLEY)
   - Test the spa water temperature with a digital thermometer (record temperature)
   - Put the spa in the test mode (refer to page 37)
   - Compare the two sensor readings with the temperature you took with your digital thermometer.
   - Make a note as to which sensor is reading off (A or B)
   - Reverse the sensors where they plug into the board if the opposite sensor is reading off now the sensor is defective.

6. **Defective PC Board** (THIS IS EXTREMELY UNLIKLEY)
   - Test the spa water temperature with a digital thermometer (record temperature)
   - Put the spa in the test mode (refer to page 37)
   - Compare the two sensor readings with the temperature you took with your digital thermometer.
   - Make a note as to which sensor is reading off (A or B)
   - Reverse the sensors where they plug into the pc board if the same sensor still reads off then the pc board is defective.

**NOTE:** Once the problem is corrected touching any button will reset the spa.
TOPSIDE PANEL DISPLAYS “DRY” OR “DR”
This is a low flow indicator. The system circulates the water for two minutes to calculate an accurate temperature. After that the system will fire the heater for four seconds. The following 60 seconds the system is looking for a four degrees F rise on either sensor from the last calculated temperature.

The following are the potential causes for this code and they are listed in order of probability.

7. Defective Pump
   • Test pump refer to page 32

8. Low Water Level
   • Fill spa to 2/3 un the skimmer

9. Closed Slice Valve
   • Open slice valve and insert clip to insure they will not close again

10. Clogged Pump Impeller
    • Remove front housing to the pump and inspect and clean impeller

11. Defective Sensor (THIS IS EXTREMELY UNLIKLEY)
    • Test the spa water temperature with a digital thermometer (record temperature)
    • Put the spa in the test mode (refer to page 37)
    • Compare the two sensor readings with the temperature you took with your digital thermometer.
    • Make a note as to which sensor is reading off (A or B)
    • Reverse the sensors where they plug into the board if the opposite sensor is reading off now the sensor is defective.

12. Defective PC Board (THIS IS EXTREMELY UNLIKLEY)
    • Test the spa water temperature with a digital thermometer (record temperature)
    • Put the spa in the test mode (refer to page 37)
    • Compare the two sensor readings with the temperature you took with your digital thermometer.
    • Make a note as to which sensor is reading off (A or B)
    • Reverse the sensors where they plug into the pc board if the same sensor still reads off then the pc board is defective.

NOTE: Once the problem is corrected touching any button will reset the spa.
TOPSIDE PANEL DISPLAYS “OHH” or “OHS”, “HH” or “OH”

This indicates one of the sensors has overheated, HH and OHH are set at 118˚ F and OH and OHS are set at 110˚ F.

To determine which sensor has overheated the boards are marked sensor A and sensor B. A sensor is the OH and OHS and B sensor is the OHH and HH. Follow the sensor back toward the board and see which one it is plugged into. Check temperature reading sensors.

The following are the most probable causes for these. They are listed in order of priority:

1. **Defective Pump**
   - Test pump refer to page 32

2. **Closed Slice Valves**
   - Open slice valves and insert clip to insure they will not close again.

3. **Clogged Pump Impeller**
   - Remove front housing to the pump and inspect and clean out the impeller.

4. **Low Water Level**
   - Fill spa to 2/3 up on the skimmer.

5. **Filtration Times Too High for Hot Weather**
   - Low filtration times (minimum of 4 hours in a 24 hour period).

6. **Heater With a Hot Spot in the Heater Vessel**
   - Replace the heater.

7. **Defective Sensor** (THIS IS EXTREMELY UNLIKELY)
   - Reverse sensor A & B at the pc board if the diagnostic code changes to the opposite code the sensor is defective.

8. **Defective PC Board** (THIS IS EXTREMELY UNLIKELY)
   - Reverse sensor A & B at the board if the diagnostic code stays the same the PC board is defective.

**NOTE:** The sensors can be replaced separately.
TOPSIDE PANEL DISPLAYS “CLD” or “ICE” (10-button), “IC” (four-button)

The “ICE” indicates one of the sensors has detected a freeze condition (55°F). “CLD” is displayed if you have installed the optional freeze sensor and it has detected a freeze condition (40°F). Seeing either of these icons is normal on a fresh fill if the water temperature is below 50°F. If either of these are detected it will start the pump(s) until the sensor(s) are within 15°F of the set point.

**TIP:** In extremely cold temperatures it is recommended to add the optional freeze sensor (part number 600-6222).
This is the diagnostic code for the clock malfunctioning:
- Turn off the power to the spa for 10 seconds
- Replace the PC Board

This is the diagnostic code for a hardware failure:
- Turn off the power to the spa for 10 seconds
- Replace the PC Board

This is the diagnostic code for a firmware failure (software):
- Turn off the power to the spa for 10 seconds
- Replace the PC Board

This is the diagnostic code for a configuration error. The configurations are pump time outs, set temperature and filter cycles.
- Turn off the power to the spa for 10 seconds
- Replace the PC Board

This is the diagnostic code if there is not a GFCI installed on the power supply to the spa.
- Install a GFCI to the power supply
- Replace the PC Board

This is the diagnostic code for the spa heating above the set temperature point by X degrees.
- Test the pump(s) operation to make sure they still have high and low speed and they turn off
- Test voltage to the heater with the heat indicator off, there should be 0 volts. If you have voltage, replace the heater
- Replace the PC Board

This is the diagnostic code for the spa heating above the set temperature point by X degrees.
- Test the pump(s) operation to make sure they still have high and low speed and they turn off
- Test voltage to the heater with the heat indicator off, there should be 0 volts. If you have voltage, replace the heater
- Replace the PC Board
SOUNDSATIONS™ HAS NO SOUND

The Soundsations system is merely using transducers to turn the spa into a speaker. We have two channels in the system so you could have only half the spa working or nothing at all.

The following listed in order of probability are the possible causes:

1. **Defective Transducer**
   - The wiring harness for the transducers is in the equipment bay and it is a four-pin amp plug.
   - You will need to disconnect the male part of the plug.
   - Then test the ohm value of the two wires for each channel. Red and Black are channel 1 and White and Green are Channel 2.
   - Each channel should read approximately 16 ohms.
   - If you read proper ohms the issue is not the spa.
   - If you do not have 16 ohms the issue is the transducer and it will need to be replaced.

   **NOTE:** There are two transducers for each channel and they are wired in series so only one has to be defective and the other one will not work. Before replacing the transducer ohm by itself, it should be approximately 8 ohms.

2. **Loose Connection**
   - Check the female and male amp plug to see if any pins have pushed out.
   - If so you should be able reinsert them.
   - If you have to dig the transducers out check their connection also.

3. **Poly-Switch**
   - If you are to the point where you have the transducers with 8-ohms on each transducer you may have a bad poly-switch.
   - The poly-switches are an over-wattage protector for the transducers and are located behind the equipment bay wall right behind the plug.
   - Perform a continuity check on the wires putting one end of your test leads on one side of the poly-switch and the other lead on the other side of the poly-switch. If you do not have continuity the poly-switch is defective and needs to be replaced.
   - If you have continuity you have a bad connection. Go back and check all connections.

**TIP:** The transducers are located close to the corners and at the tile line. To aid in locating the transducers use a magnet on the shell side. When you get close to the transducer the magnet will push away from the shell or pull towards it.
ADAGIO STEREO SYSTEM

Stereo Does not Function
The Marquis spa stereo system consists of several components:
1. AM/FM CD Stereo
2. Two Pop-Up Speakers
3. Sub-Woofer
4. Power Supply Box
5. I.R. Control Box
6. Crossover/Equalizer Box
7. Adapter Cable for an MP3 Player
8. Remote (operates stereo and spa lights and jets)

The troubleshooting for most of the items is plug and play. The power supply is the only thing you will need to check voltage on.

Stereo is Completely Dead
- Unplug the Power Supply Box from the PC board and with an analog meter check between where the white and black wires connect for 120-Volts.
- If you do not have 120-volts you will need to test the SC-30 amp right below the plug for continuity, if the fuse is good then the pc board will need to be changed.
- If you have 120-volts you will need to plug in a new stereo. While you have the stereo out check the fuse for continuity that is inline with the red wire in the black fuse holder.
- If all works plug back in the original stereo to insure it was not a bad connection.
- If the new stereo is still dead you will need to plug in a new Power Supply Box. If all works plug back in the original Power Supply box to insure it was not a bad connection.

Stereo is on but no Sound
- If both speakers and sub-woofer are dead it is unlikely a speaker issue, the best course of action would be to plug in a new stereo. While you have to stereo out check the fuse for continuity that is inline with the red wire in the black fuse holder.
- If all works now plug in the original stereo to insure it was not a bad connection.
- If there is still no sound you will need to plug in a new Crossover/Equalizer Box (this item is the first box connected to the ribbon cable from the back of the stereo).
- If all works now plug in the original Crossover to insure it was not a bad connection.

Speaker (Sub-Woofer) has no Sound Output
- Plug in a new speaker assembly.
- If the speaker works, plug in the original to insure it was not a bad connection.

NOTE: If the Crossover/Equalizer box is defective it will only affect the sound quality but the stereo will still be operating.

Stereo Remote does not function
The remote uses an infrared (IR) signal so it has to be in line of sight with the IR receivers, there are three on the spa; one on each speaker and one on the front of the stereo.

The two pop up speakers has a red L.E.D. light indicating where the I.R. receiver is.
- You can test the remote with digital camera to see if the remote is emitting the I.R. signal. Turn on your camera on and point the remote at the camera when you push a button you should see the light through the camera. No light would be a bad battery or a bad remote. Try the batter first.
- Check all the connections from the PC board to the I.R. interface box. Also check the black plug off the equalizer box. If the red L.E.D. lights on the speakers are not on that is an indication there is a bad connection.
- If the red L.E.D. lights on the speakers are on you should plug in another I.R. interface box.
- Replace the PC board.
Constellation Troubleshooting

The Constellation lights are L.E.D. (light emitting diodes) and they are wired in a series around the spa.

There are only five components that can affect the lights:
- Topside Panel
- PC Board
- L.E.D. Control Box
- Light Cord for Exterior Lights
- Lights Cord for Interior Lights

None of the Lights Come On
- After you press the light button you will need to check for approximately 12-volts out of the light socket (J 20 on the 4-button panel and J -12 for the 9 & 10 button panel spas)
- If you do not have proper voltage plug in another topside panel to see if the light button on the panel is the issue. If the light works now then the topside panel is defective.
- If the light button still does not produce voltage at the light socket remove the light fuse and test for continuity (4-button panel the fuse is located at F-1, 10-button panel the fuse is located at F-4). If the fuse if bad replace it, if the fuse is good you will need to replace the pc board.
- If the light socket is supplying the correct voltage you will need to plug in another L.E.D. control box. If the lights now work replace the L.E.D. control box.

The only other possibilities if it still does not work is that all the L.E.D. lights around the spa are burned out, which is very unlikely or that the cable from the L.E.D. control box to the first light inline is damaged/cut.

Only One Light is not Lighting
- Replace the light
- Check the cable for damage

A Series of Light do not Light
- The lights run in a series around the spa so between the last light that works and the first one that does not you will have a bad connection or a damaged cable.
PLUMBING

JET SELECTOR WILL NOT TURN
1. Unscrew top valve and pull out assembly.
2. Flush out any debris.
3. Use fine grit sandpaper (600-800 grit) to sand down any burrs or grooves on valve gate.

NO JET ACTION
1. Are pumps running?
2. Are slice valves open?
3. Is jet selector in correct position for that zone?
4. Is jet face in open or closed position?
5. Remove jet insert. Are there any obstructions (glue, foam, leaves, etc.)?
6. Remove side panel. Check for pinched or collapsed plumbing line.

NO AIR FROM JETS
1. Are pumps running?
2. Are air valves open?
3. Is jet selector in correct position for that zone?
4. Are jets in open position?
5. Check air draws in equipment bay. Are they drawing air?
6. Remove top air control. Is the ball moving freely?
7. Remove side panel. Check for pinched or collapsed airline.

TIP: To remove top control, turn valve clockwise, press down firmly on the valve, and quickly turn counter-clockwise (like a medicine bottle).

JET SURGING
1. Check water level. Add water if necessary.
2. Remove filters, check for any obstructions or debris.
3. Check the slice valves to pump(s). Are they in a fully open position?
4. Bleed-off any air in the pump by unscrewing the discharge union a couple of turns.
5. Check impeller for any obstruction or debris.
6. Confirm proper voltage to pump. (240V on 240V systems; 120V on 120V systems; 120V on 120/240V convertible systems.)
7. Replace pump.

SPA WILL NOT DRAIN
1. Make sure center plug is removed from drain.
2. Make sure drain valve is fully open by turning the ball valve in the equipment bay.
3. Check footwell drain. Clear any obstruction or debris.
4. Check for pinched or collapsed drain line between footwell drain and drain valve.
FINDING A LEAK

First always determine the spa is actually leaking. Under normal conditions, a spa can lose up to one inch of water per week through evaporation and bather activity. There can also be standing water around the spa from normal use.

1. Check the equipment area for water. Check that all disconnects are tight.
2. Check the pump seal for leaks. Replace if needed.
3. Check glue joints for leaks.

If the leak is not in the equipment area, check the internal plumbing of the spa. Here are the methods for finding such a leak:

1. Turn off the spa and let the water drain down to its lowest level. Wherever it stops, that’s where the leak will be found.

TIP: This is a time consuming technique and is not recommended in freezing temperatures.

2. Dye the water with food coloring. Run the spa, allowing enough time for the color to work its way through the foam. After draining the spa, tip the spa on its side and follow the stained foam to the leak.

TIP: If the spa has an ozonator, the ozone gas stains the foam a dark brown color eliminating the need for food coloring.

3. Use a multi-meter to check for continuity between the foam and the water in the spa. Use some 8-awg wires as an extension for one of the leads. You will get continuity where the spa is leaking.

TIP: This is also the best way to determine if a leak has been repaired properly.

REPAIRING A GLUE JOINT

1. If you have a glue joint leaking at an elbow jet, cut the flex as close to the fitting as you can.
2. Use a heat gun to heat the remainder of the flex in the fitting.
3. Once it becomes soft, use needle nose pliers to separate the flex from the fitting by twisting the flex out. Make sure you only heat the area that needs to be repaired.
4. After the old flex is removed, re-glue the pipe into the fitting. In some cases, you may need to use a coupler and additional pipe to make it reach.

REPLACING A JET

1. Cut the flex pipe and air lines as close to the jet as possible.
2. Use a jet wrench to unscrew the wall fitting from the jet back.
3. Remove jet back.
4. Clean both sides of the shell making sure no old silicone is left behind.
5. Run a bead of silicone (GE1000) on the new jet back where it meets the shell.
6. Do the same to the new wall fitting, making sure not to get any on the threads.
7. Position the new jet back and screw the wall fitting into it. Do not over tighten!
8. Clean excess silicone from around the jet. Re-glue the plumbing lines.

You should wait 24 hours before refilling the spa. Check for any leaks.
INSTALLATION GUIDES
HEATER REMOVAL/INSTALLATION LZM2U SYSTEM

Tools:
3/8” Nut Driver
90-Degree Needle Nose Pliers
Philips Screwdriver
3” Jaw Channel Lock Pliers

1. Turn off the breaker to the spa.
2. Remove the front panel/door to the spa.
3. Close the slice/knife valves to the heater. One is on the suction side of the pump and the second one is on the discharge side of the heater.
4. Remove the front cover to the control box.
5. Unplug both the sensors from the circuit board.
6. With your 3/8” nut-driver, remove the two nuts from the copper straps at the circuit board.
7. Loosen the two nuts on the brackets of the heater. One is on top and one is at the bottom of the heater.
8. Completely loosen the two white unions (one on either end of the heater).
9. Remove the heater.
10. Remove the copper straps from the heater studs (this is where the 90 degrees needle nose pliers will help).
11. For installation do the reverse steps. When you attach the copper straps back on the heater studs make sure you hold the bottom nut very tight. YOU DO NOT WANT TO TWIST THE HEATER STUD!

MQ2KU HEATER REMOVAL/INSTALLATION

Tools:
Philips Screwdriver
3/8” Nut Driver
Needle Nose Pliers
3” Jaw Channel Lock Pliers

1. Turn the breaker off to the spa.
2. Remove the front panel/door to the spa.
3. Close the slice/knife valve at the suction of the pump and the discharge side of the heater.
4. Loosen the suction disconnect to the pump to release the water pressure.
5. Remove the front cover to the control box.
6. Unplug the sensors from the circuit board.
7. Remove the 3/8” nuts from the copper straps at the circuit board.
8. Remove the four bolts on the C-clamps.
9. Take the unions loose from either side of the heater.
10. Remove the heater from the box.
11. Remove the heater straps from the heater.
12. For installation do the reverse steps. When you attach the copper straps back on the heater studs make sure you hold the bottom nut very tight. YOU DO NOT WANT TO TWIST THE HEATER STUD!
13. Test all functions.
TOOLS REQUIRED:
- Philips Screwdriver #2
- Needle Nose Pliers
- 3/8” Combination Wrench
- 3/8” Nut Driver or Socket Set

1. Turn Power off to the spa. Confirm by checking voltage at the terminal block (refer to page 22)
2. Remove door from spa.
3. Unscrew the two Philips head screws at the top of the control box and remove the cover.
4. Disconnect the incoming power wires from the terminal block and disconnect the ground wire from the ground bar.
5. Unplug the pump cords from the PC board (note their location). The plugs have clips on the ends, so you will need to squeeze the ends of the plugs to remove them.
6. Unplug the topside panel, spa monitor and I.R. receiver from the PC board (note their location).
7. Unplug the spa and waterfall light cords (note their location [for the waterfall light you will need to remove the wires from the board]). These plugs are like the pump plugs – you will need to squeeze the ends.
8. Unplug the two sensors from the PC board. They have a small clip on one side that needs to be depressed.
9. Use a 3/8” wrench or socket and remove the nut off the grounding plate to the heater.
10. Use a 3/8” nut driver and remove the two 3/8” nuts that attach the copper straps from the heater. Carefully bend the copper straps only enough to clear the PC board.
11. Remove the seven Philips head screws from the board.
12. Remove the PC board.

INSTALLATION:
1. Follow steps 3-11 in reverse order.
2. Double check all connections.
3. Power the spa up.
4. Test all functions.
5. Test amperage on the pumps and heater to insure they are working within parameters.
6. Put the cover back on the control box.
7. Put spa door back on.

If PC board is under warranty, complete warranty paperwork.
OZONATOR WIRING INSTRUCTIONS

The Marquis ozonator can operate on 120-volts or 240-volts. All Marquis equipment systems have always used the 120-volt configuration and that is how this ozonator is supplied to you. If installing in a non-Marquis spa you will need to check the system to see if it is configured for a 120-volt or 240-volt ozonator.

Standard 120-volts systems would have a black (hot), white (neutral) and ground.

Standard 240-volts systems would have a black (hot), red (hot) and ground.

It is a good idea to always check the voltage output from the equipment system to be 100% correct on the voltage configuration.

Wire the plug as follows:

Ozone connector configuration for 120V 60Hz

Ozone connector configuration for 240V 60Hz

Always double-check the wiring configuration on the equipment system you have, as some manufacturers may not follow the standard.

M2Q2U CIRCUIT BOARD REMOVAL/INSTALLATION

Tools Required:
- Philips Screwdriver
- 3/8” Nut Driver or Socket
- 5/16” Nut Driver
- 1/4” Nut Driver
- Needle Nose Pliers
- Flat Tip Screwdriver

1. Turn the breaker off to the spa.
2. Remove the front panel/door to the spa.
3. Remove the front cover to the control box.
4. Remove the incoming power wires from the terminal block.
5. Unplug the topside panel (note the locations).
6. Unplug the sensor from the circuit board.
7. Unplug all pump and light cords from the circuit board (note the locations).
8. Remove the two 3/8 nuts where the copper heater straps attach to the circuit board.
9. Remove the seven green Philips head screws from the board.
10. Do reverse steps for installation.
11. Check all functions.

NOTE: Before installing the new board, note all jumper logic and dip switch locations and make sure they are the same.
LZM2U CIRCUIT BOARD REMOVAL/INSTALLATION

Tools Required:
- Philips Screwdriver
- 3/8” Nut Driver or Socket
- 5/16” Nut Driver
- ¼" Nut Driver
- Needle Nose Pliers
- Flat Tip Screwdriver

1. Turn the breaker off to the spa.
2. Remove the front panel/door to the spa.
3. Remove the front cover to the control box.
4. Remove the incoming power wires from the terminal block.
5. Unplug the topside panel (note the locations).
6. Unplug the sensor from the circuit board.
7. Unplug all pump and light cords from the circuit board (note the locations).
8. Remove the two 3/8 nuts where the copper heater straps attach to the circuit board.
9. Remove the seven Philips head screws from the board.
10. Do reverse steps for installation.
11. Check all functions.

NOTE: Before installing the new board, note all jumper logic and dip switch locations and make sure they are the same.

PUMP REMOVAL/INSTALLATION

These steps for pump removal and installation are generic for Marquis Spas: there will be small differences between models but the basics are the same.

Tools Required:
- 3” jaw Channel locks or strap wrench
- Flat tip screwdriver
- Philips screwdriver
- ½" box/open end wrench

1. Turn the breaker off to the spa.
2. Remove the front panel/door from the spa.
3. If applicable, close the slice/knife valves for the pump. There will be one on the suction side and the other is on the discharge side beyond the heater.
4. Unplug the pump cord from the control box. If the pump cord is hard wired into the control box make sure to mark the connection point to the circuit board.
5. Disconnect the solid copper ground wire from the motor and bend it out of the way.
6. Using a ½” wrench, take off the two nuts on the motor support (bottom front).
7. Unscrew the suction and the discharge disconnects from the motor (this may require a tool: large channel locks or a strap wrench is recommended).
8. At this point the pump assembly is ready for removal. Grab the motor with both hands and remove. We do put some silicone on the back of the motor support; this may give you the impression that there are other nuts holding the motor down, but there is not. A little pulling and twisting will remove the pump assembly.

For installation, do the steps above in reverse. We suggest that you install new O rings in these disconnects each time. These disconnects should only be hand tight: if hand tight and there is a leak you may have a problem with the O ring.

After installation is complete check all functions.
Installation Instructions-Marquis Spas

Step #1

Position the spa cover (in closed position) on the spa, making sure that all four corners are properly positioned and square on the spa. Position the corner wedge and bracket so that it is flush with the side.

Step #2

Connect the Pivot Arms to the Mounting Brackets and corner wedge (See Fig. 1). Using the #10 X 1” and the #10 X 1 1/2” screws, attach the left and right Mounting Brackets 8” to 12” down from the top, to the appropriate sides of the spa (See Fig. 2). After Pivot Arms are connected tilt them back into the upright position.

Step #3

Insert the long end of the Support Arms into the center Coupler Piece. Then slide Support Arms into the Pivot Arms. (See Fig. 3)

Step #4

Lay the Cover Companion on the spa cover. Adjust the Coupler Piece and Support Arms so that the Coupler Piece is lying parallel to the spa cover’s hinge about a 1/2” away. (See Fig. 4) Using the #10 self tapping screws, fasten Support Arms to Pivot Arms and the Coupler Piece.

Note: Be sure to rotate the Coupler Piece so that the inserted screws are at a horizontal angle with heads facing the back of the spa.

Step #5

Slip the black hand grips to the edge of the spa cover and snap black plastic screw head covers on.

Step #6

Attach the provided 3 hook TowelMate on the preferred side of your Cover Companion, by simply snapping it into place and inserting the middle self tapping screw. (See Fig. 5)

You are done!

CAUTION! Do not use the Cover Companion in high wind conditions (greater than 10 m.p.h.). Injury from the spa cover being blown over and impacting the spa user can occur.
**COVERMATE III**

**Installation instructions**

**Step #1**
Position the spa cover (in closed position) on the spa, making sure that all four corners are properly positioned and square on the spa.

**Step #2**
Using the the #10 X 1” screws, attach the left and right Mounting Brackets to the appropriate sides of the spa. (See Fig. 1) **Note:** Brackets can be mounted directly to the Top Rail of the spa or to the side wall of the spa. **Caution:** To prevent splitting of wood cabinet, pre-drill holes with a 1/16” drill bit.

**Step #3**
The Covermate III is equipped with a Wind Lock Bar that can be installed on either side of the spa. This needs to be determined at this point, as the pivot arm with the stop studs needs to be installed on the chosen side of the Wind Lock Bar. Starting with the left side first, insert the short end of the left Cover Support Arm into the Pivot Arm. (See Fig. 2 to determine Left Support Arm and Pivot Arm)

Next, lay the long end of the Cover Support Arm on the top of the cover lying parallel to the spa cover hinge about a 1/2” away. Insert the U-Shaped Retainer Clip in between the two cover halves, with the horizontal part touching the underside of the cover hinge. (See Fig. 2)

With the Left Support Arm lying on the cover, slide the straight coupler piece over the long end of the left Cover Support Arm. Repeat this step for the right side Cover Support Arm and Pivot Arm and insert the long end of the Cover Support Arm into the coupler piece.

**Step #4**
Connect the Pivot Arm to the left Mounting Bracket (See Fig. 4). Be sure to run the Bolt Head as pictured. Lightly tighten the nut and bolt combination so the the Pivot Arm moves freely.

**Note:** Do not insert Self Tapping Screws at this time.

**Step #5**
Install the Wind Lock Bar on the determined bracket side (See Fig. 4). Lightly tighten the nut and bolt combination so that the Lock Bar moves freely.

**CAUTION!** Do not use the Covermate in high wind conditions (greater than 10 m.p.h.). Injury from the spa cover being blown over and impacting the spa user can occur.
Step #6
Attach the right side Pivot Arm to the right side Mounting Bracket. Next, install the ball studs to the left and right Pivot Arms. **NOTE:** Be sure that the ball stud is pointing away from the spa (see Figure 6).

Step #7
Adjust the Coupler Piece and support Arms so that the Coupler Piece is lying parallel to the spa covers hinge about 1 1/2" away, and centered. Be sure that the Retainer Clips are in their proper position. Using the #10 Self Tapping screws, fasten Support Arms to Pivot Arms and the Center Coupler Piece to the Support Arm (see Fig. 6).

Note: Be sure to rotate the Coupler Piece so that the inserted screws are at a horizontal angle with the hardware facing the back of the spa.

Step #8
Using the Covermate, lift the cover off the spa and place in the upright position. Snap the Gas Shocks on the Ball Studs. **Note:** Be sure to install Gas Shocks with the black body on top. (See Fig. 7 for completed look)

Step #9
Slip the Black Hand Grips to the edge of the spa cover and snap the black plastic Screw Head Covers on. Slip the 3/8" long Rubber Sleeve over the Stop Stud on the Pivot Arm that has the Wind Lock Bar. (See Fig. 8)

Step #10
Attach the provided 3 hook TowelMate on the preferred side of your Covermate by simply snapping it into place and inserting the middle self tapping screw. (See Fig. 9)

You Are Done

Operation of the Covermate III
1. Fold the first half of the spa cover off the spa. Gripping the rubber grip, motion the spa cover into it's vehicle upright position.
2. When closing spa cover unlock Wind Lock Bar by lifting up on the bar and pulling the Covermate down.
PRODUCT CODES

MARQUIS SPAS
EQUIPMENT CODES

48: SUV 240 volt 2 pump
13: Lezur 120/240 Volt Convertible 1 pump
15: Lezur 240 Volt 1 pump
17: Lezur 240 Volt SS Series 2 pump
28: M-7 240 Volt 2 or 3 pumps (revision1A only)
36: M-7 240 Volt 2 or 3 pump
29: Lezur 120/240 Volt Convertible 1 pump
34: Rec99 240 Volt 1 pump
27: Lite Leader 120 Volt 1 pump
30: Promo 120 Volt 1 pump
45: RCRTNL 240 Volt 1 or 2 pump
43: RCRTNL 240 Volt 1 or 2 pump optional circulation pump
41: MTSI 240 Volt 1 pump with circulation pump
44: MTS98 240 Volt 1 or 2 pumps with circulation pump
42: MTSII 240 volt 2 pump with circulation pump
22: MTSII 240 Volt 2 pump
01: MTSI 240 Volt 1 pump
21: MTSI 240 Volt 1 pump
51: Spirit 120 Volt 1 pump with circulation pump
24: Heat recovery 120 Volt 1 pump no heater
33: Baker Hydro 240 Volt 2 pump with circulation pump
32: Baker Hydro 240 Volt 2 pump
31: Baker Hydro 120/240 volt 1 pump
HI: Baker Hydro 240 Volt 1 pump/ Hydro Quip 120/240 convertible 1 pump
H2: Hydro Quip 240 volt 1 pump
II: Brett Aqualine Marq II 120/240 volt 1 pump/1 blower
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PRE - 2000
Diagnostic Codes

MARQUIS SPAS.
DIAGNOSTIC CODES 1994-1999

The following is a list of diagnostics code from 1994-1999 and what they represent.

**OH:** overheating of one of the sensors

**FL:** pressure switch is stuck closed

**FLO:** flashing (alternating with the temperature): flow switch is not closed

**FLO:** solid: flow switch is stuck closed

**SN:** one of the sensors is non-functional

**SN1:** high-limit sensor is non-functional

**SN3:** temperature sensor is non-functional

**COOL:** spa temperature is 20°F below set point

**LOC:** panel is locked

**SO:** pH jumper is in the wrong position

**HFL:** Refer to page 39

**FL:** Refer to page 66

**OH**

This indicates that one of the sensors has overheated, spa will be deactivated. The high
limit sensor (on the heater vessel) trips at 118°F and the temperature sensor (mounted to
the shell) trips at 112°F. The high-limit sensor can only be reset by touching any of the
topside panel buttons once the water cools to 110°F. The temperature sensor will reset
automatically once the water cools to 110°F. This will help you determine which sensor has
tripped.

**NOTE:** Overheating may occur if the low-speed pump is set to operate for extended
periods of time (this usually only happens in warm climates or if the spa is installed indoors
with little or no air circulation).

The following are the most probable causes of this message. Inspect these first.

- Check slice valves and jets make sure they are open.
- Clean the filter(s).
- Check heater element alignment.
- Check for debris on the heater element.
- In extremely hot weather, check for proper cabinet ventilation.
- Make sure the temperature sensor is fully inserted into the sensor mount, and the
  sensor mount is properly insulated with foam.
- Check for excessive filter duration (filtration set time).
- Check the water level (fill as needed).
- Check the water temperature with an accurate digital thermometer.
- Remove the spa cover and allow the water to cool to below 110° F: adding cool
  water may be necessary.
- Touch any button to reset the system.
  If the problem recurs, test the sensor set
- Check sensor wires for cracks or damage. If found, replace, do not repair.
- Inspect the connections of both sensors on the circuit board.
- Check to make sure the plugs are clean.
- Unplug sensor set (at the temp/high-limit jumper) and plug in the test sensor.
- Hang the test sensors over the spa side and into the water. Keep in mind there is
  no high-limit sensor protecting the heater during this test.
- If the problem is solved, replace the sensor set.
- If the problem is not solved, do not replace the sensor set.
- Plug in the original sensor set to verify there is not a connection problem.
- If the problem continues after the above steps, replace the circuit board.

**TIP:** 99% of the time the sensor that trips is the high-limit one on the heater, and most of
time it is doing its job and the heater did overheat!
**TIP:** The easiest way to test the temperature sensor is by comparing the temperature readout on the topside panel to an accurate digital thermometer. If they read the same the temperature sensor is good. This can only be done if the spa can be reset.

**FL**

This indicates that the pressure is closed without the pump running (stuck closed). This has nothing to do with water flow!

- Remember, this has nothing to do with the water flow.
- Test continuity of the pressure switch when the pump is off, there should be no continuity.
- If there is continuity, replace the pressure switch.

**HOW TO CALIBRATE A PRESSURE SWITCH**

Every time a new pressure switch is installed, it needs to be calibrated. Follow these steps below:

- Place all jet valves in the halfway position.
- Make sure all jets are in the open position.
- Disconnect the two wires from the pressure switch.
- Turn the adjusting wheel on the pressure switch all the way down (clockwise).
- Turn the pump to low speed.
- Set your multi-meter to read ohms.
- Place tester leads on each terminal on the pressure switch.
- Turn adjustment wheel counter-clockwise until the meter reads continuity.
- Turn adjustment ½ turn counter-clockwise after meter reads continuity.

**FLO (Flashing)**

This indicates the flow switch is not closing when the pump is *supposed* to be running.

- Inspect filter(s): clean or replace.
- Make sure the ball valves are open for the circulation pump (small red one).
- Test operation of the circulation pump, replace if needed.
- If the pump is getting 120-volts and not moving water it may be clogged. Remove the wet end and inspect the impeller.
- Make sure the return jets for the circulation pump are not clogged. Probe the jets with 8-awg solid copper wire for this.
- If you have proper water flow you will need to test the flow switch. Cut the two wires to it and test for continuity while the pump is running. If you do not have continuity, replace the flow switch.
- If you have continuity you may have a bad connection or a defective circuit board.
- To test the board, jump out the two pins where the flow switch plugs in while the pump is running. If you still have the flashing “FLO” the circuit board is defective. If the spa works properly you have a bad connection between the board and the flow switch.

**TIP:** Most of the time when you see a flashing “FLO” it is a flow issue.

**FLO (Solid)**

This indicates the flow switch is closed while the pump is *not running*. Spa will be deactivated.

- Remember this has nothing to do with the water flow.
- Test continuity of the flow switch when the pump is off: there should be no continuity. If you do not have continuity the circuit board is defective.
• If there is continuity, replace the flow switch.
• If you do not have continuity, replace the circuit board

**TIP:** If you recently installed a new flow switch and you now see this code you may have installed it incorrectly. Make sure not to thread the new switch in too far. Before removing the old one count the exposed threads and install the new switch to the same depth.

**SN**

This indicates that either the temperature sensor or the high-limit sensor is non-functional. Spa will be deactivated. The most likely cause for this code is the sensor(s) are damaged or simply disconnected from the circuit board.

• Check for loose or damaged sensor.
• Check the connections to the board.
• If all connections look good install a test set of sensors and test operations.
• If the problem was solved replace the sensor.
• If not, replace the circuit board.

**SN1**

This indicates the high-limit sensor is non-functional. Spa will be deactivated. The most likely cause for this code is the sensor is damaged or simply disconnected from the circuit board.

• Check for loose or damaged sensor.
• Check the connections to the board.
• If all connections look good install a test set of sensors and test operations.
• If the problem was solved replace the sensor.
• If not, replace the circuit board.

**SN3**

This indicates the temperature sensor is non-functional. Spa will be deactivated. The most likely cause for this code is the sensor is damaged or simply disconnected from the circuit board.

• Check for loose or damaged sensor.
• Check the connections to the board.
• If all connections look good install a test set of sensors and test operations.
• If the problem was solved replace the sensor.
• If not, replace the circuit board.

**COOL**

This indicates the water temperature is 20°F below the set temperature point. No corrective action needs to be taken.

**LOC**

This indicates the main topside panel has been place in the locked position. No corrective needs to be taken. Refer to the owner’s manual on how to unlock.

**SO or 5O**

When this is displayed the pH sensor jumper on the board has been jumped out. Remove the jumper to correct.
MARQUIS SPAS SERIAL NUMBERS THROUGH THE YEARS

The serial number (located on the equipment box) of a spa is a very important item to understand. It can designate the year, equipment, series and other useful information about the spa. Here are examples of serial numbers and how to decode them:

From 1981-1986 a serial looked like this 85125. Unfortunately, these serial numbers did not provide information beyond the year manufactured:

85:
Represents the year the spa was manufactured

125:
Represents the day of that year the spa was manufactured

From 1987-2002 the serial numbers took a much bigger role, they appear in one of two ways: DR-32-1-O-011583 or DRMS441-0591255.

DR:
Represents the model of the spa

32:
Represents the equipment

1:
Represents the voltage

O:
Represents where the spa was manufactured

011:
Represents what month and year the spa was manufactured

583:
Represents the sequential number of the spa manufactured that month

For serial number DRMS441-0591255 there is an additional identifier, MS, signifying the series of the spa. The location of manufacturing was omitted after the model identifier.

From 2003 forward the serial number is only a sequential number of spas made and does not distinguish any information about the spa.
GLOSSARY
GLOSSARY

**Amperage A**: The strength of current expressed in amps.

**Bromine**: A halogen element that is used as a sanitizer in spas.

**Capacitor**: A device giving capacitance and usually consisting of conducting plates or foils separated by thin layers dielectric layers oppositely charged by a source of voltage and the electrical energy of a charged system stored in the polarized dielectric.

**Cavitation**: This happens when too much air is being sucked into the system. It can cause the affect of surging and it will make a lot of noise. The noise comes from the air trying to be pushed in the water.

**Check Valve**: A device used for letting the water flow in only one direction.

**Chlorine**: A halogen element, oxidizing agent, and disinfectant in water purification. There are many forms of chlorine and Sodium Dichlor is the type used in spas.

**Circuit/PC Board**: The device that controls all functions of the spa. It consists of relays, transformer, resistors, capacitors, etc.

**Continuity**: Uninterrupted connection.

**Fuse**: A device used to protect components from over amperage.

**LED**: Light Emitting Diode

**Multi-Meter**: A device that can measure several different items in electrical troubleshooting i.e. voltage, amperage, ohms, etc.

**Ohms**: The practical meter-kilogram-second unit of electric resistance equal to the resistance of a circuit in which a potential difference of one volt produces a current of one ampere.

**Ozonator**: A device that uses an Ultra Violent (U.V.) bulb to convert O2 into O3 (ozone).

**Peak Load**: The maximum energy consumption from the spa; all pump(s) in high speed, heating, ozone and lights on.

**Pump**: The combination of the wet-end and motor.

**Pump Cycling**: A cycling pump is a pump motor that is turning on and off.

**Pump Surging**: A surging pump is a pump that will gain and lose water flow, but the motor continues to run normally.

**Relay**: An electromagnetic device for remote or automatic control that is actuated by variation in conditions of an electric circuit and that in turn operates other devices (as switches) in the same or different circuit.

**Slice/Ball Valve**: A device used for shutting off water flow to the pump and heater for servicing.

**Spa Pack**: The control box for the spa.
**Terminal Block:** The connection point for the incoming power from the house to the spa.

**Topside Panel:** The control panel on the lip of the spa.

**Transformer:** a device employing the principle of mutual induction to convert variations of current in a primary circuit into variations of voltage and current in a secondary circuit. Example: 120-volts in and 14-volts out.

**Turbidity:** A deficiency in clarity or purity in the water. This happens when the pump(s) are turning on. The cause is usually high Total Dissolved Solids (TSD).

**Voltage V~:** Electric potential.