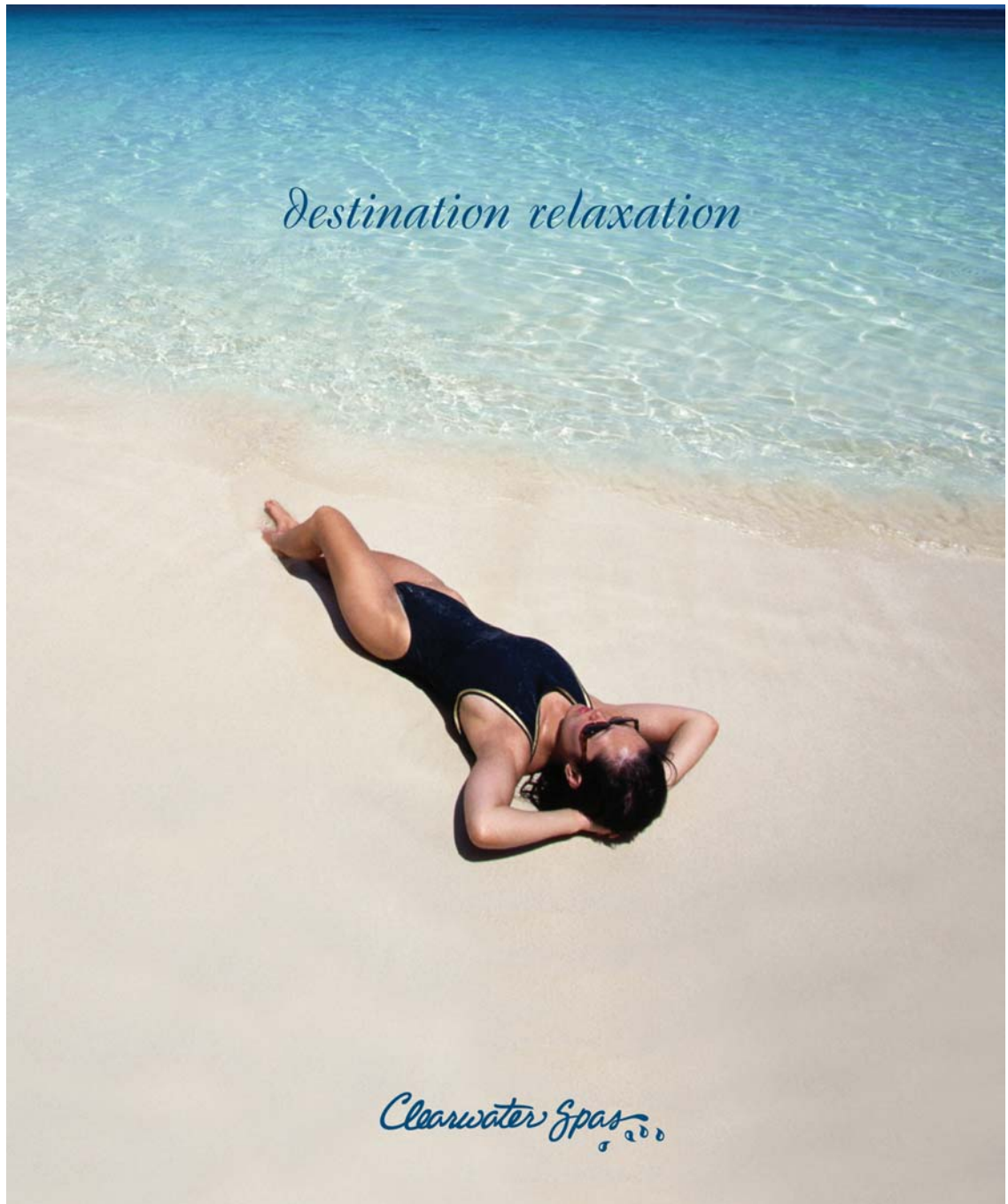


CLEARWATER SPA MANUAL

RHYTHM, SPORT, BEACHCRAFT & ULTRA-SAGE SERIES



Destination relaxation

Clearwater Spas



OWNER'S MANUAL

RHYTHM, SPORT, BEACHCRAFT, ULTRA-SAGE SERIES

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INTRODUCTION

Congratulations on your purchase of a new Clearwater Spa! Your Clearwater Spa is designed and manufactured with the finest components available and is engineered with comfort, low maintenance, and durability in mind.

You will enjoy your spa for several years to come if you are diligent with the care and maintenance of your spa. This manual will help you to determine the best way to take care of your spa based on the amount of use and the type of environment your spa is installed.

It is very important for you to read the entire manual before attempting to use your spa. Contained in this manual are important maintenance and start-up procedures as well as safety precautions that must be followed to ensure the prolonged life of your spa and the safety of the people using the spa. Failure to follow start-up procedures may damage your unit and void your warranty.

Please feel free to call your local Clearwater Spa dealer if you have any further questions after reading this manual. We hope you enjoy many years of fun and relaxation in your new Clearwater Spa.

ICON KEY	
	Safety tip
	Key point
	Warning

ICON Key

The Icon key on the left defines the type of information boxes that will appear throughout the manual. The boxes highlight helpful information that contains useful tips or warnings that apply to the use and care of your spa.

SAFETY FIRST

IMPORTANT SAFETY INSTRUCTIONS!

READ AND FOLLOW ALL INSTRUCTIONS

SAVE THESE INSTRUCTIONS



When installing and using this electrical equipment it is recommended that a licensed and bonded electrician perform the work. Basic safety precautions should always be followed, including the following:

- A pressure wire connector is provided on the outside of the control box to permit the connection of a solid copper bonding wire between the spa and any metal equipment, metal enclosures of electrical equipment, metal water pipe or conduit within 5 feet of the spa as needed to comply with local requirements.
 - A green colored terminal (or a wire connector marked “G”, “GR”, “Ground”, or “Grounding”) is provided. To reduce the risk of electric shock, connect this terminal to the grounding terminal of your electric service or supply panel with a continuous green insulated copper wire equivalent to the circuit conductor supplying this equipment.
 - The electrical supply must include a suitably rated Ground Fault Interrupter Circuit to open all underground supply conductors to comply with section 422-20 of the National Electrical Code. ANSI/NFPA 70-1987. The power supply cut off must be readily accessible to the spa occupant, but installed at least 5 feet from spa water.
 - Test the performance of the GFCI according to manufacturers recommendations. If the GFCI does not
-

perform correctly, there may be a ground current flowing indicating the possibility of electric shock. Disconnect the power until the fault has been identified and corrected.

- **DANGER – RISK OF ELECTRIC SHOCK.** Install at least 5 feet from all metal surfaces.
- **DANGER – RISK OF ELECTRIC SHOCK.** Do not permit any electric appliance such as a light, telephone, radio or television within 5 feet of a spa or hot tub.
- **WARNING – RISK OF CHILD DROWNING.** Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use a spa or hot tub unless they are supervised at all times.
- **DANGER** – To reduce risk of injury, do not remove suction fittings.
- Installation should provide drainage of the electrical equipment area to prevent electrical shortage.
- Store all chemicals in a cool dry area and keep out of children's reach.
- To reduce the risk of injury:
 - A. Spa heat can cause hyperthermia and unconsciousness! The water in a spa or hot tub 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 extended use (exceeding 10 – 15 minutes) and for young children.
 - B. Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit water temperatures to 100° F (38° C).
- The use of alcohol, drugs, or medication before or during spa or hot tub use may lead to unconsciousness with the possibility of drowning.
- Persons suffering from obesity or with a medical history of heart disease, low or high blood pressure, circulatory



system problems or diabetes should consult a physician before using a spa or hot tub.

- Persons using medication should consult a physician before using a spa or hot tub since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.

INSTALLATION

Before Your Spa Arrives

Prior to having your new spa delivered to your house you will need to prepare an area to install the spa. We have listed some key points to installing your spa that will help eliminate some of the unforeseeable situations that could occur.



- Do not install too close to a building or structure.
- Leave enough room around all sides to allow access to service panels.
- Install on a load bearing, level platform.
- Do not install less than 5 feet from ground conductors.
- Use non-conductive conduit for all wiring.
- If installing below a deck surface, leave enough room to access and remove service panels.

We recommend a level 4" thick concrete pad if you are installing on land (versus deck or platform). The dimensions of the pad should be at least 3" wider than the spa dimension on all sides. (e.g.: If the spa is 8' x 8', then the pad should be 8'6" x 8'6"). Allow a few days for curing the cement when calculating your scheduled delivery date.

Balconies and upper decks are not recommended for spa installations, but if you choose to do so, keep in mind that a large filled spa with 6 people can weigh as much as three tons. Balconies and decks must be constructed to **current** state and local building codes and **must** support at least 100 pounds per square foot.

If you are building a deck around the spa, be sure that the deck does not cover *any* of the service panels to the spa. If you are building stairs for getting up to the spa, it is recommended that

they be installed in such a way that they can be moved out of the way if entrance to the service panels is required.

The most obvious thing to remember is to plan your installation in a location where it will be easy to move from the delivery truck to the location site. Spas are typically transported on a mover's dolly lying on their side. Check for adequate gate clearance and remove any fence panels if necessary to allow access to the installation site.

If you don't know the dimensions of your spa, contact your local Clearwater Spa dealer for information.

Electrical



The closer you locate the spa to the main service panel, the less money you will have to spend on wire. Wire can become expensive if you run long lengths.

Wiring Checks

Safety is key when servicing any spa or spa control panel. Remember, safety comes first for you and your customer. Please take all necessary precautions before attempting any repairs. Wiring checks are the first step to ensure safety and proper function before beginning service on a unit.

Wiring Check Precautions

- When working in a system box always be aware that it may contain high voltage.
- Always keep your fingers and hand tools away from any wiring or circuit board when the 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 house breaker.
- Keep in mind, Balboa equipped 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 Residual Current Device (R.C.D.) to trip.

Check for Loose Connections or Damaged Wires:

- Make sure the power is off before you touch any wiring.
- 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 that connections for the incoming wires are clearly labeled at the main terminal block.

- Two 16A service - minimum twelve gauge copper wire per line (each).
- 30A service – minimum ten gauge copper wire.
- 40A service – minimum eight gauge copper wire.
- 50A service – minimum six gauge copper wire.

These wires must connect the house breaker 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 also can 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 an 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.

R.C.D. Wiring Check

If a Residual Current Device has recently been installed, a majority of tripping problems can be attributed to incorrect wiring of the R.C.D. A clear understanding of the correct configuration is essential. **Please refer to the figure on page 11 as needed.**

Wiring Check for R.C.D./Service Disconnect

Precautions

In most areas, R.C.D.'s are required for spa installations. In other areas, R.C.D.'s are recommended for spa installations, but are not mandatory.

If the spa you are servicing was not installed with a R.C.D., strongly urge your customer to improve safety and comply with current standards by installing one.

Note: A suitable R.C.D. may be acquired through your local distributor.



Important!

Remember, high voltage is still accessible in the house breaker box even though you have turned off the spa breaker.

R.C.D. Line-in Wiring Check

- Locate the proper circuit breaker and turn it off.
- Remove the cover from the house breaker box. Check the main service amperage rating to the breaker box.

Note: Typically, a house circuit will require at least a 100 Amp service when a spa is installed.

- From the circuit breaker, locate the brown load wire and the blue neutral wire.
- From the R.C.D. neutral bar, locate the blue load neutral, and the green ground wire.
- Be sure there are no other appliances on the spa circuit. If there are, service must be re-wired to supply the spa only.
- Make sure all three wires exit the house breaker box via conduit, routed to the R.C.D. breaker box. The brown should be connected to the R.C.D. line-in. The blue load neutral connects to the neutral in.

R.C.D. Line-out Wiring Check for 230 V Dedicated System (3 wire system including ground wire)

The brown wire should connect to load out, the blue wire from neutral out. All wires will exit the box via conduit routed to the spa control system.

Once you have found all wiring correctly installed, begin to check for proper voltage.

Voltage Checks - System Box R.C.D. Load Out Voltage Check 230 V Dedicated System:

- Be sure the house breaker is on.
- Be sure the R.C.D. breaker is on.
- Probe the blue and brown wires at the R.C.D. load out. The voltage should be 230 V.
- Probe the blue wire and the green ground wire. The meter should read 0 V.
- Probe the brown wire and the R.C.D. neutral bar. The voltage should read 230 V.
- Recheck voltage under peak load conditions.*

Important!

If the voltage is not within the acceptable range, call an electrician or the local electric company to diagnose the problem.

System Box Check (at TB1) 230 V Dedicated System Check:

- Be sure the R.C.D. breaker is on.
-

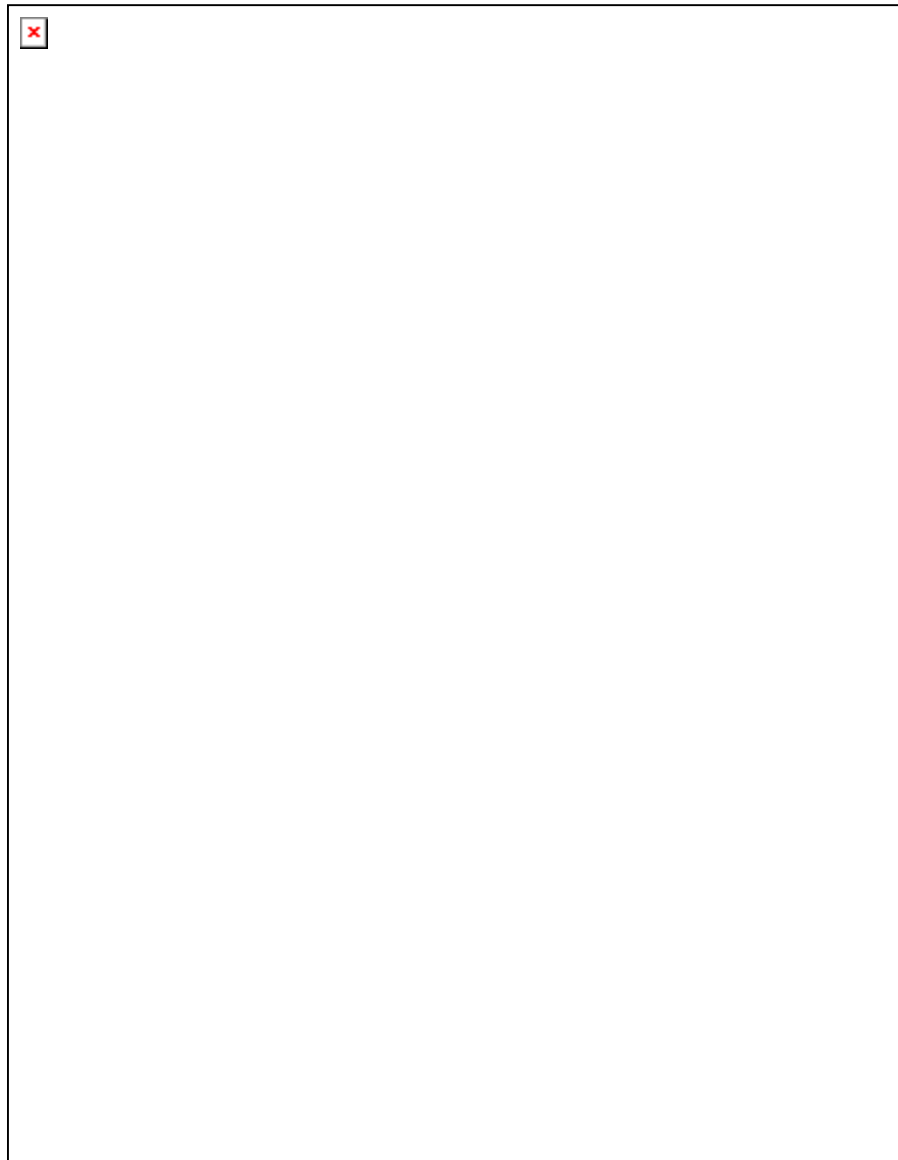
- Probe the blue and brown wires. Look for 230 V.
- Probe the blue and green ground wires for 0 V.
- Probe the brown and green ground wires – also 230 V.
- Recheck voltage under peak load conditions.*

***Peak Load Check**

It is important to check the voltage again under **peak load conditions**. To reach peak load, turn on the blower, heater, light, and all pumps.

Peak Load Check for 230 V System:

- Check the voltage between the blue and brown wires. The acceptable voltage range is between 207 and 253 V.



Ultrasage & Beachcraft Series Service Conversion Instructions From One 32 AMP or Larger Service to Two 16 AMP Services

This instruction sheet describes how to convert a Spa controller from a single service to a dual service configuration.

WARNING: This modification should be performed prior to connecting the AC power wires to the terminal block. Failure to follow the instructions may cause a safety hazard or damage to the control system.

STEP ONE: CUT JUMPER J93 AT BOTH ENDS AS CLOSE TO BOARD AS POSSIBLE, as shown by the yellow arrows on enlarged picture below. See main picture below for jumper location.

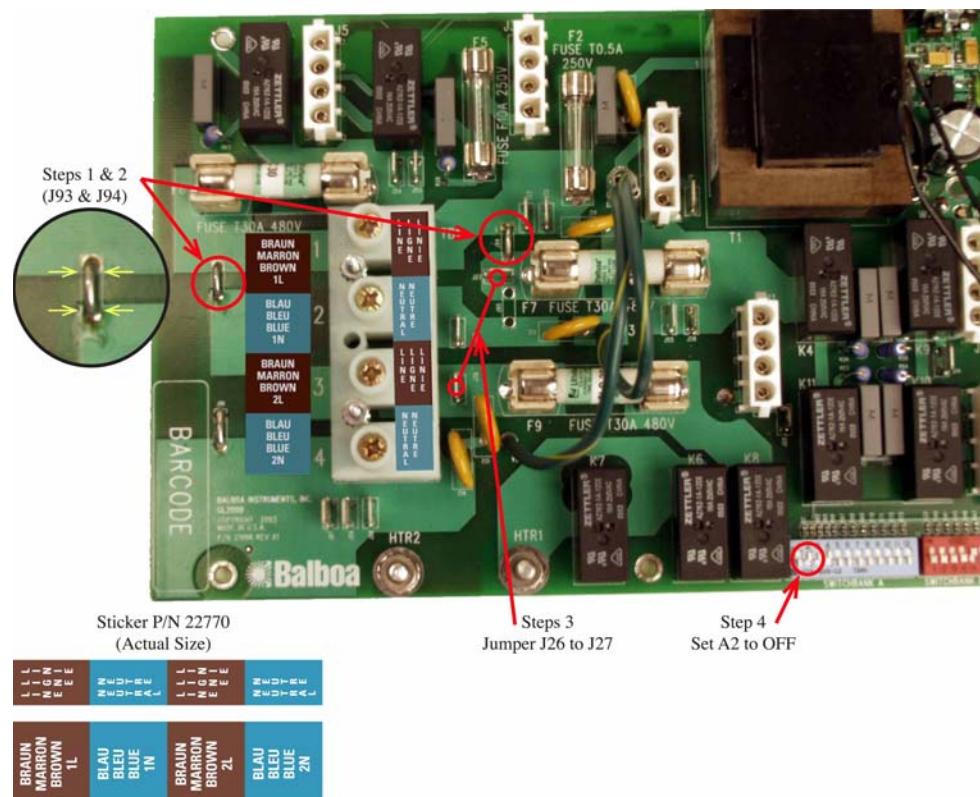
STEP TWO: CUT JUMPER J94 AT BOTH ENDS AS CLOSE TO BOARD AS POSSIBLE, same method as step one. See main picture below for jumper location.

STEP THREE: Add a wire jumper with slip connects at both ends to connect J26 to J27 as shown below.

STEP FOUR: Set DIP switch A2 to OFF.

STEP FIVE: Add stickers provided (p/n 22770) to the top of the terminal block and in front of terminal block as shown.

STEP SIX: Connect AC service to board.



Fill The Tub



IMPORTANT! !

Improperly balanced water may damage your spa and void your warranty.!!

Before you begin to fill your tub, it is advisable to have your water tested for hardness (water rich in calcium and mineral content). Wells usually contain harder water than urban water supplies. Mineral and metal imbalances in your water can shorten the life of the equipment in your spa. Contact your local Clearwater Spa dealer for proper water analysis.

We recommend that you purchase a high quality “Water Test Kit” for checking pH and sanitizer levels. Test the water daily until your “user load” is determined.



IMPORTANT!!
Do not fill your tub with water from your hot water heater.!!

Make sure there is no dirt or sediment at the bottom of the tub and that there is nothing inside the filter compartment before filling with water. Remove the service panel below the main control panel with the #2 square-head driver bit supplied with your spa. Insure that the drain valve located as shown in figure 1-2 is closed all the way.

OPTIONAL OZONATOR



DRAIN VALVE



Figure 1-2 – Controller, Ozonator and Drain Valve

Topside Controllers

Identify your topside control as either Rhythm and Sport package (See figure on page 14) or Beachcraft and Ultra-Sage (See figures 1-4 on page 22).

If your equipment is Rhythm and Sport see your fill up and power on instructions on pages 14-21.

If your equipment is Beachcraft and Ultra-Sage see your instructions on pages 22-30.

After you identified your control system, and the spa is filled to the fill line, turn your power on and go to your controller spa operations.



IMPORTANT!!

Do not turn power on until tub is full of water and all valves are open!!

Power On

It's time to turn on the power. Set the breaker at the main service panel to the on position. Now set the breaker at the service panel or spa disconnect outside the spa to the on position. Then proceed to Initial Start-up referencing your specific control system.

Rhythm and Sport Package Control Reference

Rhythm and Sport Package Control Reference



Initial Start-up

When your spa is first actuated, it will go into Priming mode (after displaying some configuration information). The Priming mode will last for up to 4 minutes and then the spa will begin to heat the spa and maintain the water temperature in the Standard mode. You can exit Priming mode early by pressing "Temp."

Temp Set (80°F - 104°F / 26.0°C - 40.0°C)

The start-up temperature is set at 100°F/37.5°C. The last measured temperature is constantly displayed on the LCD.

Note that the last measured spa temperature displayed is current only when the pump has been running for at least 2 minutes.

Temp

Press the "Temp" button once to display the set temperature. To change the set temperature, press the pad a second time before the LCD stops flashing. Each press of the "Temp" button will continue to either raise or lower the set temperature.

If the opposite direction is desired, release the pad and let the display revert to the current water temperature. Press the pad to display the set temperature, and again to make the temperature change in the desired direction.

After three seconds, the LCD will automatically display the last measured spa temperature.

Mode

A button combination is used to switch between standard, economy, and sleep modes. Press "Temp" followed by "Light" to enter mode programming, press "Temp" to cycle through to desired mode (LCD flashes until confirmed), then press "Light" to confirm selection.

Standard mode maintains the desired temperature. Note that the last measured spa temperature displayed is current only when the pump has been running for at least 2 minutes. "Std" will appear on the display momentarily when you switch into Standard Mode.

Economy mode heats the spa to the set temperature only during filter cycles. “Ecn” will appear solid when the temperature is not current and will alternate with the temperature when the temperature is current.

Pressing “Jets 1” while in Economy mode puts the spa in Standard-In-Economy mode, (“SE”) which operates the same as Standard Mode, then reverts to Economy Mode automatically after 1 hour. During this time, pressing “Temp” followed by “Light” will revert the mode to Economy immediately.

Sleep mode heats the spa to within 20°F (11°C) of the set temperature only during filter cycles. “SLP” will appear on the display until mode is changed.

Standby Mode

Pressing “Temp” followed by “Blower” or “Jets 2” or “Aux” will turn off all spa functions temporarily. This is helpful when changing a filter. Pressing any button exits Standby mode.

Jets 1

Press the “Jets 1” button once to turn pump 1 on or off, and to shift between low and high speeds (if equipped). If left running, the low speed turns off after 2 hours and the high speed turns off after 15 minutes.*

On non-circ systems, the low speed of pump 1 runs when the blower or any other pump is on. It may also activate for at least 2 minutes every 30 minutes to detect the spa temperature (polling) and then to heat to the set temperature if needed, depending upon mode. When the low speed turns on automatically, it cannot be deactivated from the panel; however, the high speed may be started.

Jets 2 (optional)

If your system has a second pump but your panel does not have a “Jets 2” button, use the “Aux” button to control pump 2.

Press the “Jets 2” button once to turn pump 2 on or off, and to shift between low and high speeds if it is a two-speed pump. If left running, the pump will turn off after 15 minutes.*

Blower

If your system has a blower (and only one pump), but your panel does not have a “Blower” button, use the “Aux” button to control the blower.

1-speed operation: on/off;

2-speed operation: med/hi/off; or

3-speed operation: lo/med/hi/off.

If left on, the blower will automatically turn off after 15 minutes.*

Light

Some systems are equipped with both a spa light and a fiber optic light; however, only one be accessed by this panel. (Larger panels may be purchased so that both the spa light and fiber optic light can be utilized.) Depending upon how your spa is equipped and configured, the “Light” button will operate in one of three ways:

- 1) Press the “Light” button to turn the spa light on and off, and to shift between dim and bright settings if your light is dimmable.
- 2) If a fiber-optic light with wheel is installed, press the “Light” button once to start the light and wheel, press it again to stop the wheel, and then again to turn the light off.
- 3) If a fiber-optic light without a separate wheel stop is installed, press the “Light” button to turn it on and off.

Again, both a spa light and a fiber optic light may be used simultaneously on the EL8000 and EL5000 systems with a different panel.

If any light is left on, it will automatically turn off after 4 hours.

Circ Pump (optional)

If your system is equipped with a circ pump, it may be configured to work in one of three different ways:

- 1) The circ pump operates continuously (24 hours) with the exception of turning off for 30 minutes at a time when the water temperature reaches 3°F (1.5°C) above the set temperature (most likely to happen in very hot climates).
- 2) The circ pump stays on continuously, regardless of water temperature.
- 3) The circ pump will come on when the system is checking temperature (polling), during filter cycles, during freeze conditions, or when the blower or another pump is on.

Preset Filter Cycles

Note: This panel cannot be used to program filter cycles for EL8000 and EL5000 systems or for the EL2000 and EL1000 systems that are programmed by time rather than by duration. For these systems, a larger panel is needed and the following description does not apply.

The pump and the ozone generator** will run during filtration. At the start of each filter cycle, the blower will run on highest speed for 30 seconds to clean out the air channels. The lowest speed of pump 2 will run for 5 minutes.

The first filter cycle ("day") begins 6 minutes after the spa is powered up. The second filter cycle ("night") begins 12 hours later. Filter duration is programmable for 1-12 hours (F1-F12). The default filter time is 2 hours. To program, press "Temp" then "Jets 1." Press "Temp" to select the filter duration. Press "Jets 1" to select the number of filter cycles. The display will show "dn" (both "day" and "night" cycles); "d" (day cycle only); or "n" ("night" cycle only). Press "Temp" to adjust, then press "Jets 1" to exit the programming mode. For continuous filtration, use F12 and "dn."

Clean-up Cycle (optional)

When the pump or blower is turned on by a button press, a clean-up cycle begins 30 minutes after the pump or blower is turned off or times out. The pump and the ozone generator** will run for one hour.

****Ozone (optional)**

On most systems, the ozone generator (if installed) runs during filter cycles (except when pump 1 is operating at high speed on a non-circ system) and during clean-up cycles. On some systems, the ozone generator operates whenever the pump runs. If your system is configured with the optional ozone suppress feature, the ozone generator will turn off for 1 hour any time a function button (Jets 1, Jets 2, Blower, etc.) is pressed.

Freeze Protection

If the temperature sensors detect a drop to 44°F (approximately 6.7°C) within the heater, then the pump automatically activates to provide freeze protection. The equipment stays on until 4 minutes after the sensors detect that the spa temperature has risen to 45°F (approximately 7.2°C) or higher. In colder climates, an optional additional freeze sensor may be added to protect against freeze conditions that may not be sensed by the standard sensors. Aux freeze sensor protection acts similarly except with the temperature thresholds determined by the switch and without a 4-minute delay in turnoff. See your dealer for details.

Message**Action required**

	No message on display. Power has been cut off to the spa.	The control panel will be disabled until power returns. EL2000 and EL1000 systems reset the time of day on each power up. Spa settings will be preserved until next power up.
— —	Temperature unknown.	After Pump 1 has been running for 2 minutes, the temperature will be displayed
H H	“Overheat” - The spa has shut down. One of the sensors has detected 118°F (48°C) at the heater.	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by pushing any button. If spa does not reset, shut off the power to the spa and call your Clearwater Spa dealer or service organization
O H	“Overheat” - The spa has shut down. One of the sensors has detected that the spa water is 110°F (43°C).	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F (42°C), the spa should automatically reset. If spa does not reset, shut off the power to the spa and call your Clearwater Spa dealer or service organization.
I C	“Ice” - Potential freeze condition detected	No action required. Both pumps will automatically activate regardless of spa status.
S a	Spa is shut down. The sensor that is plugged into the Sensor “A” jack is not working	If the problem persists, contact your Clearwater Spa dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.)
S b	Spa is shut down. The sensor that is plugged into the Sensor “B” jack is not working	If the problem persists, contact your Clearwater Spa dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.)
S n	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, contact your Clearwater Spa dealer or service organization.

H L	A significant difference between temperature sensors has been detected. This could indicate a flow problem	Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. If problem persists, contact your Clearwater Spa dealer or service organization
L F	Persistent low flow problems. (Displays on the fifth occurrence of "HL" message within 24 hours.) Heater is shut down, but other spa functions continue to run normally.	Follow action required for "HL" message. Heating capability of the spa will not reset automatically; you may press any button to reset.
d r	Inadequate water detected in heater.	Check water level in spa. Refill if necessary. If water level is okay, make sure the pumps have been primed. Press any button to reset. If problem persists, contact your Clearwater Spa dealer or service organization.
d y	Inadequate water detected in heater. (Displays on third occurrence of "dr" message.) Spa is shut down.	Follow action required for "dr" message. Spa will not automatically reset. Press any button to reset.
Pr	When your spa is first actuated, it will go into Priming mode.	See the M-7 Installation Instruction Manual for complete instructions on Power-up and Pump Priming. The Priming mode will last up to 4 minutes and then the spa will begin to heat and maintain the water temperature in the Standard Mode.
--	Temperature not yet known.	This is normal within the first few minutes of the spa power-up.
Std	The spa is operating in Standard Mode.	Temperature display is current after pump has been running for at least 2 minutes. Press "Temp" followed by "Light" to switch modes.

Ecn	The spa is operating in Economy Mode.	“Ecn” will appear solid on the display when the temperature is not current. “Ecn” will alternate with the temperature when the temperature is current. Press “Temp” followed by “Light” to switch modes.
SE	The spa is operating in Standard-in-Economy Mode.	Operates the same as Standard Mode, then reverts to Economy mode after 1 hour. Press “Temp” followed by “Light” to switch directly to Economy mode.
SLP	Sleep Mode has been activated by pressing a button combination on the user panel.	“SLP” will appear solid on the display when the temperature is not current. “SLP” will alternate with the temperature when the temperature is current. Press “Temp” followed by “Light” to switch modes.
Sby	Standby Mode has been activated by pressing a button combination on the user panel.	Press any button to leave Standby mode and return to normal operation.
PHL	pH is low.	Add pH increaser according to manufacturer’s instructions.
PHH	pH is high.	Add pH decreaser according to manufacturer’s instructions.
SAL	Sanitizer is low.	Add sanitizer according to manufacturer’s instructions.
SAH	Sanitizer is high.	Remove spa cover and allow sanitizer to dissipate.

Periodic Reminder Messages (Press the “Temp” button to reset a displayed reminder)

rPH	Every 7 days	Test and adjust pH chemical levels per manufacturer’s instructions.
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rSA	Every 7 days.	Test and adjust sanitizer chemical levels per manufacturer's instructions.
rCL	Every 30 days.	Remove, clean, and reinstall filter per manufacturer's instructions.
rt9	Every 30 days	Test & reset GFCI per manufacturer's instructions.
rdr	Every 90 days	Drain and refill spa per manufacturer's instructions.
rCO	Every 180 days	Clean and condition cover per manufacturer's instructions.
rtr	Every 180 days	Clean and condition wood per manufacturer's instructions.
rCH	Every 365 days	Install new filter.

Warning! Shock Hazard! No User Serviceable Parts.

Do not attempt service of this control system. Contact your dealer or service organization for assistance. Follow all owner's manual power connection instructions. Installation must be performed by a licensed electrician and all grounding connections must be properly installed.

Beachcraft & Ultra-Sage Controller



Beachcraft and Ultra-Sage Package Control Reference

Initial Start-up

When your spa is first actuated, it will go into Priming mode (after displaying some configuration information). Press Jet 1 Button once to start low speed on pump one. The Priming mode will last for up to 4 minutes and then the spa will begin to heat and maintain the water temperature in the Standard mode. You can exit Priming mode early by pressing “Temp”.

Temp Set (80°F - 104°F / 26.0°C - 40.0°C)

The start-up temperature is set at 100°F/37.5°C. The last measured temperature is constantly displayed on the LCD.

Note that the last measured spa temperature displayed is current only when the pump has been running for at least 2 minutes.

Up/Down

Press the “Down” or “Up” button once to display the set temperature. Each time either button is pressed again, the set temperature will increase or decrease depending on which button is pressed. After three seconds, the LCD will automatically display the last measured spa temperature.

Mode

This button is used to switch between standard, economy, and sleep modes. Press “Mode” to enter mode programming, press “Down” to cycle through to desired mode (LCD flashes until confirmed), then press “Mode” to confirm selection.

Standard mode maintains the desired temperature. Note that the last measured spa temperature displayed is current only when the pump has been running for at least 2 minutes. The “Std” will appear on the display momentarily when you switch into Standard Mode.

Economy mode heats the spa to the set temperature only during filter cycles. The “Ecn” will appear solid when the temperature is not current and will alternate with the temperature when the temperature is current. Pressing “Jets 1” while in Economy mode puts the spa in **Standard-In-Economy mode, (“SE”)** which operates the same as Standard Mode, then reverts to Economy Mode automatically after 1 hour. During this time, a press of the “Down” or “Up” followed by “Light” will revert the mode to Economy immediately.

Sleep mode heats the spa to within 20°F (11°C) of the set temperature only during filter cycles. The “Slp” will appear on the display until mode is changed.

Standby Mode

Pressing “Down” or “Up” followed by “Blower” or “Jets 2” or “Aux” will turn off all spa functions temporarily. This is helpful when changing a filter. Pressing any button exits Standby mode.

Jets 1

Press the “Jets 1” button once to turn pump 1 on or off, and to shift between low and high speeds (if equipped). If left running, the low speed turns off after 2 hours and the high speed turns off after 15 minutes.

On non-circ systems, the low speed of pump 1 runs when the blower or any other pump is on. It may also activate for at least 2 minutes every 30 minutes to detect the spa temperature (polling) and then to heat to the set temperature if needed, depending upon mode. When the low speed turns on automatically, it cannot be deactivated from the panel; however, the high speed may be started.

Jets 2

Press the “Jets 2” button once to turn pump 2 on or off, and to shift between low and high speeds if it is a two-speed pump. If left running, the pump will turn off after 15 minutes.

Jets 3

Press the “Jets 3” button once to turn pump 3 on or off. If left running, the pump will turn off after 15 minutes. If applicable.

Aroma

Press the “Aroma” button once to turn on. Again to turn off. If left on, the blower will automatically turn off after 15 minutes. If applicable.

Light

Press the “Light” button to turn the spa light on and off, and to shift between dim and bright settings if your light is dimmable. On dim, the LCD will show center circle plus one quarter of the light beams. Half of the light beams will show on medium brightness, and all of the light beams will show on bright.

If a fiber-optic light without a separate wheel stop is installed, press the “Light” button to turn it on and off. If any light is left on, it will automatically turn off after 4 hours.

Circ Pump (Optional)

If your system is equipped with a circ pump, it may be configured to work in one of three different ways:

- 1) The circ pump operates continuously (24 hours) with the exception of turning off for 30 minutes at a time when the water temperature reaches 3°F (1.5°C) above the set temperature (most likely to happen in very hot climates).
 - 2) The circ pump stays on continuously, regardless of water temperature.
-

3) The circ pump will come on when the system is checking temperature (polling), during filter cycles, during freeze conditions, or when the blower or another pump is on.

Preset Filter Cycles

On all systems, the pump and the ozone generator** will run during filtration. At the start of each filter cycle, the blower will run on highest speed for 30 seconds to clean out the air channels. The lowest speed of pump 2 will run for 5 minutes.

The first filter cycle ("day") begins 6 minutes after the spa is powered up. The second filter cycle ("night") begins 12 hours later. Filter duration is programmable for 1-12 hours (F1-F12). The default filter time is 2 hours. To program, press "Down" or "Up" then "Jets 1". Press "Down" or "Up" to select the filter duration. Press "Jets 1" to select the number of filter cycles. The display will show "dn" (day cycle only) or "n" ("night" cycle only). Press "Down" or "Up" to adjust, then press "Jets 1" to exit the programming mode. For continuous filtration, use F12 and "dn".

Clean-up Cycle

When the pump or blower is turned on by a button press, a clean-up cycle begins 30 minutes after the pump or blower is turned off or times out. The pump and the ozone generator** will run for one hour.

****Ozone**

The ozone generator (if installed) runs during filter cycles (except when pump 1 is operating at high speed on a non-circ system) and during clean-up cycles.

Freeze Protection

If the temperature sensors detect a drop to 44°F (approximately 6.7°C) within the heater, then the pump automatically activates to provide freeze protection. The equipment stays on until 4 minutes after the sensors detect that the spa temperature has risen to 45°F (approximately 7.2°C) or higher. In colder climates, an optional additional freeze sensor may be added to protect against freeze conditions that may not be sensed by the standard sensors. Aux freeze sensor protection acts similarly except with the temperature thresholds determined by the switch and without a 4-minute delay in turnoff. See your Clearwater Spa dealer for details.

Diagnostic Messages

Message	Meaning	Action Required
	No message on display. Power has been cut off to the spa.	The control panel will be disabled until power returns. Settings are preserved until the next power-up.
OHH	“Overheat” - The spa has shut down. One of the sensors has detected 118°F (approximately 47.8°C) at the heater.	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by pushing any button. If spa does not reset, shut off the power to the spa and call your Clearwater Spa dealer or service organization.
OHS	“Overheat” - The spa has shut down. One of the sensors has detected that the spa water is 110°F (approximately 43.3°C).	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F (approximately 41.7°C), the spa should automatically reset. If spa does not reset, shut off the power to the spa and call your Clearwater Spa dealer or service organization.
ICE	“Ice” - Potential freeze condition detected.	No action required. The pumps and the blower will automatically activate regardless of spa status.
SnA	Spa is shut down. The sensor that is plugged into the Sensor “A” jack is not working.	If the problem persists, contact your Clearwater Spa dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.)
SnB	Spa is shut down. The sensor that is plugged into the Sensor “B” jack is not working.	If the problem persists, contact your Clearwater Spa dealer or service organization. (May appear temporarily in an overheat situation and

		disappear when the heater cools.)
SnS	Sensors are out of balance. If this is alternating with the temperature, it may just be a temporary condition. If the display shows only this message (periodically blinking), the spa is shut down.	If the problem persists, contact your Clearwater Spa dealer or service organization.
HFL	A substantial difference between the temperature sensors was detected. This could indicate a flow problem.	Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. If problem persists, contact your Clearwater Spa dealer or service organization.
LF	Persistent low flow problems. (Displays on the fifth occurrence of the “HFL” message within 24 hours.) Heater is shut down, but other spa functions continue to run normally.	Follow action required for “HFL” message. Heating capacity of the spa will not reset automatically; you may press any button to reset.
dr	Inadequate water detected in heater.	Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. Press any button to reset.
dr4	Inadequate water detected in heater. (Displays on third occurrence of “dr” message.) Spa is shut down.	Follow action required for “dr” message. Spa will not automatically reset; you may press any button to reset.
Pr	When your spa is first actuated, it will go into Priming mode.	See the M-7 Installation Instruction Manual for complete instructions on Power-up and Pump Priming. The Priming mode will last for up to 4 minutes and then the spa will begin to heat and maintain the water temperature in the Standard mode.

--	Temperature not yet known.	This is normal within the first few minutes of the spa power-up.
Std	The spa is operating in Standard Mode.	Temperature display is current after pump has been running for at least 2 minutes.
Ecn	The spa is operating in Economy Mode.	"Ecn" will appear solid on the display when the temperature is not current. "Ecn" will alternate with the temperature when the temperature is current.
SE	The spa is operating Standard-in-Economy Mode.	Operates the same as Standard mode, after 1 hour. Press "Mode" to switch directly to Economy mode.
Slp	Sleep Mode has been activated by pressing a button combination on the user panel.	"SLP" will appear solid on the display when the temperature is not current. "SLP" will alternate with the temperature when the temperature is current.
SbY	Standby Mode has been activated by pressing a button combination on the user panel.	Press any button to leave Standby Mode and return to normal operation.
PHL	pH is low.	Add pH increaser according to manufacturer's instructions.
Phh	pH is high.	Add pH decreaser according to manufacturer's instructions.
Sal	Sanitizer is low.	Add sanitizer according to manufacturer's instructions.
Sah	Sanitizer is high.	Remove spa cover and allow sanitizer to dissipate.

Periodic Reminder Messages (Press the “Mode” button to reset a display reminder)

Message	Frequency	Action Required
rPH	Every 7 days	Test and adjust chemical levels per manufacturer's instructions.
rSA	Every 7 days	Test and adjust chemical levels per manufacturer's instructions.
rCL	Every 30 days	Remove, clean, and reinstall filter per manufacturer's instructions.
rt9	Every 30 days	Test & reset GFCI per manufacturer's instructions.
rdr	Every 90 days	Drain and refill spa per manufacturer's instructions.
rCO	Every 180 days	Clean and condition cover per manufacturer's instructions.
rtr	Every 180 days	Clean and condition wood per manufacturer's instructions.
rCH	Every 365 days	Install new filter.

CHEMICALS

Keeping The Water Clean



IMPORTANT!!

Always read directions on chemical container thoroughly before using spa chemicals.

One of the bigger reasons that people require service on their spa is because they haven't followed a strict chemical application routine. Water can accumulate impurities that can worsen the performance or even the damage the filtration system if chemicals are not applied on a regular basis. The water can even become unhealthy if chemicals are not used to sanitize the water. Improper pH levels or calcium levels can cause either corrosion of parts or scale build-up.

We recommend that you begin a routine of applying chemicals that you can get comfortable with and follow all the time. If you get into a scheduled routine, it will be easier to remember when to apply the chemicals.

Your spa may come with an optional ozonator that will do a very good job at killing bacteria and oxygenating the water, but chlorine, bromine or Nature II are used to compliment the job of the ozonator.

Finally, the best way to keep the water clean over long periods of time is to change the water four times a year. Connect a hose to the drain valve and open it all the way to allow the tub to drain all the way. Use a shop-vac to remove any standing water and debris at the bottom of the tub. Refer to the maintenance section for instructions on cleaning the tub before refilling it.

Spa Chemistry 101

At first, trying to understand spa chemistry can seem like a daunting task to say the least. We intend on helping you understand spa chemicals so that you can maintain the health of your spa at the best level possible.



The pH scale goes from 0 to 14, with zero being extremely acidic and 14 being extremely base (alkaline). Seven is considered neutral pH.

There are three basic principals to spa water chemistry.

1. Sanitize/Disinfect (kill viruses, germs, etc.)
2. Oxidize (break down organic compounds like oils and sweat)
3. Maintain slightly base (alkaline) water (pH of 7.4 - 7.6). This controls the corrosiveness of the water, prevents excessive scaling (mineral formation on surfaces exposed to water, and insures that the water is comfortable to the skin.

Once you have a good understanding of the chemicals that are used in your spa, you will be able to maintain proper water balance. Water balance is reached when all elements (pH, total alkalinity, calcium hardness and total dissolved solids) are within their proper ranges.

The following definitions for chemicals will help you understand what the chemical is and what it is used for:

Sanitizers

CHLORINE - Chlorine is widely used as a sanitizer or disinfectant in pool and spa water to kill bacteria, viruses and algae, and oxidizes ammonia and nitrogen compounds such as swimmer waste. Its formal name is *Sodium Dichlor* and is referred to as a chlorinated concentrate. *Sodium Dichlor* is a fast-dissolving, granular, stabilized organic chlorine compound providing either 56% or 63% available chlorine. *Cyanuric acid* and/or stabilizers are added to prevent U.V. light destruction of the chlorine by the sun.

Chlorinated concentrate produces *chlorides* and *chloramines*, which are formed when chlorine has combined with ammonia and nitrogen in pool and spa water. *Chloramines* exude a foul, "chlorine" odor and causes skin and eye irritation.

BROMINE – Bromine is the other commonly used sanitizer or disinfectant in pool and spa water to kill bacteria and algae, and oxidizes ammonia and nitrogen compounds such as swimmer waste. This chemical does not eliminate swimmer waste unless it is combined with an oxidizer (non-chlorine shock). It is very susceptible to direct sunlight, therefore is not efficient in outdoor pools. Bromine is sometimes used as an alternative for people whom are allergic or sensitive to chlorine products.

Bromine products are available as *sodium bromide* and bromine tablets. The *bromide ion* has no effective disinfectant or sanitizing capabilities without the use of non-chlorine shock (*potassium monopersulfate*). *Potassium monopersulfate* is added to oxidize, or activate, *bromide ion* to bromine, which rapidly forms the active sanitizer - *hypobromous acid* - in spa water. Upon reaction with bacteria and other spa contaminants, *hypobromous acid* is reduced back to *bromide ion*, ready to be activated again by the next dose of *potassium monopersulfate*. *Potassium monopersulfate* begins to produce bromine immediately and continues to do so for several hours, providing sufficient time for oxidation of bather waste and other organic contamination such as ammonia and nitrogen.

NON-CHLORINE SHOCK (Potassium Monopersulfate) – Also known as “Oxy-Shock”, is an important chemical used in the process of disinfecting and sanitizing the spa water. Non-chlorine shock is used as an oxidation agent to oxidize and eliminate organic contaminants, dead algae and debris, and will also convert the chlorine by-products (chlorides and chloramines) back into free available chlorine.

When used with bromine products, non-chlorine shock is used with *sodium bromide* in a two-part disinfection system. *Potassium monopersulfate* (non-chlorine shock) is added to oxidize, or activate, *bromide ion* to bromine which rapidly forms the active sanitizer - *hypobromous acid* - in spa water. Upon reaction with bacteria and other spa contaminants, *hypobromous acid* is reduced back to *bromide ion*, ready to be activated again by the next dose of *potassium monopersulfate*.

Most non-chlorine shock products have buffers that reduce pH instability, and corrosion inhibitors that help protect the heater and other metal surfaces.

OZONE – Ozone is a powerful gas that is used as a sanitizer and an oxidant to keep the spa water clean and disinfected. Although *ozone* is about 3000 times more powerful than chlorine, it has a tendency to dissipate quickly and does not create any sanitizer residual. By using an ozonator for your spa, you can cut maintenance time and chemical costs by as much as 60%. *Ozone* is manufactured by an ozonator (ozone generator) and is dispensed during the filtration mode.

Nature²® - Comes in a cartridge form that is easily installed inside your filter. Spa water is percolated through minerals and then trace amounts of minerals are released back into the water to help control bacteria. This does not altogether eliminate the need for chlorine but greatly reduces it. (Do not use bromine with Nature II)

Be sure to ask your Clearwater Spas Dealer for the complete Nature2® Spa Recipe.

pH Controllers

SODIUM BICARBONATE - Commonly used to increase pH and total alkalinity of spa water. *Sodium bicarbonate* is also known as natural baking soda.

SODIUM CARBONATE – Also known as soda ash, is a substance used to raise pH and total alkalinity.

SODIUM BISULFATE - Also known as dry acid, the chemical used to lower pH and total alkalinity of spa water.

MURIATIC ACID - A liquid acid that is most commonly used to reduce pH and total alkalinity levels. It tends to be very strong and is not recommended for use in spas.

Water Conditioners

FLOCCULENT - A compound which clarifies spa water by gathering oils, dirt, scum, metal deposits and small contaminant particles into larger globules, which then can be easily trapped in the filtering system allowing the filtering system to work more effectively.

CLARIFIER - A compound used to remove dissolved solids, metals, dirt, oils, or other contaminants from spa and pool water.

SCUM BALL™ - A softball sized ball that is kept in the water. The ball is chemically treated so that it attracts contaminants that would normally be trapped in the filter.

SEQUESTERING AGENT - Stain & scale preventing compounds that sequester dissolved metals to prevent water discoloration.

CALCIUM CHLORIDE - A soluble white compound used to raise the calcium hardness of spa & pool water, to protect equipment from corrosion.

ALGAECIDE - A chemical used to kill algae and prevent it from growing back.

DEFOAMER - A compound used to reduce or eliminate foaming in spa water. Products containing Chitin do this naturally.

CHITIN - A naturally occurring polymer (pronounced KY-tin) found in crab and lobster shells. As a spa clarifier, it is the best flocculating agent available. Removes

oils, dirt, scum, and metal deposits and allows the filtering system to work more effectively.

How To Use The Chemicals

Now that you have some knowledge about spa chemicals, you will learn how to use those chemicals to maintain balanced water in your spa. This section will explain how to apply chemicals, how much to use, and when to use them.

Usage Definitions

Before getting into how much and when, it is important to understand some of the terminology that is used to describe how the chemicals are applied:

P.P.M. – Parts Per Million. Expressed as a ratio of *number* out of 1 million.

SHOCK - Addition of an oxidizer (OXY SHOCK) or superchlorinator to the water to break-down the organic contaminants on which bacteria feed and to destroy ammonia and nitrogen compounds (oxidize only).

SUPERCHLORINATION - Means the addition of enough chlorine in the water to kill all living things (sanitize) and destroy any organic wastes present in the water (oxidize). Usually this means about double your normal dose of chlorine. Superchlorination can be done once a day for heavy bather loads or as infrequent as once a week for a moderately used spa.

CHLORINATION – To add chlorine to your spa on a regular basis to disinfect and oxidize your spa water.

BREAK POINT CHLORINATION - The process of shocking the water with significant quantities of chlorine to oxidize all contaminants and organic wastes and leave all remaining chlorine as free chlorine.

CALCIUM HARDNESS - A measure of the amount of calcium dissolved in water. Water with low hardness can lead to corrosion of metal parts. Water with high level of hardness can cause scale (calcium crust) build up on spa surfaces and clog filters, heaters and pumps.



WATER BALANCE is reached when all elements (free chlorine, pH, total alkalinity, calcium hardness and total dissolved solids) are within their proper ranges.

WATER BALANCE - Water balance is reached when all elements (pH, total alkalinity, calcium hardness and total dissolved solids) are within their proper ranges.

ENZYMES - Biodegradable proteins which breakdown oils, films and digest scum in spa water.

FREE CHLORINE - The amount of chlorine available to kill bacteria or algae. Also known as "Available Chlorine".

COMBINED CHLORINE - The portion of the total chlorine in water in chemical combination with ammonia, organics, and nitrogen, most of which are chloramines.

TOTAL ALKALINITY (TA) - The measure in PPM of all the dissolved base/alkaline material in the water. The acid-neutralizing capacity of water which indicates its buffering ability, or resistance to fluctuations in pH.

TOTAL DISSOLVED SOLIDS (TDS) - The total amount of dissolved materials in pool or spa water. The ideal range is from 1,000 to 2,000 ppm in pools and 1,500 ppm above the start-up TDS in spas.

Starting A Chemical Maintenance Program

Ultimately, in a chemical maintenance program, the goal is to maintain water balance. If you apply chemicals and test your water on a regular basis, water balance is easy to maintain and your spa water will stay clear and healthy. Discuss with your Clearwater Spa dealer proper water maintenance. You will want to purchase more chemicals from your local Clearwater Spa dealer after you have a better idea of what your chemical needs will be. Although test strips are fairly accurate, test kits are also available that are very accurate and will test everything that you will need to monitor your water chemistry.

Three main parameters should be tracked closely:

1. pH
2. Free chlorine
3. Alkalinity

T.D.S. (Total Dissolved Solids) and calcium hardness should be checked after the first three are in the correct range. Test strips and test kits come with instructions on how to diagnose readings to determine whether the chemicals are in the right range. Table 2-1 shows how to dispense chemicals and how often to do it.

Table 2-1 – Spa water care

PARAMETER	INDICATION	SCHEDULE	ACTION
pH	< 7.2 pH	Check bi-weekly or more for heavy use	Add Spa Up™
pH	> 7.8 pH	Check bi-weekly or more for heavy use	Add Spa Down™
Chlorine/Bromine	3 – 5 ppm	Check bi-weekly or more for heavy use	Add Chlorine or Bromine
Alkalinity	80 – 120 ppm	Check bi-weekly or more for heavy use	Add Alkalinity Increaser
TDS	< 3000 ppm	Check monthly	Drain and refill if > 3000 ppm
Oxy-Shock		Add bi-weekly or more for heavy use	Add Oxy-Shock
Hardness	150 – 400 ppm	Check monthly or with new water	Add calcium increaser if < 200 ppm. Drain and refill if >400 ppm
Ozone		Ozonator runs on FILTER CYCLES	



ALWAYS

read the entire label on a chemical container before using. Read all safety precautions on the container.

In the beginning, it is a good idea to test your water daily to learn how the water changes with the addition of chemicals. By keeping a log, you will be able to keep better track of your water condition.

When adding water to your spa for the first time or changing the water, you should superchlorinate the water by doubling (1 tbsp. Per 100 gallons) the regular dose of chlorine. It is a good idea to wait for 8 hours before entering your spa after superchlorinating the water.

Remember that keeping your spa water healthy keeps you, your family, and your guests healthy too. Most service calls for spa repairs are related to problems caused by not maintaining balanced spa water.

JETS

Types Of Jets

Your Clearwater Spa comes with different types of jets and jet configurations. Each type of jet has a specific purpose and operates differently than the others. All jets with the exception of the fixed jets in the foot well by the light are adjustable and can be turned on or off. They all combine to create a luxurious and invigorating hydrotherapy environment that can't be beat.

Most of the jets are removable for easy cleaning. It is not uncommon for particulates to get caught in the jets causing them to stop rotating, especially in environments where there are trees overhead or nearby. Refer to the next section for jet cleaning instructions. Most of the jets are easiest to adjust or remove when the pumps are off.



3" Mini Power Flo Jet

The Mini Power Flo Jet provides massaging relief to the areas affected by discomfort from carpal tunnel syndrome or arthritis. This jet can be directed to maximize your ultimate comfort, as it is fully adjustable.



3 ½" Power Flo Jet

The Power Flo Jet is designed to concentrate a soft massage to the smaller muscle groups particularly in the spine and shoulder areas. Similar to the Maxim Power Flo Jet, this jet is available in single or dual massaging action. It will generate a complete hydrotherapy experience.



5" Maxim Power Flo Jet

This jet propels an extravagant swirl of water and air bubbles. With just a touch you can change this directional jet into a rotating jet. It is available in single or dual massage action creating a luxurious hydrotherapy experience.

5" Extreme Power Flo Jet



The Extreme Power Flo Jet delivers the maximum volume of water to operate the incredible volcano and dual massage jets. These jets are placed to target the feet and legs where the relief of the day-to-day wear and tear is critical.

Topside Diverter Valves



This valve, which is located on the topside, is used to divert the power from the pump to one of the "Hot Seats" or the other. The valve has a 180° range from one side to the other. By moving the valve to one side, the pump will deliver all of its power to one seat. Moving the valve to the other side will shift the power to the other seat. If the valve is moved to a position anywhere between both sides, the power will be shared between both sides. The other diverter valve controls the power going to "Extreme Power Flo Jet" (footwell jet).



Waterfall Control and Waterfall Jet

Soothing dual waterfalls are featured on selected models. Handy turn knob controls allows for

complete adjustability of flow to match your every mood.

Soothing Scents



Aromatherapy scent packets load through the topside screw top inductor to the air system. Apple, Kiwi, Floral and Ocean scents are all available through your Clearwater Spas Dealer.



Air Controls

These valves, which are located on the topside, are used to control the air that flows through the jets. By introducing air into the jets, they effectively double their power. Because there are so many tub models, it would be impractical to describe which air controls correspond with what jets. Experiment by opening all the jets and turn on one motor at a time. Turn the air controls one at a time and take note as to what jets are affected. Air controls will only affect the jets that are operating.

Cleaning The Rotating Jets

Occasionally debris will get caught in the housing of the rotating jets causing the jet to either slow down the rotation or stop rotating altogether. This can easily be fixed by removing the jet and cleaning it. Always turn pumps off before removing jets. After removing the jet, they can easily be cleaned by vigorously shaking the jet while in the water. If the jet nozzle does not spin freely after doing this, move the nozzle to the outside rotating position and turn the nozzle in the rotating pattern until it starts to bind. Move the nozzle back and forth over the binding spot until it starts to free up. Shake the jet in the water again and check for free rotation.

Jet Removal

Jets – To remove jets simply turn the outside ring of the jet counterclockwise approximately one quarter turn and pull jet out. (Figure 3-1) To replace the jet, simply place the jet in the shell and turn the jet until the slots line up, then turn jet one quarter turn clockwise until secured. The jet will easily push into place and “snap” when it is locked.

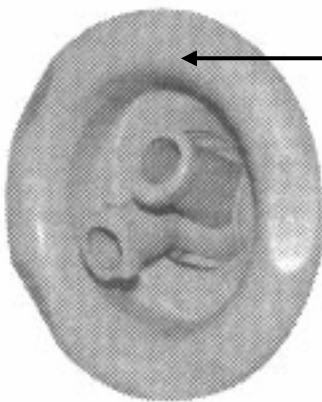


Figure 3-1 – Turn Outer Ring Counter Clockwise To Remove Jet.

FILTRATION



CAUTION !

Turn off the power to the spa before removing the filter!

Your spa is pre-programmed to run a 2-hour filter cycle twice a day. For the system to work properly, the filters must be hosed off at least once a week and thoroughly cleaned once a month with a filter degreaser. We recommend that you buy an extra filter cartridge from your Clearwater Spas dealer to alternate with the filters included with your spa. A dirty filter will restrict water flow and will prohibit the filtering system from keeping your spa clean. If the filters are not cleaned for extended periods, it could possibly damage the pumps.

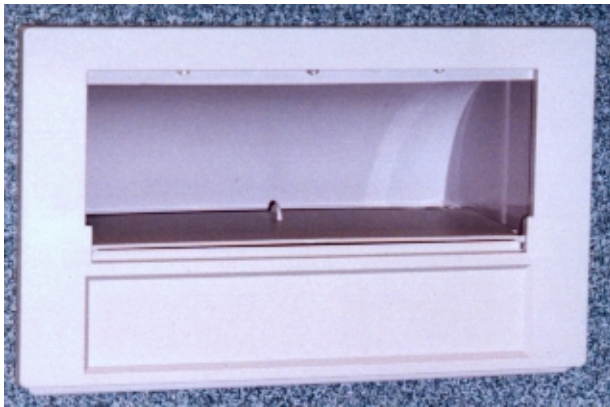
If you have a problem with floating contaminants, you may want to purchase a skimmer net to easily remove bugs, leaves, etc...



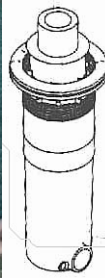
For the best performance possible, clean the filter weekly.

Details on cleaning the filters are included in the maintenance section, but as a reminder, it is important to first turn off the power to the spa. Leaving the power on while changing the filters could allow objects to be drawn into the heater and/or pump and may damage your equipment.

To remove filter pull weir open and remove



100 sq. ft. Filter Housing. To remove filters pull weir skimmer frame up and off. Un screw filters (counter clockwise) and lift out. (Part #6CH-940)



50 SQ. FT. FILTER. To remove filter turn top ring approximately one quarter turn and lift off. Lift out leaf basket, then lift out filter. (Part #C-4335)

Ask your Clearwater Spa Dealer for more information on the new Microban Filters, a new technology with antimicrobial protection that will inhibit the growth of bacteria and mold.

Ozone Generator

Clearwater Spas offers an optional Ozonator made to our specifications. Ozonators supply the spa water with ozone, which is an extremely effective oxidant that will kill bacteria and microorganisms. The Ozonator will distribute ozone into your spa automatically during the filter cycles and will keep your spa and water sparkling clean. Even though ozone is effective at keeping your water clean, it cannot replace the use of chlorine or bromine. Refer to the chemical section for more information.

No maintenance is necessary on the ozonator. The ozonator works during the filter cycles set by the controller only.

If your spa did not include an optional ozonator and you would like to have one installed, contact your Clearwater Spas sales representative.

MAINTENANCE & MISCELLANEOUS

Spa Light

Colored lenses are provided with your spa. Simply snap the colored cover over the light lens in the bottom of the tub. Use a flat blade screwdriver to lightly pry the cover off when changing light covers.



If the light bulb burns out, a replacement bulb can be obtained from your Clearwater Spa dealer. To replace the bulb, shut off power to the spa and remove the service panel closest to the light. Turn the bulb receptacle a quarter of a turn counter clockwise and pull out the bulb receptacle.

Pillows

Your spa is equipped with high quality polyurethane foam pillows. These pillows can be removed by simply pulling them off. To replace them, line the receptacle holes up with the buttons on the spa.

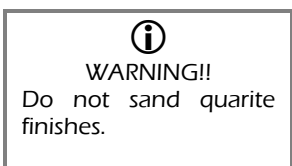
Note that it is normal for water to accumulate in the pillows and will not damage them. Using a basketball pump needle, insert into receiving hole on pillow to evacuate water, Use the basketball pump and needle to inflate.

Spa Skirt

Clearwater Spas uses select clear cedar for manufacturing the exterior cabinet. High quality wood is used for beauty and functionality. A generous coat of water base sealer has been applied at the factory. To maintain the beautiful appearance and extend the life of the cabinet, apply a coat of water base clear sealer once a year.

If access to the plumbing, motors or the controller is required, remove the screws on the service panels using the square bit supplied with the spa. Panels can then be easily removed by pulling the panel away from the spa.

The Shell



Your Spa is constructed with a high quality, impact resistant, thermoplastic shell that requires very little maintenance. Make sure that when you drain and clean your spa that you use a mild, non-abrasive cleaner and cleaning pads. We recommend that you use a cleaner made specifically for cleaning spas. They tend to be non-

abrasive and easy to rinse off completely. Contact your Clearwater Spa dealer for information on waxes and sealers.

Spa Cover

If you purchased a cover with your spa, you will want to be sure to keep it clean and protected. Spa covers exposed to the outdoors take a beating from the elements. Use a vinyl protectant to discourage deterioration caused by the UV rays from the sun. This will also minimize rain penetration. See your Clearwater Spa dealer for a vinyl protectant.

Once a month, take the cover off the spa and use a sponge and dish soap to scrub the cover clean. Keeping the cover free of dirt and debris is the most important maintenance task for the cover. Be sure to clean the seams extra well.

Your cover comes with screws that are used to fasten the receiving end of the strap locks. Simply align the cover on the spa and stretch out the straps until they are tight. Mark the location of the strap receptacles, then fasten them to the spa skirt with the screws supplied.

Winterizing

If you live in a climate where winter temperatures are below freezing and power to the spa will be disconnected, follow these procedures for draining:



1. Add an algaecide to the water and run pumps for half an hour to evenly disperse algaecide.
2. Turn off power to the unit at the circuit breaker.
3. Drain the spa by attaching a garden hose to the hose bib in the equipment housing and open the drain valve all the way. After the spa is empty, remove the hose and leave the drain valve open.
4. For freeze protection – Access motor area by removing the outer front panels to the right and left of the controller panel and unscrew the plumbing collars from the pumps. Leave union couplings disconnected. Vacuum out lines with a wet/dry shop vacuum.
5. Soak up any excess water that drains from motors and associated plumbing with a towel. Keep water and debris out by covering with a rigid spa cover.
6. Before using the spa again, reattach pump couplings, close drain valve, and review startup instructions.

If the spa is to be used during the winter, save energy by turning the temperature down and keeping the spa covered. If the spa reaches freezing temperatures, the main pumps will automatically turn on to circulate the water.

APPENDIX A

Troubleshooting

For error messages on your topside control, see your control reference from the Initial Start-up.

System Trouble

PROBLEM	PROBABLE CAUSE	REMEDY
GFCI trips (on startup)	Improper or defective wiring.	Electrician should inspect for wiring mistakes.
GFCI trips	A) Ozone generator defective.	Unplug from controller and reset breaker to verify problem.
	B) Unknown cause.	Unplug all components, then plug in one at a time until problem is identified.
	C) Heater element burned out.	Contact Clearwater Spa dealer.
System not operating	A) System lockup.	Reset power source or GFCI.
	B) Improper or defective wiring.	Electrician should inspect for wiring mistakes.
	C) House circuit breaker tripped to off position.	Reset circuit breaker.
	GFCI tripped to off position.	Reset GFCI. If still tripping, Check installation guide for proper wiring.

Controls

PROBLEM	PROBABLE CAUSE	REMEDY
System overheating/shutdown	A) Restricted filter.	Clean filter overnight with filter degreaser.
	B) Water too low.	Fill water to fill line on filter door.
Control response poor	A) Low water level.	Fill water to fill line on filter door.
	B) Dirty filter.	Clean filter overnight with filter degreaser.
	C) Closed slice valves.	Remove service panels and open slice valves.
Water won't heat	A) Same suggestions as system overheating and poor control response.	If problem persists, contact Clearwater Spa dealer.
	B) Improper or defective wiring.	Electrician should inspect for wiring mistakes.

Pumps

PROBLEM	PROBABLE CAUSE	REMEDY
Noisy pump or motor	A) Clogged filter or pump inlets.	Clean filter, filter basket, and pump inlets.
	B) Low water level.	Fill water to fill line on filter door.
	C) Slice valves not open.	Remove service panels and open slice valves.
	D) Debris in pump(s).	Contact Clearwater Spa dealer.
	E) Damaged or worn motor bearings.	Contact Clearwater Spa dealer.

Pumps (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Motor not functioning	A) Cord unplugged or damaged.	Check wiring to controller. Contact Clearwater Spa dealer if damaged.
	B) Motor overloaded.	Let motor cool for one hour, open all jets. Motor will reset automatically.
	C) Defective start switch.	Contact Clearwater Spa dealer.
Insufficient flow from motor	A) Jets closed.	Open jets.
	B) Air controls closed.	Open air controls.
	C) Clogged filter or pump inlets.	Clean filter, filter basket, and pump inlets.
	D) Blockage in line.	Contact Clearwater Spa dealer.
	E) Kink in hose.	Remove service panels and check for a kinked hose.
	F) Slice valves not open.	Remove service panels and open slice valves.

Jets

PROBLEM	PROBABLE CAUSE	REMEDY
Cyclone jet won't rotate	Debris in jet housing.	See "Cleaning The Rotating Jets" section of the JETS chapter.
Vari-swirl jets won't rotate	Debris in jet housing.	See "Cleaning The Rotating Jets" section of the JETS chapter.

Water

PROBLEM	PROBABLE CAUSE	REMEDY
Water leak	A) Compression fittings (unions) have loosened.	Tighten fittings.
	B) Leak at barbed fitting.	Remove compression clip and reseal hose. Replace clip. If leak persists, contact Clearwater Spa dealer.
Cloudy water	A) Clogged or blocked filter fitting.	Remove filter and clean fitting.
	B) Dirty filter.	Clean filter.
	C) Poor water chemistry.	Balance water.
	D) Insufficient filter time.	Increase filter time to a minimum 4 hours per filter cycle.
	E) Particles too small for filter.	Add flocculent and clarifier.
	F) High pH and /or alkalinity.	Adjust pH with pH Down.
	G) Trace metals in water.	Use metal remover.
	H) Too much clarifier used.	Wait to be filtered out.
Green water	A) Algae.	Add algaecide, superchlorinate and add Oxy Shock. Check ozonator.
	B) Metal corrosion in equipment.	PH too low, adjust to 7.2 to 7.6 with pH Up.
Brown water	Iron present in water.	Superchlorinate and add Oxy Shock. Add metal remover.
Blue-green water	Copper present in water. Usually only found in spas with gas heaters.	PH too low, adjust to 7.2 to 7.6 with pH Up.

Water (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Bleached hair/bathing suits. Eye irritation.	Too much chlorine.	Allow to dissipate. Add Oxy Shock.
Bad smell, eye & skin irritation, complaints of too much chlorine.	Too much chloramines, not enough free chlorine in water.	Superchlorinate and maintain 3 - 5 PPM. Add Oxy Shock.
Scale formation on walls and equipment.	A) High pH	Reduce to 7.2 to 7.6 pH.
	B) Calcium too high	Drain 20% to 40% of tub and refill with "soft" water. Maintain at 150 to 400 PPM
pH fluctuates radically	Total alkalinity out of balance	Balance alkalinity

LIMITED WARRANTY

RHYTHM SERIES

TEN YEAR SPA SHELL

Clearwater Spa shells are warranted against water loss occurring from defects in material or workmanship for ten years from the original purchase date. Clearwater Spas also warrant their spa shell interior surface against blistering, cracking and delamination for five years from the original purchase date.

THREE YEAR EQUIPMENT

Clearwater Spas warrants the operating equipment and plumbing against defects in workmanship and materials for three years from the original purchase date.

BEACHCRAFT & ULTRA-SAGE SERIES

TEN YEAR SPA SHELL

Clearwater Spa shells are warranted against water loss occurring from defects in material or workmanship for ten years from the original purchase date. Clearwater Spas also warrant their spa shell interior surface against blistering, cracking and delamination for five years from the original purchase date.

THREE YEAR EQUIPMENT

Clearwater Spas warrants the operating equipment and plumbing against defects in workmanship and materials for three years from the original purchase date.

HOW THE WARRANTY WORKS

In the event of a covered defect under this Limited Warranty, Clearwater Spas or its agent will make repair in accordance with conditions contained in this Limited Warranty. There will be no charge for parts or labor to repair the spa. There may be repairman travel costs if the spa is located outside the normal serviceman's service area. If the covered defect cannot be repaired, as determined by Clearwater Spas, we reserve the right to provide a replacement exchange spa of equal value. In such an event, the spa owner will be responsible for the cost associated with the removal of the defective spa and the installation of the replacement spa. The liability of Clearwater Spas under this Limited Warranty, if any, shall not exceed the original amount paid for the defective product. It is the responsibility of the spa owner to notify the factory in writing immediately upon discovery of a warranty claim. Neglecting this notification may void your claim.

LIABILITY LIMITATIONS

This warranty does not cover any defects, malfunctions or damages that result from improper installation, commercial use or improper maintenance. The spa shell is made of high quality impact resistant thermoplastic. The spa surface can not be subjected to periods of direct sunlight without being filled with water. Exposure to direct sun can cause deformation of the spa surface. Such exposure will void the warranty. This Limited Warranty is limited to the original owner installed at the original site. Any requests for change of site location must first be approved in writing by Clearwater Spas. This Limited Warranty is void if the spa has been altered, neglected, abused or misused or if any repairs have been made by an unauthorized agent. Misuse and abuse include any installation, maintenance or operation not in accordance with the owner's operations manual. Clearwater Spas is not responsible for incidental or consequential damages of any nature, acts of God or other causes beyond the control of Clearwater Spas. All warranties implied or otherwise, including implied warranties for merchantability and fitness for a particular purpose, are limited to the terms set forth in this warranty. This limited warranty only covers those items manufactured by Clearwater Spas, excluding pillows, CD stereo players, filter cartridges and ozonators which are covered under their separate manufacturer's warranty. Exterior surround, skirting is warranted to be free of defects at time of delivery and for one year thereafter. No representative of Clearwater Spas not its agents, distributors or dealers has any authority to alter in any manner the terms of this Limited Warranty and Clearwater Spas is not responsible for any undertaking, representation of warranty made by any other person beyond those expressly set forth in this warranty.

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