

Entry level 2008
Emp.

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LETTER OF INTRODUCTION

Dear Valued Customer:

Congratulations. On behalf of the entire L.A. Spas family, thank you for your decision to purchase one of our products.

Every effort has been made to ensure the accuracy of this owner's manual, however, L.A. Spas reserves the right to modify and improve the product without notice. This may create minor variations between this manual and your spa. If you have any questions regarding your spa, or the owner's manual, please contact your authorized L.A. Spas dealer.

The following pages contain valuable and helpful information for the care and safe operation of your new spa. Every effort has been made to insure optimum therapy and relaxation at minimal cost of operation, delivering maximum value for you, your family, and your home.

Please take the time to read these instructions carefully. When the spa is properly installed and maintained, your spa will provide years of enjoyable, trouble free operation.

We are confident that once you become familiar with the various options, maintenance features, and the general operation of your new spa, you will be completely satisfied that you made the right decision in purchasing an L.A. Spas product.

Sincerely yours,

L.A. Spas, Inc.

SPA RECORD KEEPING INFORMATION

Serial Number Location

The serial number is located in the lower right corner of the equipment access panel on the front of the spa.

PLEASE FILL IN THE INFORMATION BELOW

Spa Information:

Model _____ Color _____ Serial # _____

Owner Information:

Name _____ Date of Purchase _____

Address _____

City _____ State _____ Zip Code _____

Dealer Information:

Name _____

Address _____

City _____ State _____ Zip Code _____

Telephone # _____

SAVE THIS INFORMATION FOR FUTURE REFERENCE

TO OFFICIALLY ACTIVATE YOUR WARRANTY, YOU MUST GO TO WWW.LASPAS.COM AND REGISTER YOUR SPA BY CLICKING ON THE REGISTER YOUR SPA LINK UNDER THE CUSTOMER CORNER TAB AND FILL OUT ALL THE INFORMATION

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

SAVE THESE INSTRUCTIONS

READ THE ENTIRE OWNER'S MANUAL & SAFETY INSTRUCTIONS BEFORE OPERATING THE SPA. When installing the spa, basic safety precautions should always be followed, including the following:

1. **WARNING:** To reduce the risk of injury, do not permit children to use this product unless they are closely supervised by an adult at all times.
2. **WARNING:** A grounding wire connector is provided on this unit to connect a minimum 8 AWG (8.4mm²) solid copper conductor between this unit and any metal equipment, metal enclosure of electrical equipment, metal water pipe, or conduit within 5 feet (1.5 m) of the unit.
3. **DANGER – RISK OF ACCIDENTAL DROWNING:** Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use this spa unless they are closely supervised by an adult at all times.
4. **DANGER – RISK OF INJURY:** The suction fittings in this spa are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure to replace with same model suction fittings for safety and compatible flow rates. **NEVER OPERATE THE SPA IF THE SUCTION FITTINGS ARE BROKEN OR MISSING. NEVER REPLACE A SUCTION FITTING WITH ONE RATED LESS THAN THE FLOW RATE MARKED ON THE ORIGINAL SUCTION FITTING.**
5. **DANGER – RISK OF INJURY:** Do not remove suction grate. Suction through drains and skimmer is powerful when the jets in the spa are in use. Damaged suction grate can be hazardous to children and adults with long hair. Should any part of the body or hair be drawn into these fittings or stuck onto the fittings, turn off the spa immediately. As a precaution, long hair should NOT be allowed to float freely in the spa.
6. **DANGER – RISK OF ELECTRIC SHOCK:** Install the spa at least 5 feet (1.5 m) from all metal surfaces. As an alternative, a spa maybe installed within 5 feet (1.5 m) of metal surfaces if, in accordance with the National Electrical Code, each metal surface is permanently connected by a minimum 8 AWG (8.4mm²) solid copper conductor to the wire connector on the terminal box that is provided for this purpose.
7. **DANGER – RISK OF ELECTRIC SHOCK:** Do not permit any electric appliances such as light, hair dryer, telephone, radio, or television with 5 feet (1.5 m) of the spa. Never operate any electrical appliances from inside the spa or while wet.
8. **DANGER:** To reduce risk of injury:
 - a. The water in a spa should never exceed 104°F (40°C). Water temperatures between 100°F (38°C) and 104°F (40°C) are considered safe for a healthy adult. Lower water temperatures are recommended for young children and when spa use exceeds 10 minutes.
 - b. Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant women should limit spa water temperatures to 100°F (38°C).

- c. Before entering a spa, the user should check the water temperature with an accurate thermometer since tolerance of water temperature regulating devices can vary and not reflect the proper temperature.
 - d. The use of alcohol, drugs, or medication before or during spa use is prohibited and may lead to unconsciousness with the possibility of drowning.
 - e. Obese persons and persons with a history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a spa.
 - f. Persons using medication should consult a physician before using a spa since some medication may induce drowsiness while other medications may affect heart rate, blood pressure, and circulation.
- 9. Do not use spa immediately after strenuous exercise.
 - 10. Maintain water chemistry as recommended by your authorized dealer.
 - 11. **CAUTION – RISK OF ELECTRIC SHOCK:** Replace components only with identical components.
 - 12. **WARNING – PREVENT ELECTROCUTION:** Do not connect any auxiliary components such as cable or lights to the system.
 - 13. Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other risk of injury. Refer all servicing to qualified service personnel from your local L.A. Spas authorized dealer.
 - 14. For more information on Spa safety you can visit www.APSP.org and go to their Safety section to download free brochures.

HYPERTHERMIA INFORMATION

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above normal body temperature of 98.6°F (37°C).

The symptoms of hyperthermia include:

- ❖ Dizziness
- ❖ Fainting
- ❖ Drowsiness
- ❖ Lethargy
- ❖ Increase in internal body temperature

The effects of hyperthermia include:

- ❖ Unawareness of impending hazard
- ❖ Failure to perceive heat
- ❖ Failure to recognize the need to exit spa
- ❖ Physical inability to exit spa
- ❖ Fetal damage in pregnant women
- ❖ Unconsciousness resulting in a danger of drowning

SAFETY PRECAUTIONS

- a. Always enter and exit a spa slowly.
- b. Do not use the spa alone.
- c. Before entering the spa, always measure the water temperature with an accurate thermometer. Tolerance of water temperature regulating devices can vary as much as $\pm 5^{\circ}\text{F}$ (3°C). Always check the spa water temperature before entering.
- d. Since excessive water temperature has a high potential for causing fetal damage during early months of pregnancy, pregnant or possibly pregnant women should limit spa water temperatures to 100°F (38°C). Always consult your doctor prior to using a spa.
- e. Children's body temperature can increase more rapidly than adults in the same water with elevated temperatures above 99°F (37°C). Children should spend less time in water above body temperature than adults.
- f. The use of alcohol, drugs, and/or medication before or during spa use may lead to unconsciousness, hypothermia, serious injury or the possibility of drowning.
- g. Persons suffering from obesity or with a medical history of heart disease, diabetes, high or lower blood pressure, or circulatory system problems should consult with their physician before using the spa.
- h. Persons on medication should consult with their physician before entering the spa since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.
- i. People with infections, sores, or skin abrasions should not use the spa. Warm and hot water temperatures may allow the growth of infectious bacteria if not properly disinfected.
- j. Test the GFCI (Ground Fault Circuit Interrupter) unit before each use. (Refer to instructions provided by GFCI manufacturer.)
- k. Do not service or repair any equipment without making sure the circuit breaker and/or all power to the spa is turned off.
- l. Cover must be kept on the spa at all times when not in use and locked, especially if children are present.

SAFETY SIGN

Each spa has been provided with a warning sign that outlines safety precautions. This sign should be permanently placed in a location that is visible to all spa users. This sign has been mounted permanently to the front of the spa. Replacement signs can be obtained from:

L.A. Spas, Inc.
1311 N. Blue Gum Street
Anaheim, CA 92806
U.S.A.

SPA CAUTIONS

1. Persons suffering from heart disease, diabetes, high or low blood pressure, any condition requiring medical treatment, pregnant women, the elderly, or infants should consult with a physician before using a spa.
2. The Consumer Product Safety Commission has stated that the water temperature in a spa or hot tub should not exceed 104°F (40°C). Immersion in water in excess of 104°F (40°C) can be hazardous to your health.
3. Observe a reasonable time limit when using the spa. Long exposures at higher temperatures can cause high body temperature. Symptoms may include dizziness, nausea, fainting, drowsiness, and reduced awareness. These effects could result in possible drowning.
4. Do not use the spa under the influence of alcohol, narcotics, or other drugs. Use of the spa under these conditions may lead to serious consequences.
5. Always test the spa water temperature before entering the spa. Enter and exit the spa slowly. Wet surfaces can be very slippery.
6. Never bring any electrical appliance into or near the spa. Never operate any electrical appliance from inside the spa or when you are wet.
7. Proper chemical maintenance of spa water is necessary to maintain safe water and prevent possible damage to spa components.
8. Use the spa straps and clip tie downs to secure the cover when not in use. This will help to discourage unsupervised children from entering the spa and keep the spa cover secure in high wind conditions. There is no representation that the cover, clip tie downs, or actual locks will prevent access to the spa.

SPA EQUIPPED SAFETY DEVICES

Your spa is equipped with the following safety features:

1. **Overheat Protection** – A water temperature sensor circuit in the system will monitor the water temperature. If the temperature reaches 112°F (44°C), the pump and all accessories will shut off. The spa will resume normal operation when the water temperature drops to 109°F (42°C).
2. **Heater High Limit Protection** – If the water temperature reaches 119°F (48°C) as determined by the water temperature sensor circuit, the pump and all accessories will shut off. The spa will resume normal operation when the water temperature drops to 109°F (42°C) and a key press to clear the fault.
3. **Heater Dry Run Protection** – The system will prevent the heater from turning on if it determines that there is not enough water flow to operate the heater.
4. **Freeze Protection Mode** – The freeze protection system will activate at 44°F (6.6°C). The system will turn on the low speed pump and heat to the set temperature. The spa will resume normal operation upon reaching a temperature of 45°F (7.2°C).
5. **Timeouts** – The pump will turn off automatically after 30 minutes of continuous operation. The light will turn off automatically after 4 hours of continuous operation.

INSTALLATION INSTRUCTIONS

SAVE THESE INSTRUCTIONS

Read all instructions in this manual prior to having your spa installed at the selected location, whether indoors or outdoors. **IMPROPER INSTALLATION MAY RESULT IN EQUIPMENT DAMAGE AND VOID THE WARRANTY.**

SURFACE AND PAD REQUIREMENTS

1. We recommend that your new spa be placed on a 4" (10 cm) thick reinforced concrete pad or level foundation capable of supporting the total filled weight of your specific spa model. The foundation should support the entire base of the spa and must offer structural integrity for the life of the spa. A typical spa, filled with water, could weigh as much as 3 tons, and if the concrete is not fully cured, it could easily crack. **AN UNEVEN OR UNSTABLE FOUNDATION OR THE USE OF SHIMS OF ANY KIND MAY CAUSE THE SPA TO BUCKLE, DISTORT, AND/OR CRACK, AND WILL VOID THE WARRANTY ON YOUR SPA.**
2. If your spa is located near water sprinklers, adjust or cap them so the water will not hit the wood cabinet of the spa.
3. Balconies and decks must be constructed to current state and local codes to safely support the maximum load of your water filled spa and the number of people using the spa. Check with your construction contractor for these safety specifications.
4. Access gates "fencing/wall" must be self-closing and self-locking. Check your local codes for regulations regarding fences and gates.
5. Ensure that the spa installation and location allows a clear and unobstructed access to the spa. It is the responsibility of the owner to provide clear access on **all sides** of the spa for service. Failure to do so may result in additional charges or assessments to service and/or repair the spa.
6. Ensure that water drains away from the spa in order to keep water out of the equipment compartment and away from all electrical components.
7. Assure accessibility is maintained to your spa should the need arise. Your spa is an appliance and may require occasional service requirements. Assure the installation allows access to the equipment area, side panels, and removal of the spa if possible. Construction or reconstruction costs associated with spa removal or reinstallation are not covered by the warranty.

ELECTRICAL INSTALLATION REQUIREMENTS

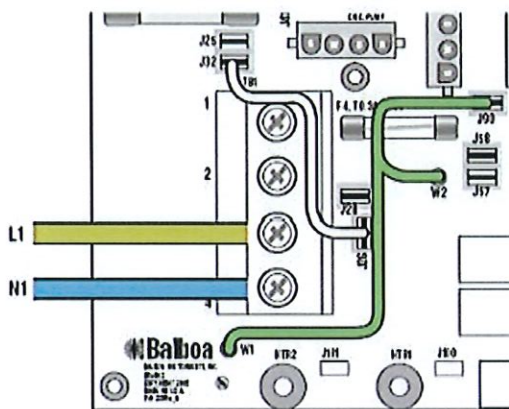
IMPROPER INSTALLATION MAY RESULT IN EQUIPMENT DAMAGE AND VOID THE WARRANTY.

NOTE: Do not turn on electrical power to your spa until you are told to do so later in the Owner's Manual.

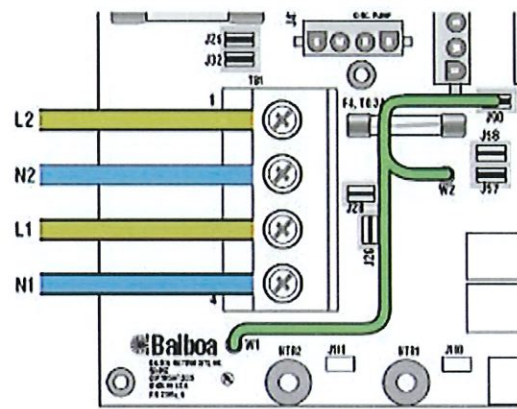
1. We strongly recommend that only a licensed and bonded electrician perform the electrical installation. Improper electrical connections may damage the equipment, cause injury, cause a fire, and void your spa warranty.

- It is the responsibility of the spa owner to ensure that a qualified electrician performs the electrical installation. This installation must be in accordance with the National Electrical Code; local and state electrical codes; and the manufacturer's instructions.
- This equipment has been designed to operate on 230V 50Hz alternating current.
- This spa must be connected to a dedicated branch circuit.
- The electrical supply for this spa must include a suitably rated switch or circuit breaker to open all ungrounded supply conductors to comply with Section 422-20 of the National Electric Code (NEC). A disconnect switch must be located where visible, not less than 5 feet (1.5 m) from the spa and not to exceed 50 feet (15 m) from the spa. This requirement maybe filled with the GFCI circuit breaker and sub-panel.
- The electrical circuit to the spa must include a Class A type Ground Fault Circuit Interrupter (GFCI) as required by the NEC.
- All supply wires must be copper and rated at a minimum of 167°F (75°C).
- Input power wiring and circuit breaker selection:

Single-phase (1 x 16A, 1 x 32A)



Dual-phase (2 x 16A)



IMPORTANT INFORMATION REGARDING ELECTRICAL INSTALLATION

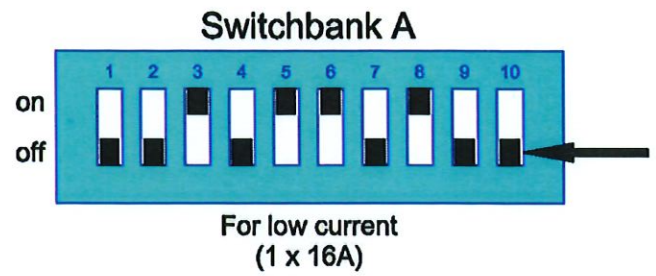
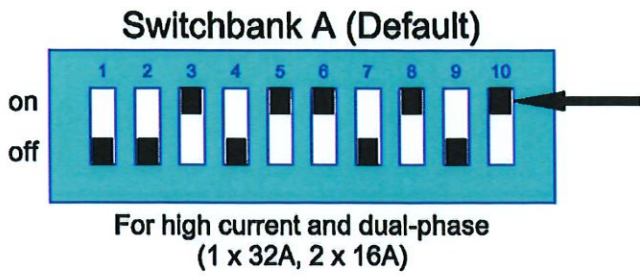
Equipment Type	Electrical Rating ³	Branch Circuit	Circuit Breaker ¹	Wire Size ²
1 pump (low current)	230V, 1 x 16A	2 wires + ground	20A	10 AWG
1 pump (high current)	230V, 1 x 32A	2 wires + ground	40A	8 AWG
1 pump (dual-phase)	230V, 2 x 16A	4 wires + ground	2 x 20A	10 AWG

1. Circuit breaker amperages may vary according to the area of installation. Please check local electrical codes to verify requirements and assure compliance.

2. The minimum wire size does not account for the distance of wire run to the spa from the service input.

3. DIP switch A10 on the circuit board configures the electrical rating. See the diagrams below for the proper setting. For high current and dual-phase setups, the heater will operate with the pump on high speed. For low current setup, the heater will shut off with the pump on high speed.

4. Only a licensed electrician should size and install the electrical connections to the spa.



ELECTRICAL CONNECTIONS

To hook up your spa, follow these instructions:

1. Remove the front center cabinet panel.
2. Loosen the 2 screws on the top front of the equipment control enclosure.
3. Use $\frac{3}{4}$ " flexible conduit for 8 AWG copper wire. Run the conduit from the power source to the spa, through the hole in the left or right front corner of the spa and into the equipment control pack.
4. After pulling all wires through the conduit and into the equipment control box, connect them to the proper terminals as indicated by the wiring diagram on the lid of the equipment control box. Please note that the ground wire returns through a hole in the controller to the outside ground buss.
5. Close the lid on the equipment control box and tighten the screws.
6. Electrical hook up is now complete. Do not re-attach the front center cabinet panel yet.

INITIAL START-UP INSTRUCTIONS

DO NOT TURN ON THE POWER TO THE SPA WHEN THE SPA IS EMPTY OR PARTIALLY FILLED.

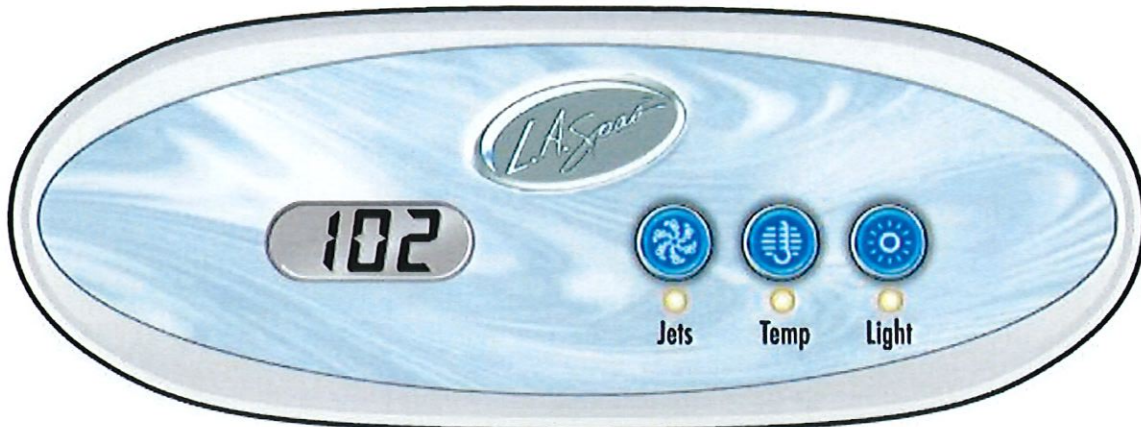
1. Ensure the circuit breaker to the spa is off.
2. Rotate all the jets in the spa to a counterclockwise position (fully open position).
3. Ensure the gate valve is fully open. Pull the "T" handle on the gate valve (located near the jet pump) all the way up. When opened, there will be approximately 2" (5 cm) of metal rod visible.
4. Check the heater unions, pump unions, and pump plugs to assure that they are tight to prevent the possibility of leakage in the equipment bay.
5. Close and cap the hose bib located in the equipment compartment. This is used for draining the spa.
6. Fill the spa with water to a level of approximately 4" (10 cm) above the top of the filter. To prevent the pumps being air locked, it is recommended to fill the water at the filter bucket area.
7. Turn on the circuit breaker. The control panel will go through some numbers, then $\Pi\rho$ will be displayed for about 4 minutes. $\Pi\rho$ depicts priming mode. Press the **Jets** key twice to turn the pump on high speed. Observe to ensure adequate water flow. Once the water is flowing smoothly, press the **Temp** key to exit the priming mode. If there is no water flow through the jets, the pump needs to be primed to eliminate air lock.

Pump Priming

- Turn off the power to the spa.
 - Remove the handle from the jet selector valve supplied by the pump you are priming.
 - Loosen the pump union on the suction side of the pump until some water starts gushing out of the pump union.
 - Tighten the pump union.
8. After the priming mode, the control panel will display two dashes --. The system will take about 2 minutes to register the water temperature. Set the desired temperature by pressing the **Temp** key. Refer to the Control Panel Operation section for instructions on how to adjust the set temperature.
 9. Re-attach the front center cabinet panel.
 10. Depending upon the size of the spa and the size of the electrical circuit, heating will occur at a rate of approximately 5°F (2°C) per hour.
 11. After completing the above steps, it is necessary to ensure proper water chemistry. See the Water Balance section in the manual.
 12. Place the thermal cover on the spa to conserve energy and to keep it ready for use.

OPERATING INSTRUCTIONS

CONTROL PANEL



This easy to use control has been pre-programmed to be “plug and play”. Turn the power on, adjust the desired temperature and the system is ready to go. If there are situations that require additional filtering time, the filter settings can be customized to any special requirements. Simple to use and easy to read, the Control System makes using the spa effortless.

CONTROL PANEL OPERATION

Please note: The pump has an automatic timeout (shut-off) programmed 30 minutes after the pump is activated. The low speed pump will remain running if there is a call for heat, and will continue to do so until the set temperature is reached.

1. Jets key:

When the **Jets** key is pressed the first time, the low speed of the jet pump is turned on. When the **Jets** key is pressed the second time, the high speed of the jet pump is turned on. Pressing the **Jets** key the third time will turn the pump off.

2. Light key:

Press the **Light** key once to turn the light on. Press the **Light** key a second time to turn off the light.

3. Temp key:

Press the **Temp** key once to display the set temperature. To change the set temperature, press the **Temp** key a second time before the display stops flashing. Each press of the **Temp** key will continue to either increase or decrease the set temperature. If the opposite direction is desired, allow the display to revert to the water temperature. Press the **Temp** key to display the set temperature, and again to make the temperature change in the desired direction. After three seconds, the display will stop flashing and begin to display the current water temperature. The default temperature is programmed at 100°F (38°C).

FILTRATION

The spa is factory programmed to filter two times a day for 1 hour. In most cases, this is sufficient filtration. However, the cycle duration can be modified between 1 and 8 hours in increments of 1 hour. The first cycle begins 6 minutes after the initial start-up of the spa, and the second cycle is 12 hours later. To change the filtration cycle duration, press the **Temp** key, then the **Jets** key. The display will show the default setting, $\Phi 1$. Press the **Temp** key to adjust the duration. The sequence will repeat after cycling through 1 to 8. Once the desired filtration cycle duration is displayed, press the **Jets** key to accept the selection and exit the program.

PROGRAM MODES

Mode is changed by pressing the **Temp** key, then the **Light** key. The default setting is in Standard mode. The spa is factory equipped with three program modes: Standard, Economy, and Sleep modes.

Standard mode maintains the set temperature. The equipment control pack checks the water temperature twice per hour and heats accordingly. It will not allow the water temperature to reach below 20°F (10°C). $\Sigma\tau$ will be displayed momentarily when switched into Standard mode.

Economy mode heats the spa to the set temperature only during the filter cycles. $E\chi$ will be displayed momentarily when switched into Economy mode. $E\chi$ will also be displayed when the water temperature is not current, and will alternate with water temperature when the pump is running.

Sleep mode heats the spa to within 20°F (10°C) of the set temperature only during filter cycles. $\Sigma\Lambda$ will be displayed momentarily when switched into Sleep mode. $\Sigma\Lambda$ will also be displayed when the water temperature is not current, and will alternate with water temperature when the pump is running.

FEATURE OPERATIONS

AIR CONTROL VALVES

Your spa may be equipped with air controls. The air control is an on/off valve that allows air to be introduced into a specific jet configuration resulting in a more vigorous jet action. Turn the valve handle clockwise to turn the air on, and counterclockwise to turn the air off. Opening the valve increases jet pressure and closing the valve decreases the jet pressure.

WATER BALANCE

WATER CHEMISTRY

Maintaining proper water chemistry is imperative to maintaining safe water and preventing possible damage to your spa and spa components.

START-UP PROCEDURES

1. Fill spa to correct level (approximately 4" above the top of the filter cartridge).
2. With your cartridge filter, you may add stain and scale control, or a similar sequestering agent, such as Metal Gone.
3. Test and adjust total alkalinity – run pump for ½ hour.
4. Test and adjust pH – run pump for ½ hour.
5. If sanitizing with bromine, add sodium bromide with jets running (see Bromine in this section).
 - a. Fill and set bromine floater or adjustable bromine feeder and place in the spa water.
 - b. Shock water with potassium peroxydisulfate (such as "Renew") with jets running.
6. If sanitizing with chlorine, use only a granular "Dichlor" compound (see Chlorine in this section).
 - a. Fill and set chlorine floater or chlorine feeder and place in the spa water.
 - b. Shock water with potassium peroxydisulfate (such as "Renew") with jets running.
7. Run pump for ½ hour.

WATER QUALITY

Your spa is equipped with a specially designed cartridge filter system. Filtering the water helps maintain water cleanliness and clarity. While the filter traps most solid materials, it is still necessary to add a sanitizer such as bromine or chlorine to the water in order to control bacteria, algae, and to oxidize any organic materials in the water.

We recommend that you purchase your chemicals from your spa dealer. The dealer can also advise you on alternative methods for water sanitation. **Use of the wrong chemicals can be dangerous and may void the warranty on your spa.**

pH CONTROL

All water has a pH value determined by a scale of 0-14, which is a measure of the acid to alkaline relationship. While a pH reading of 7.0 is considered neutral, a lower reading is considered acidic and a higher reading is alkaline. The proper pH for spa water is between 7.2-7.6. High pH (above 7.8) can reduce sanitizer efficiency, cloud the water, promote scale formation on spa surface and equipment and interfere with filter operations. When pH is too high, add a pH down solution. Low pH (below 7.2) is equally damaging and can cause equipment corrosion, water that is irritating, and rapid sanitizer dissipation. Add pH increaser to adjust the level. Follow the chemical manufacturer's directions and procedures when adding chemicals to spa water.

NOTE: Always add pH adjuster with jets operating and circulate all chemicals for at least 30 minutes. Remember that good pH control and sanitation are absolutely essential for proper spa water treatment.

TOTAL ALKALINITY

Total alkalinity is the amount of carbonate, bicarbonate, and hydroxyl ions in the water. Total alkalinity affects and buffers the pH of the water. With high total alkalinity (above 160), pH resists adjustment. With low total alkalinity (below 130), pH is unstable and difficult to keep in the ideal range. Proper total alkalinity levels allow other spa chemicals to work effectively.

WATER TREATMENT

SANITIZERS

The importance of maintaining an adequate levels of sanitizer in your spa cannot be overemphasized. Warm water presents a fertile environment for the growth of bacteria and viruses. This growth is prevented when adequate sanitizer levels are continuously maintained.

WARNING – Sanitizers such as tri-chlor (tablets or sticks), calcium hypochlorite, sodium hypochlorite, and any chemical that dissolves on or remains un-dissolved in contact with the spa surface will damage your spa surface and will void the warranty completely.

BROMINE

Bromine is the most common sanitizer used in spas. Maintain a proper total bromine level of 3.0-5.0 ppm. If the reading is below the minimum, raise the level before using the spa. If the reading is above 5.0 ppm, allow ppm to drop to the proper range before using the spa. Brominating tablets are a convenient and effective source of bromine for your spa. Do not drop bromine tablets directly into the water as this may damage the spa surface. A chemical "floater" safely and properly dispenses the tablets into the spa water. When used properly, brominating tablets will keep you water clean, clear, and odor-free. To ensure maximum effectiveness, add ½ oz. of sodium bromide per 100 gallons of water every time you fill your spa. This will establish a bromide reserve.

CHLORINE

Chlorine is a water sanitizer also; however it is more sensitive to pH than bromine. To be effective, you must have a pH range of 7.2-7.6. Any reading outside this range will greatly reduce chlorine effectiveness.

Use a chlorine test kit or test strip to maintain a reading of 2.0-3.0 ppm of free chlorine. If the reading is below the minimum, raise the level before using the spa. If the reading is above 5.0 ppm, allow ppm to drop to the proper range before using the spa. Read the instructions on your chlorine container carefully, or consult your spa dealer if you are having difficulty adjusting your chlorine level.

The best chlorine for your spa is a granular "Dichlor" compound. It dissolves quickly in moving water and has a nearly neutral pH. Add chlorine while jets are running and let the jets run for ½ hour. Generally, heavily contaminated water can be disinfected using large chlorine doses, in the range of 8-10 ppm, but a more practical method is to drain the spa and refill it with fresh water.

The effectiveness of chlorine is decreased when the cover is left off the water for two reasons: (1) sunlight decays chlorine rapidly, and (2) organic debris is blown into the spa and taxes the effectiveness of the chlorine. In addition, the higher the water temperature, the faster chlorine will decay.

NOTE: Two or more individuals in a spa may reduce the level of sanitizer rapidly.

SUPER CHLORINATION

Super chlorination quickly oxidizes the spa water to burn out wastes such as perspiration, hairspray, lotions, etc. that cannot be removed by the spa filter. This waste build-up reduces the power of the sanitizer, making the water dull and irritating to the eyes and skin. It may also produce an odor. When this occurs, the free chlorines have become chloramines which are much less effective as a sanitizer. This can be eliminated by super chlorination as needed. An application of 5 times the normal chlorine dosage will act as an adequate treatment.

SHOCK TREATMENTS (POTASSIUM PEROXYMONOSULFATE)

Even with regular sanitization, shock treatment may be necessary on occasion. Shock is recommended over super chlorination because it does not add additional sanitizer to the water. It is also effective in oxidizing wastes and will reduce chloramines or bromamines. Follow the manufacturer's instructions listed on the label.

WATER TESTING

It is recommended that you test your spa water regularly with an accurate test kit or test strip. These are available from your local authorized L.A. Spas dealer. Be sure to follow the chemical manufacturer's instructions for chemical use.

STAIN AND SCALE INHIBITOR

Staining and scaling may be a common problem in spas. Because the water is hot, scale may be deposited more quickly. The circulation of water can cause the erosion of metals from spa equipment, which can stain interior surfaces. A weekly dose of a stain and scale fighter will help control these problems.

A sequestering agent, such as Metal Gone, can be added to the spa water when filling a spa (for the first time or when draining and refilling). This will help eliminate metals in your water and increases the life of your spa equipment.

FOAM INHIBITOR

Soap residue from a user's body, hair, and swimsuit combined with rapid circulation of spa water may cause foaming in your spa. Foam inhibitors will suppress foam, but cannot remove soap from the water. When foaming occurs, a shock treatment can oxidize the soap in your water and help prevent this condition. If foam remains a problem, change the water. Consult the directions on the foam inhibitor container for usage amount. When adding chemicals to your spa water, add to the center of the spa with the pump and air blower (if equipped) operating simultaneously. Never add chemicals directly into the skimmer. Make sure the water is heated. Never add chemicals to cold water, as this will affect the chemical reaction.

Store all chemicals in a cool dry location and in such a manner to prevent contact by children or pets.

You should consult your local authorized L.A. Spas dealer prior to any chemical use.

KEEPING YOUR WATER CLEAN AND SAFE

Monday		Friday	
Test:	Bromine/Chlorine pH Total Alkalinity	Test:	Bromine/Chlorine pH Total Alkalinity
Adjust:	Follow steps 1-4	Adjust:	Follow steps 1-3
Add:	Stain & Scale control		

Step 1: Adjust total alkalinity – ideal range is 130-160. Test water, follow directions on manufacturer's label, and add the required amount of spa chemicals with the jets on. Wait 30 minutes before performing additional tests.

Step 2: Adjust pH – ideal range is between 7.4-7.6. Test water, follow directions on manufacturer's label, and add the required amount of spa chemicals with the jets on.

Step 3: Adjust bromine/chlorine – ideal range is between 2-3 ppm chlorine and 3-5 ppm bromine (4-6 ppm for heavy spa usage). Fill bromine floater or adjustable feeder and shock spa as necessary.

Step 4: Stain and scale control – add the required amount of spa chemicals with jets on weekly.

NOTE: The chemical chart above is a simple schedule for moderate spa use. Depending on the usage, chemical balancing may be required more often.

SPA CARE

FILTER CLEANING

Always make sure the power to the spa is off before removing and cleaning the pleated cartridge filter. Cartridges should be removed and hosed off weekly. Using a high pressure hose nozzle between the pleats will easily remove dirt and debris. This will be evident as you rinse. A soaking in filter cartridge cleaner should be performed every 2-4 weeks depending on spa usage.

CARE FOR SPA SURFACE

Mountain Series Spas have a very high quality finish. Stains and dirt will generally not adhere to the surface. After draining the spa, wipe the surface with a soft damp cloth (or sponge) using household soap or liquid detergent. Stubborn dirt and stains maybe removed by using Spic & Span adequately dissolved in water. Be sure to rinse detergent well as this will cause suds when refilling the spa.

SPA COVER

CAUTION – Keep your spa cover installed at all times when not in use.

Do not use any cleaning products containing abrasives or solvents since these could damage the surface and void your warranty.

You may wax the spa surface if you choose. This adds a protective coating on the finish. Use a spa wax only. Follow the instructions on label of wax product. Consult your L.A. Spas dealer.

CARE OF SPA CABINET (THERMOGUARD CABINET)

Your ThermoGuard cabinet requires little or no maintenance of any kind. To clean, simply wipe cabinet with a clean towel and mild detergent soap solution.

CAUTION – Do not use any cleaning products containing abrasives or solvents since these could damage the surface of the ThermoGuard spa skirt and void your warranty.

CARE FOR SPA COVER

The thermal cover for your spa is an extremely durable foam insulated product. See the manufacturer's literature for proper cleaning and care instructions. When the spa is not in use, it is recommended that the cover tie downs always be utilized to discourage unsupervised children from entering the spa and to minimize heat loss. Small locks are available for the cover tie downs. In either case these locking methods are not considered adequate to keep unauthorized people from entering the spa.

DRAINING THE SPA

All Mountain Series Spas are gravity drained. Do not drain water onto your lawn or plants unless all of the bromine or chlorine has dissipated from the spa water. The sanitizer in your spa water can be dissipated very quickly by leaving the spa cover off and exposing the water to direct sunlight. Drain and refill your spa every 4 months. For heavier spa use, you may wish to change the water more frequently.

1. Turn power off to spa.
2. Attach a hose to the hose bib located in the equipment area of your spa. Open the valve and allow the water to drain away from the spa.
3. Clean the spa surface (see care of spa surface in this section).
4. Refill spa, and follow initial start-up procedures to reheat the spa.

SPECIAL COLD WEATHER INSTRUCTIONS (WINTERIZING)

Winter can be one of the most enjoyable times of the year to enjoy your spa. As it is difficult to get water out of the plumbing lines; **WE DO NOT RECOMMEND DRAINING YOUR SPA FOR THE WINTER.** However, if you decide not to use your spa during the winter, we recommend you winterize as follows:

1. If you drain your spa, turn off the main power to the spa. Drain as completely as possible. You may want to use a wet-vacuum or high-pressure blower to evacuate as much water as possible.
2. When the spa is completely empty, leave the hose bib open and open the pump drain plug located on the bottom side of the front end of the pump. Loosen all pump unions and fittings to allow air and water to expand freely within the system. This should help prevent water from freezing and damaging pipes and fittings. The idea is to try to eliminate water from any sealed areas in the system.

Should you have a heavy snowfall during the winter months, you may want to build a protective cover cap for the spa cover. This may be done with a ½" or ¾" piece of plywood and a few 2" x 4" cross members.

Although your spa is equipped with an automatic freeze protection, a power outage can cause your spa equipment system to freeze quickly. During freezing conditions, check your spa frequently to ensure proper operation. Be sure to check your spa after any power failure to ensure the spa is operational.

For additional information on winterizing your spa, contact your local L.A. Spas dealer.

WARRANTY SERVICE INFORMATION

Your spa warranty gives you specific coverage. Be sure you read your warranty carefully. The warranty does not cover problems resulting from misuse, abuse, or neglect, and it does not cover problems caused by improper installation or perceived problems caused by failure to read the spa owner's manual.

TROUBLESHOOTING

HEATING SYSTEM

Symptom	Problem	Corrective Action
Spa water cold / spa not heating	1. Temperature setting is not at user select. Power reset caused default setting.	1. Increase temperature
	2. Spa in economy mode	2. Reset to standard mode.
	3. Dirty filters	3. Clean filters
	4. Air lock	4. Prime pump (see page 12)
	5. Jets closed obstructing flow	5. Open jets
	6. Equipment malfunction	7. Call for service
Spa water too warm / spa heating above set point	1. Temperature setting too high	1. Decrease temperature
	2. Too much filtration	2. Reduce the number of filter cycles and/or the filter cycle duration
	3. Dirty filters	3. Clean filters
	4. Overheat or high limit occurred	4. Call for service
	5. Equipment malfunction	5. Call for service
Spa temperature erratic	1. Water level low	1. Fill with water to 4" (10 cm) above top of the filters
	2. Spa in economy mode	2. Reset to standard mode
	3. Dirty filters	3. Clean filters
	4. Jets closed obstructing flow	4. Open jets
	5. Pump gate valve closed	5. Open gate valve
	6. Equipment malfunction	6. Call for service

WATER SYSTEM

Symptom	Problem	Corrective Action
Pulsating jets	1. Water level low	1. Fill with water to 4" (10 cm) above top of the filters
	2. Dirty filters	2. Clean filters
	3. Filter intake / pump intake restricted	3. Remove obstruction
	4. Pump gate valve closed	4. Open gate valve
	5. Equipment malfunction	5. Call for service
No jet action or action is poor	1. Jets are turned off	1. Turn jets on by turning jet face counterclockwise
	2. Water level low	3. Fill with water to 4" (10 cm) above top of the filters
	3. Dirty filters	4. Clean filters
	4. Air lock	6. Prime pump (see page 12)

ELECTRICAL SYSTEM

Symptom	Problem	Corrective Action
Spa will not turn on in any mode	1. No power	1. Check circuit breaker and/or GFCI
	2. Control panel unresponsive	2. Turn power off spa then back on
	3. Control panel still not working	3. Call for service
	4. Overheat occurred	4. Call for service
Spa turns on by itself	1. Normal automatic daily filtration cycle	1. No action required
	2. Spa required heat to maintain temperature	2. No action required
	3. Freeze protection engaged	3. No action required
	4. Equipment malfunction	4. Call for service
Light is out	1. Automatic time out has shut off light (4 hours)	1. Press Light key again to start another cycle
	2. Burned out light bulb	2. Replace light bulb
Pump shuts down unexpectedly while in use	1. Automatic timeout has shut pump off (30 minutes)	1. Press Jets keys again to start another cycle
	2. Motor overheated and protective device has shut down pump	2. Allow pump to cool. If the pump does not restart when Jets key is pressed, call for service.

ERROR CODES

Error Code	Description	Corrective Action
HH	Overheat – The spa has shut down. One of the sensors has detected that the spa water is 118°F (47.8°C).	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by pressing any key. If the spa does not reset, power off spa and call for service.
OH	Overheat – The spa has shut down. One of the sensors has detected that the spa water is 118°F (47.8°C).	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F (41.7°C), the spa should automatically reset. If the spa does not reset, power off spa and call for service.
ΣA	Spa is shut down. The sensor that is plugged into the sensor A jack is not working.	This error may appear temporarily in an overheat condition. If the problem persists, call for service.
Σβ	Spa is shut down. The sensor that is plugged into the sensor B jack is not working.	This error may appear temporarily in an overheat condition. If the problem persists, call for service.
Σν	Sensors are out of balance. If alternating with spa temperature, it may just be a temporary condition. If flashing by itself, spa is shut down.	If the problem persists, call for service.
ΗΛ	A significant difference between temperature sensors has been detected. This could indicate a flow problem.	Add water if necessary. If water level is normal, make sure the pump has been primed (see page 12). If the problem persists, call for service.
ΛΦ	Persistent low flow problems. (Displays on the fifth occurrence of ΗΛ message within 24 hours.) Heater is shut down, but other spa functions continue to run normally.	Follow action required for ΗΛ message. Heating capability of the spa will not reset automatically, press any key to reset.
δρ	Possible inadequate water, poor flow, or air bubbles detected in the heater. Spa is shut down for 15 minutes.	Add water if necessary. If water level is normal, make sure the pump has been primed (see page 12). Press any key to reset. This message will reset within 15 minutes. If problem persists, call for service.
δΨ	Inadequate water detected in heater. (Displays on third occurrence of δρ message.) Spa is shut down.	Follow action required for δρ message. Spa will not automatically reset. Press any key to reset manually.
1X	Ice – Potential freeze condition detected.	No action required. All equipment will activate regardless of spa status. The equipment stays on for 4 minutes after the sensors detect that the spa temperature has risen to 45°F (7.2°C) or higher.