

# **CONTRACTOR SERIES**

## **OWNER'S MANUAL**



# OWNER'S MANUAL

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## Welcome To Ultimate Relaxation!

Please read the entire Owner's Manual before installing and using your spa. The goal of this manual is to provide you with safety and operational information plus some tips that will help you enjoy your spa to its fullest.

At the time of print, this manual is accurate in its information. The manufacturer reserves the right to change or improve its product without prior notice.

## RECORD OF OWNERSHIP

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Date Purchased \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Model \_\_\_\_\_ Serial # \_\_\_\_\_

Dealer Name \_\_\_\_\_

Phone # (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Service Tech Rep \_\_\_\_\_

## \*SERIAL NUMBER LOCATION

The serial number for your spa is located in the filter area, on the spa system pack, or on the listing plate on the skirting. *Ex. 1000420*

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## SAVE THESE INSTRUCTIONS

Included with your new spa is a safety sign. The sign is for you and your guest's protection and is suitable for outdoor use in wet locations. The sign should be placed in a location visible to all users of the spa.

Please take time to point out the physical location of the safety sign and the importance of the safety precautions displayed on the safety sign to all of your guests. Remember, your safety and the safety of anyone who enjoys the use of your spa is our utmost concern.

The sign should be mounted with screws or another type of permanent fastener. Additional or replacement signs can be obtained from your dealer or direct from the factory.

## INTRODUCTION

It's time to relax! You now have your very own portable spa. By fully understanding the operation of each of the features of your new spa, you will be assured of many years of hassle-free, hot water therapy and fun.

Your safety is of paramount importance. We urge you to read and become thoroughly familiar with all safety aspects addressed in this manual.

Through reading and totally understanding the important information in your owner's manual, you will realize that you now own **THE ULTIMATE RELAXATION MACHINE!**

<b>NO DIVING</b>	<b>DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.</b>	
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## IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should be observed including the following:

### READ AND FOLLOW ALL INSTRUCTIONS

**WARNING** – To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

A wire conductor is provided on this unit to connect a minimum 6 AWG (13.302mm<sup>2</sup>) solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5m) of the unit

(For cord-connected/convertible units)

**DANGER** – Risk of injury.

- a) Replace damaged cord immediately.
- b) Do not bury cord.
- c) Connect to a grounded, grounding type receptacle only.

(For units intended for indoor use only)

**WARNING** – For indoor use only. This unit is not intended for outdoor use.

(For units intended for outdoor use only)

**WARNING** – For outdoor use only. This unit is not intended for indoor use.

# NO DIVING

**DANGER: DIVING MAY  
RESULT IN SERIOUS  
INJURY OR DEATH.**



## IMPORTANT SAFETY INSTRUCTIONS (CONT.)

(For units with GFCI)

**WARNING** – This product is provided with a ground-fault circuit interrupter located on the front panel of selected swim spas and on the power cord of 120 volt convertible spas. The GFCI must be tested before each use. With the product operating, open the service door. When the product stops operating, this merely indicates that the door is equipped with an electrical interlock. Next, push the test button on the GFCI and close the service door. The product should not operate. Now open the service door, push the reset button on the GFCI and close the service door. The product should now operate normally. When the product fails to operate in this manner, there is a ground current flowing indicating the possibility of an electric shock. Disconnect the power until the fault has been identified and corrected.

**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 supervised at all times.

**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 that the flow rates are compatible.

Never operate 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.

**DANGER** – Risk of Electric Shock. Install at least 5 feet (1.5m) from all metal surfaces. As an alternative, a spa may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a minimum 8AWG (8.4mm<sup>2</sup>) solid copper conductor to the wire connector on the terminal box that is provided for this purpose.

**DANGER** – Risk of Electric Shock. Do not permit any electric appliance, such as a light, telephone, radio, or television, within 5 feet (1.5 m) of a spa.

**WARNING** – To reduce the risk of injury:

- a) The water in a spa should never exceed 40°C (104°F). Water temperatures between 38°C (100°F) and 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>NO DIVING</b>	<b>DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.</b>	
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## IMPORTANT SAFETY INSTRUCTIONS (CONT.)

- 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 spa water temperatures to 38°C (100°F).
- c) Before entering a spa, the user should measure the water temperature since the tolerance of water temperature- regulating devices varies.
- d) The use of alcohol, drugs, or medication before or during spa use 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 medication may affect heart rate, blood pressure, and circulation.

(For spas with a gas heater)

**WARNING – Risk of Suffocation.** This spa is equipped with a gas heater and is intended for outdoor use only unless proper ventilation can be provided for an indoor installation.

### HYPERTHERMIA

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

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

<b>NO DIVING</b>	<b>DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.</b>	
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## IMPORTANT SAFETY INSTRUCTIONS (CONT.)

**DANGER** – To reduce the risk of injury to persons, do not remove the suction grate. Suction through drains and skimmers is powerful when the jets in the spa are in use. Damaged covers can be hazardous to small children and adults with long hair. Should any part of the body be drawn into these fittings, turn off the spa immediately. As a precaution, long hair should not be allowed to float in the spa.

**WARNING** – Install the spa so that water can be easily drained out of the compartment containing electrical components so as not to damage equipment. When installing the spa make sure to allow for an adequate drainage system to deal with any overflow water. Please allow for at least 2 feet of clearance around the perimeter of the spa to provide enough room to access for servicing. Contact your local dealer for their specific requirements.

**WARNING** – The spa should be covered with an approved locking cover when not in use, to prevent unauthorized entry and injuries.

**WARNING** – People with infections, sores or the like should not use the spa. Warm and hot water temperatures may allow the growth of infectious bacteria if not properly disinfected.

**CAUTION** – Safe temperatures for swimming or aquatic exercise is around 80°F.

**CAUTION** – Risk of Electrical Shock. Do not leave CD compartment open. CD controls are not to be operated while inside the spa.

**CAUTION** – Replace components only with identical components.

**WARNING** – Risk of Electric Shock. Do not connect any auxiliary components (for example, additional speakers, headphones, additional audio/ video components etc.) to the system. These units are not provided with an outdoor antenna.

Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

If the power supply cord(s) are damaged, water is entering the speaker, CD compartment, or any other component in the electrical equipment compartment area, the protective shield is showing signs of deterioration, or there are signs of other potentially hazardous damage to the unit, turn off the circuit breaker from the wall and refer servicing to qualified personnel.

<b>NO DIVING</b>	<b>DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.</b>	
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## IMPORTANT SAFETY INSTRUCTIONS (CONT.)

The unit should be subjected to periodic routine maintenance once every quarter to make sure that the it is operating properly.

**DANGER – Risk of Electric Shock.** A green colored terminal or a terminal marked G, GR, Ground, Grounding or the symbol shown in Figure 14.1 of UL 1563 is located inside the supply terminal box or compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment.

At least two lugs marked “Bonding Lugs” are provided on the external surface or on the inside of the supply terminal box or compartment. To reduce the risk of electric shock, connect the local common bonding grid in the area of the spa to these terminals with an insulated or bare copper conductor not smaller than 6AWG.

All field installed metal components such as rails, ladders, drains, or other similar hardware within 3m of the spa shall be bonded to the equipment grounding bus with copper conductors not smaller than 6AWG.

## SAVE THESE INSTRUCTIONS

# SAFETY INSTRUCTIONS

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**WARNING:** CHILDREN SHOULD NOT USE SPAS OR HOT TUBS WITHOUT ADULT SUPERVISION

**AVERTISSEMENT:** NE PAS LAISSER LES ENFANTS UTILISER UNE CUVE DE RELAXATION SANS SURVEILLANCE

**WARNING:** DO NOT USE SPAS OR HOT TUBS UNLESS ALL SUCTION GUARDS ARE INSTALLED TO PREVENT BODY AND HAIR ENTRAPMENT.

**AVERTISSEMENT:** POUR ÉVITER QUE LES CHEVEUX OU UNE PARTIE DU CORPS PUISSENT ÊTRE ASIPIRES, NE PAS UTILISER UNE CUVE DE RELAXATION SI LES GRILLES DI PRISE D'ASPIRATION NE SONT PAS TOUTES EN PLACE

**WARNING:** PEOPLE USING MEDICATIONS AND/OR HAVING AN ADVERSE MEDICAL HISTORY SHOULD CONSULT A PHYSICIAN BEFORE USING A SPA OR HOT TUB.

**AVERTISSEMENT:** LES PERSONNES QUI PRENNENT DES MÉDICAMENTS OU ONT DES PROBLÉMES DE SANTÉ DEVRAIENT CONSULTER UN MÉDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

**WARNING:** PEOPLE WITH INFECTIOUS DISEASES SHOULD NOT USE A SPA OR HOT TUB

**AVERTISSEMENT:** LES PERSONNES ATTEINTES DE MALADIES INFECTIEUSES NE DEVRAIENT PAS UTILISER UNE CUVE DE RELAXATION

**WARNING:** TO AVOID INJURY EXERCISE CARE WHEN ENTERING OR EXITING THE SPA OR HOT TUB.

**AVERTISSEMENT:** POUR ÉVITER DES BLESSURES, USER DE PRUDENCE EN ENTRANT DANS UNE CUVE DE RELAXATION ET EN SORTANT

**WARNING:** DO NOT USE DRUGS OR ALCOHOL BEFORE OR DURING THE USE OF A SPA OR HOT TUB TO AVOID UNCONSCIOUSNESS AND POSSIBLE DROWNING

**AVERTISSEMENT:** POUR ÉVITER L'ÉVANOUISSEMENT ET LA NOYADE ÉVENTUELLE, NE PRENDE NI DROGUE NI ALCOOL AVANT D'UTILISER UNE CUVE DE RELAXATION NI QUAND ON S'Y TROUVE

**WARNING:** PREGNANT OR POSSIBLY PREGNANT WOMEN SHOULD CONSULT A PHYSICIAN BEFORE USING A SPA OR HOT TUB.

**AVERTISSEMENT:** LES FEMMES ENCEINTES, QUE LEUR GROSSESSE SOIT CONFIRMÉE OU NON, DEVRAIENT CONSULTER UN MÉDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

**WARNING:** WATER TEMPERATURE IN EXCESS OF 38°C MAY BE INJURIOUS TO YOUR HEALTH

**AVERTISSEMENT:** IL PEUT ÊTRE DANGEREUX POUR LA SANTÉ DE SE PLONGER DANS DE L'EAU A PLUS DE 38°C

**WARNING:** BEFORE ENTERING THE SPA OR HOT TUB MEASURE THE WATER TEMPERATURE WITH AN ACCURATE THERMOMETER

**AVERTISSEMENT:** AVANT D'UTILISER UNE CUVE DE RELAXATION MESURER LA TEMPÉRATURE DE L'EAU À L'AIDE D'UN THERMOMÈTRE PRÉCIS

# SAFETY INSTRUCTIONS

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**WARNING:** DO NOT USE A SPA OR HOT TUB IMMEDIATELY FOLLOWING STRENUOUS EXERCISE  
**AVERTISSEMENT:** NE PAS UTILISER UNE CUVE DE RELAXATION IMMÉDIATEMENT APRÈS UN EXERCISE FATIGANT

**WARNING:** PROLONGED IMMERSION IN A SPA OR HOT TUB MAY BE INJUROUS TO YOUR HEALTH

**AVERTISSEMENT:** L'UTILISATION PROLONGÉE D'UNE CUVE DE RELAXATION PEUT ÊTRE DANGEREUSE POUR LA SANTÉ

**WARNING:** DO NOT PERMIT ELECTRIC APPLIANCES (SUCH AS LIGHT, TELEPHONE, RADIO, OR TELEVISION) WITHIN 1.5 M OF THIS SPA OR HOT TUB

**AVERTISSEMENT:** NE PAS PLACER D'APPAREIL ÉLECTRIQUE (LUMINAIRE, TÉLÉPHONE, RADIO, TÉLÉVISEUR, ETC) À MOINS DE 1.5 M DE CETTE CUVE DE RELAXATION

**CAUTION:** MAINTAIN WATER CHEMISTRY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION

**ATTENTION:** LA TENEUR DE L'EAU EN MATIÈRES DISSOUTES DOIT ÊTRE CONFORME AUX DIRECTIVES DU FABRICANT

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 37°C. The symptoms of hyperthermia include drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include

- (a) unawareness of impending hazard;
- (b) failure to perceive heat;
- (c) failure to recognize the need to exit spa;
- (d) physical inability to exit spa;
- (e) fetal damage in pregnant women; and
- (f) unconsciousness and danger of drowning.

**WARNING:** THE USE OF ALCOHOL OR DRUGS CAN GREATLY INCREASE THE RISK OF FATAL HYPERTHERMIA IN HOT TUBS AND SPAS

LA CONSOMMATION D'ALCOOL OU DE DROGUE AUGMENTE CONSIDÉRABLEMENT LES RISQUES D'HYPERTHERMIE MORTELLE DANS UNE CUVE DE RELAXATION.

## SAFETY LITERATURE

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There are additional available publications related to spa safety. These documents include booklets entitled: "Children aren't Waterproof;" "Pool and Spa Emergency Procedures for Infants and Children;" "Layers of Protection;" and "Sensible Way to Enjoy Your Spa." All of these publications are published by National Spa and Pool Institute (NSPI) / Association of Pool and Spa Professionals (APSP).

## GLOSSARY OF SPA TERMINOLOGY



- 1. DRAINING YOUR SPA.** The drain is located behind the front panel on the far right side, grasp the hose bib cap and turn it counter clockwise. Attach a garden hose, if desired. Turn the black knob on the side of the valve a quarter turn. Draining times may vary by model using the external hose bib. A sump pump may also be used to drain the spa quickly.
- 2. MAIN PUMP.** This produces water flow through the main jets in the spa. The first pump may be operated on two speeds. Low speed will produce efficient water circulation during filtration and gentle jet action. High speed should be used for maximum jet action. The main pump is controlled by the "Jets" or "Jets I" button on the Topside Control Panel.
- 3. SECONDARY PUMP.** This produces water flow through the other jet system in the spa (if applicable). The second pump operates similar to the main pump and is controlled by the "Aux" button on the Topside Control Panel.
- 4. CIRCULATION PUMP (IF SO EQUIPPED).** This produces water flow through the heater in the spa and provides the water flow necessary to actuate the ozone. This fractional hp pump runs 24 hours a day to provide filtration and heating.
- 5. PUMP UNION.** These are used by service personnel to easily service the pump(s).
- 6. HEATER UNION.** These are used by service personnel to easily service the heater.
- 7. OZONATOR.** Your optional ozonator will operate in conjunction with your filtration system. It will deactivate when any other control function is manually activated and will reactivate after one hour of inactivity.

# ELECTRICAL INSTALLATION REQUIREMENTS

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## **HAVE YOUR ELECTRICIAN READ THE FOLLOWING INFORMATION BEFORE INSTALLATION BEGINS**

Electrical connections made improperly, or the use of wire gauge sizes for incurring power which are too small, may continually blow fuses in the electrical equipment box, may damage the internal electrical controls and components, may be unsafe and in any case will void your warranty.

**It is the responsibility of the spa owner to ensure that electrical connections are made by a qualified electrician in accordance with the National Electrical Code and any local and state electrical codes in force at the time of installation.**

These connections must be made in accordance with the wiring diagrams found inside the control box. This equipment has been designed to operate on 60Hz. alternating current only, 240 volts are required. Make sure that power is not applied while performing any electrical installation. A copper bonding lug has been provided on the electrical equipment pack to allow connection to local ground points. The ground wire must be at least 10 AWG copper wire (unless local or state codes require a heavier gauge wire) and must be connected securely to a grounded metal structure such as a cold water pipe. All Riviera Spas equipment packs are wired for 240 VAC only. The only electrical supply for your spa must include a 50 AMP switch or circuit breaker to open all non-grounded supply conductors to comply with section 422-20 of the National Electrical Code. The disconnect must be readily accessible to the spa occupants, but installed at least five feet from the spa. A Ground-Fault Circuit Interrupter (GFCI) must be used to comply with section 680-42 of the National Electrical Code. A ground fault is a current leak from any one of the supply conductors to ground. A GFCI is designed to automatically shut off power to a piece of equipment when a ground fault is detected.

**Power hook-up to the spa must be 240 volt 3 wire plus ground (6 AWG copper).**

Route the cable into the equipment area for final hook-up to terminals inside the control panel. The spa must be hooked up to a "dedicated" 240 volt, 50 amp breaker and GFCI. The term "dedicated" means the electrical circuit for the spa is not being used for any other electrical items (patio lights, appliances, garage circuits, etc.). If the spa is connected to a non-dedicated circuit, overloading will result in "nuisance tripping" which requires resetting of the breaker switch at the house electrical panel.

*Rev. 11/07*

Permanently Connected Equipment Assembly with Pump(s), Heaters, Luminaine, Ozone, Spa Side Control(s), Pump shut off device, and Audio/Video Components.

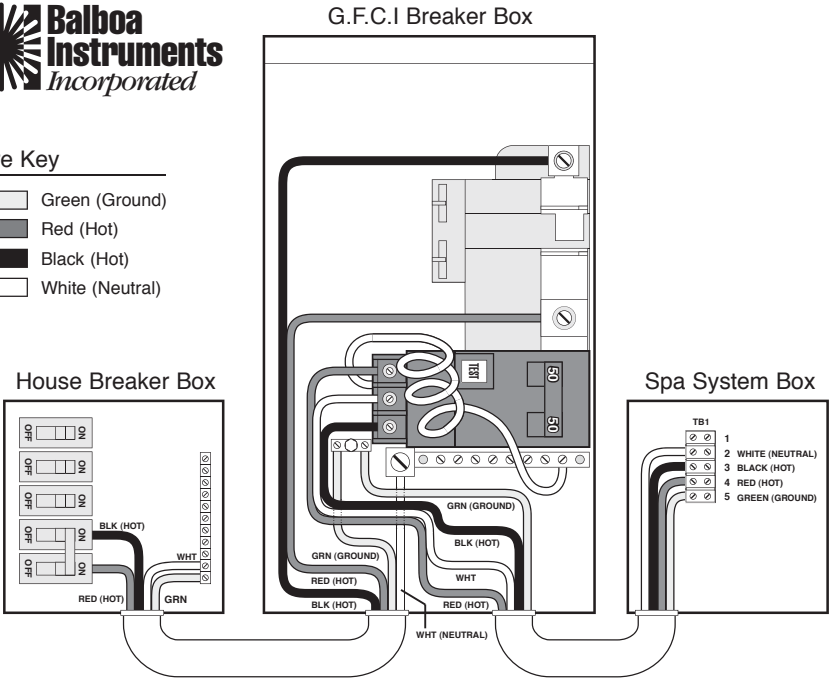
***NOTE: Some of the above components may be optional or not available with every spa model.***

# WIRING SCHEMATIC - 240 VOLT SPA HOOK-UP



## Wire Key

- Green (Ground)
- Red (Hot)
- Black (Hot)
- White (Neutral)



IDF00007.mac 6/17/97

*\* Actual wiring of GFCI will vary by manufacturer of GFCI. The GFCI shown is a Square D. Improper wiring of GFCI may result in permanent damage to spa system box. Repair / replacement of spa system box is not covered under warranty when damage results from improper wiring.*

## **SITE PREPARATION / GENERAL GUIDELINES**

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Portable spa installation is simple when properly planned. To that end, it is important that you read the following information carefully and consult with your spa dealer.

- 1) **Access** - The actual dimensions of your new spa will determine the amount of space that is needed in moving the spa from curbside to its final installation area. Be sure to measure side yard dimensions, gates or doors and vertical obstructions such as roof overhangs and overhead cables. Any other space limiting obstacles such as trees or shrubs must be evaluated.
- 2) **If the spa is being installed indoors**, dimension limitations such as stairs, ceilings and walls must be taken into consideration. Please have your spa dealer or delivery service review site or installation plans prior to delivery.
- 3) **Surface/Pad Requirements** - When your new spa is filled with water and bathers, it may weigh as much as several tons. It is imperative that the base beneath the spa can support the entire weight. The spa must be on a uniformly firm, continuous, and level surface. The recommended foundation is a concrete pad with a minimum thickness of four (4) inches with steel reinforcement bars crossed throughout the pad.

### **IMPORTANT**

When installing your spa indoors, on a wood deck, or balcony, the same load requirements must be met. Total load may be as much as 90 pounds per square foot. You should speak with a qualified contractor or your local building department to confirm that your surface is adequate for supporting a spa. Be sure to locate your spa so that equipment remains above grade and is not subject to flooding.

The equipment side(s) of the spa must be accessible in the event that future service is needed. Periodical maintenance checks require entry into the equipment bay. When possible, it is wise planning for the future to leave access to all sides of the spa in the event your spas plumbing requires maintenance. Your spa warranty does not cover the cost of providing access for service.

## **SITE PREPARATION / GENERAL GUIDELINES**

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### **GENERAL CONSIDERATIONS FOR OUTDOOR INSTALLATION**

Again, proper planning will increase your total enjoyment factor with your new spa. Listed below are some additional items to consider when planning your installation.

- How spa will complement landscaping and vice versa
- View from inside spa and view of spa from inside of home
- Exposure to sunlight and shading from trees
- Privacy
- Getting to spa from house and return
- Proximity to dressing rooms and bathrooms
- Storage for spa chemicals
- Local building codes (if applicable)
- Power cable

### **GENERAL CONSIDERATIONS FOR INDOOR INSTALLATION**

Installing your spa indoors creates an entirely different set of considerations. Here again, with proper planning, no matter what room your spa goes in, it will be your favorite room.

- Work with your spa dealer and contractor to insure all local building, electrical and plumbing codes are met
- Plan for a floor drain to drain off excess water or for draining and cleaning your spa
- A ventilation fan may be necessary due to high humidity created by your spa
- Finished material in your spa room should also be capable of withstanding increased humidity
- If you are installing your spa indoors, always be aware that if you splash water into the speaker compartments of the spa, water will run down through the speaker drain which drains below the spa in the corner where the speakers are located. Please be aware of this as any damage is not covered by the warranty. This could cause unwarranted damage.

# INSTALLATION INSTRUCTIONS

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- 1.) Put spa in final position that allows for access to equipment and spa components.



- 2.) Remove front side panel (This is the side where the main topside control panel is located) so electrical can be hooked up to the spa system pack. Panels are removed by unscrewing the screws in the corner sections and side panels.

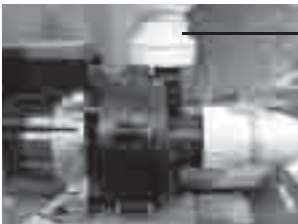
- 3.) Fill spa at least 1" above filter. We recommend filling the spa through the filter area.

- 4.) Turn the power on to the spa. Spa will go through its priming mode. This lasts approximately 5 minutes.

- 5.) It may be necessary to bleed air from the pump(s) on your spa if, after start up, your spa pumps do not operate.

Due to the nature of water flow and hydro-therapy pumps, please be advised that air locking of pumps may occur. We have taken measures to reduce the possibility of this, but it still may occur, especially after refilling a spa. This is not a service covered under warranty.

To relieve an airlock situation, loosen the union (see picture) on the discharge of the pump (see arrow on picture of pump below). Water should leak out. Tighten the union and test the pump for proper jet flow. If needed repeat process.



*Pump Union*

*Airlock*

- 6.) Adjust water chemistry according to the instructions provided in the "Spa Water Maintenance Section" (page 20).
- 7.) Your spa water will heat approximately 4° - 7° per hour, for all 240V spas. This varies depending on the size of the spa. Step into the soothing waters of your new spa!

**RELAX AND ENJOY.**

# WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

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1. **Parts per million, or ppm:** This is a form of measurement used in most pool or spa chemical readings. Best described as any one million like items of equal size and make up, next to one unlike item, but of equal size. This would be one part per million.
2. **Average size spa:** What is it? The national spa and pool institute (NSPI) states; 350 to 400 U.S. gallons is average. As a general rule, chemical dosages are the same for any spa between 100 and 500 U.S. gallons. Spas over 500 U.S. gallons the dosage would be double. Under 100 U.S. gallons would be on a case by case basis.
3. **Total Alkalinity:** This is a measurement of the ability of the water to resist changes in pH. Put another way, it is the water's ability to maintain proper pH. Total alkalinity is measured in parts per million from 0 to 400 plus, with 80 to 150 ppm being the best range for spas. With low alkalinity, the pH will flip, or change back and forth, and be hard to control. With high alkalinity it becomes extremely difficult to change the pH.
4. **pH or potential hydrogen:** This is a measurement of the active acidity in the water, or it is the measurement of the concentration of active hydrogen ions in the water. The greater the concentration of active hydrogen ions, the lower the pH. pH is not measured in parts per million, but on a scale from 0 to 14, with 7 being the neutral. In spas when ever possible, a measurement between 7.2 and 7.8 is best. Whenever possible, it should be between 7.4 and 7.6. With low pH, the results can be corroded metals, etched and stained plaster, stained fiberglass or acrylic, eye / skin irritation, rapid chlorine or bromine loss, and total alkalinity destruction. With high pH, the results can be cloudy water, eye / skin irritation, scale formation and poor chlorine or bromine efficiency.
5. **Shocking:** This is when you add either extra chlorine (superchlorinate) by raising the chlorine level above 8 ppm, or add a non-chlorine shock (potassium monoperoxysulfate or potassium monopersulfate) to burn off the chloramines or bromamines. A non-chlorine shock acts by releasing oxygen in the water, which serves the same function as chlorine. The advantage to using non-chlorine shock, is you can enter the water within 15 minutes after shocking. Using chlorine, you must wait until the total chlorine reading is below 5 ppm. One thing to remember, a non-chlorine shock will not kill bacteria or disinfect.
6. **Sequestering:** This can be defined as the ability to form a chemical complex which remains in solution, despite the presence of a precipitating agent (i.e. calcium and metals). Common names for sequestering chemicals are; minquest, stain and scale control, metal-x, spa defender, spa metal gone, (etc.).

# WATER CHEMISTRY TERMS YOU SHOULD KNOW

Before jumping into the Spa Water Maintenance, here are some terms to help you.

7. **Filtration:** Filters are necessary to remove particles of dust, dirt, algae, etc. that are continuously entering the water. If the spa is not operated long enough each day for the filter to do a proper job, this puts a burden on the chemicals, causing extra expense. Filtration time will depend on the spa size, pump and filter size, and of course, bather load. A spare cartridge should be kept on hand to make it easy to frequently clean the cartridge without the need for a long shut down. This will also allow the cartridge to dry out between usages, which will increase the cartridge life span as much as twice. Replace the cartridge when the pleats begin to deteriorate. Cartridge cleaning should be done a minimum of once a month. More often with a heavy bather load.
8. **Sanitizers:** This is what kills the germs and bacteria that enter the water from the environment and the human body.
  - A. Chlorine
    1. Only one type is approved for spa use
      - a. Sodium dichlor which is granular, fast dissolving and pH neutral chlorine.
    2. Chlorine is an immediate sanitizer.
  - B. Bromine
    1. Two types of tablets.
      - a. Hydrotech
      - b. Lonza
    2. Bromine is a slow dissolve chemical and may take a few days to develop a reserve or reading in the water.
9. **Total dissolved solids (TDS):** Materials that have been dissolved by the water. i.e. Like what happens when you put sugar in coffee or tea.
10. **Useful life of water (in days):** Water should be drained at least once every 180 days. Useful life may vary by usage and bather load.
11. **Defoamer:** Foaming may be caused by body oils, cosmetics, lotions, surface cleaners, high pH or algeacides as well as other organic materials. Low levels of calcium or sanitizer can also cause foaming. Also, double rinse your bathing suits as they will hold residual soap after being washed.
12. **Calcium hardness:** Water that is too hard (over 250 ppm) can promote scale formation in components and on spa surface. Water that is too low (below 180 ppm) may also shorten the life of metal components on the spa.

***NOTE: Always leave spa cover open for 15 min. after adding chemicals to prevent off gas from damaging your spa cover, spa pillows, and other critical parts.***

# WATER QUALITY MAINTENANCE SCHEDULE

---

- BEFORE EACH USE** - Check spa water with a test strip for proper sanitation levels and adjust accordingly to the proper levels.
- ONCE A WEEK** - Add 3 Tablespoons of a non-chlorine shock or 1 teaspoon of Dichlor to spa per 250 gallons.
- 3 TIMES A WEEK** - Test water using chemical test strips. Adjust sanitizer, pH and Alkalinity accordingly.
- ONCE A MONTH\*** - Soak your filter element overnight in a bucket with spa Filter Cleaner and then rinse with clean water before re-inserting.
- EVERY 180 DAYS** - Drain and refill your spa. Repeat start up procedure.
- AFTER EACH USE** - Add 1 tablespoon of non-chlorine shock or 1/3 teaspoon of Dichlor to spa per 250 gallons.
- AS NEEDED** - If water looks hazy, shock treat with 1 teaspoon of Dichlor per 500 gallons.

\* These are general recommendations for water quality maintenance that may vary by usage and or bather load. Depending on bather load and frequency of use, drain and refill times may vary as well as the frequency of cleaning your filters.

\* Foam Gone may be used when excessive foaming occurs. Be sure to use only a drop or two at a time. Over use of Foam Gone will result in cloudy, milky water.

## NOTE:

As an alternative to non chlorine shock, Dichlor may be substituted.

1 tsp. Dichlor = 3 tablespoons of non chlorine shock

## USE ONLY SPA CHEMICALS

(some pool chemicals are not suitable for spa use).

\* when cleaning filters, be sure to never have the pump(s) running without the filter in place. Failure to do so may result in debris in the pumps causing unwarranted damage.

## SPA WATER MAINTENANCE - START-UP

---

1. Read the spa owners manual first.
2. Clean the surface with a spa general purpose cleaner or wipe down with a clean wet towel.
3. Begin filling the spa with fresh water. If possible, do not use softened water.
4. When the spa has 2 to 4 inches of water on the bottom, add the recommended amount of a sequestering chemical for that size spa. See the chemical bottle for correct amounts.
5. When the spa is full, run the pump on high speed for 30 minutes without air controls open. This will give the sequestering chemical time to mix well with the water. Allow sequestering chemical 12-24 hours to properly filter in the water before proceeding with any further steps.
6. Using test strips or a test kit, test for total alkalinity, and adjust if necessary to between 80 to 150 ppm using the pH / alkalinity increaser or decreaser 1oz. at a time. Wait 15 minutes, retest, and adjust if necessary. The pump should be running on high speed during this time without air controls open.
7. Using test strips or a test kit, test for pH, and adjust if necessary to within the 7.2 and 7.8 range using the pH / alkalinity increaser or decreaser 1/2oz. at a time. Wait 15 minutes, retest, and adjust if necessary. The pump should be running on high speed during this time, without air controls open.
8. Add the sanitizer of choice, following label directions. If chlorine is used, broadcast the recommended amount across the surface of the water, with the pump running on high speed. Wait 15 minutes, retest, and adjust if necessary to a total chlorine reading of 1 to 3 ppm. If bromine is used, add bromine tablets to the bromine feeder following label directions. With the pump running on high speed, add 2oz. of sodium bromide, and shock the spa with 2oz. of non chlorine shock. It may take several days adjusting the bromine feeder to obtain a total bromine reading of 3 to 5 ppm. A bromine reading may not be obtained on the first day.
9. If any foam develops, add a defoamer at the base of the problem area. Use only enough defoamer to get rid of the foam. This is usually one or two drops. Do not pour large amounts of defoamer into water.
10. Wait two days, and begin a three day a week maintenance program.

# **SPA WATER MAINTENANCE - START-UP**

---

## **DAY ONE**

1. Test and adjust total alkalinity if necessary to between 80 to 150 ppm using the pH / alkalinity increaser or decreaser 1oz. at a time. Wait 15 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
2. Test and adjust pH, if necessary, to within the range of 7.2 to 7.8 using the pH / alkalinity increaser or decreaser, 1/2oz. at a time. Wait 15 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
3. Test and adjust sanitizer level. Add chlorine following label directions to maintain a free chlorine level of 1 to 3 ppm. If using bromine, adjust feeder to maintain a total bromine level of 3 to 5 ppm. Add bromine tablets to the dispenser if necessary, following label directions.
4. Add a water clarifier following label directions. If the spa is equipped with an ozone unit, we recommend adding an enzyme product in place of the clarifier, following the label directions.
5. Use a small amount of defoamer only if necessary.

## **DAY TWO SKIP**

## **DAY THREE**

1. Test and adjust total alkalinity, if necessary, to between 80 and 150 ppm using the pH / alkalinity increaser or decreaser, 1oz at a time. Wait 15 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
2. Test and adjust the pH, if necessary, to within the range of 7.2 to 7.8 using the pH / alkalinity increaser or decreaser, 1/2oz at a time. Wait 15 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
3. Test and adjust sanitizer level. Add chlorine following label directions to maintain a free chlorine level of 1 to 3 ppm. If using bromine, adjust feeder to maintain a total bromine level of 3 to 5 ppm. Add bromine tablets to the dispenser if necessary, following label directions.
4. Add sequestering chemical, following label directions for maintenance.
5. If necessary, clean water line with a spa general purpose cleaner or enzyme product.
6. Use a defoamer only if necessary.

*(cont. next page)*

# **SPA WATER MAINTENANCE - START-UP**

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## **DAY FOUR SKIP**

## **DAY FIVE**

1. Test and adjust total alkalinity, if necessary, to between 80 and 150 ppm using the pH / alkalinity increaser or decreaser, 1oz. at a time. Wait 15 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
2. Test and adjust the pH, if necessary, to within the range of 7.2 to 7.8 using the pH / alkalinity increaser or decreaser, 1/2oz. at a time. Wait 15 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
3. Test and adjust sanitizer level. Add chlorine following label directions to maintain a free chlorine level of 1 to 3 ppm. If using bromine, adjust feeder to maintain a total bromine level of 3 to 5 ppm. Add bromine tablets to the dispenser if necessary, following label directions.
4. Shock with 2oz. of non chlorine shock, or superchlorinate following label directions. A spa should be shocked at least once a week even if it is not used. If using chlorine as the sanitizer, the spa should be shocked whenever a free chlorine reading of 1 to 3 ppm cannot be obtained without raising the total chlorine level above 5 ppm. Always shock a spa after any heavy bather load.
5. Check filter cartridge and clean if necessary. Clean with cartridge filter cleaner, following label directions. It is best to have a spare cartridge on hand, to prevent long spa down times while the cartridge is being cleaned. Never operate your spa without the filters in place.
6. Use a defoamer only if necessary.

## **DAY SIX AND SEVEN SKIP**

With a swim spa you are working with a small volume of hot water compared to a large volume of relatively cool water in a swimming pool. Because of this chemicals will have a shorted life span and bacteria can grow more quickly than in a swimming pool. A spa is less forgiving then a pool and requires that whatever is put into it have a pH as close to neutral as possible. That is why only chemical made for spas should be used.

# SPA WATER MAINTENANCE

## TROUBLE-SHOOTING GUIDE

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<b>PROBLEM</b>	<b>POSSIBLE CAUSES</b>	<b>HOW TO FIX IT</b>
Chlorine / Bromine Odor	<ul style="list-style-type: none"><li>• Excessive Chlorine or bromine levels</li><li>• Low pH</li></ul>	<ul style="list-style-type: none"><li>• Shock water with non-chlorine shock treatment</li><li>• Adjust pH if necessary</li></ul>
Water Odor	<ul style="list-style-type: none"><li>• Low levels of sanitizer</li><li>• pH out of range</li><li>• Bacteria or algae growth</li></ul>	<ul style="list-style-type: none"><li>• Shock water with non-chlorine shock treatment or adjust sanitizer levels</li><li>• Adjust pH level if necessary</li><li>• Adjust sanitizer if necessary</li></ul>
Cloudy Water	<ul style="list-style-type: none"><li>• Dirty filters or inadequate filtration</li><li>• Water chemistry not balanced</li><li>• Suspended particles or organic materials</li><li>• Old water</li></ul>	<ul style="list-style-type: none"><li>• Clean filters and adjust filtration times</li><li>• Adjust chemistry levels</li><li>• Add spa clarifier (see dealer)</li><li>• Change spa water</li></ul>
Scum Ring Around Spa	<ul style="list-style-type: none"><li>• Build up of oils, dirt and organic elements</li></ul>	<ul style="list-style-type: none"><li>• Wipe off with a clean towel</li></ul>
Eye / Skin Irritation	<ul style="list-style-type: none"><li>• Unsanitary water</li><li>• Free chlorine level above 5 ppm</li><li>• Poor sanitizer / pH levels</li></ul>	<ul style="list-style-type: none"><li>• Shock spa with non-chlorine shock</li><li>• Allow level to drop below 5 ppm</li><li>• Adjust according to spa test strip results</li></ul>
Foaming	<ul style="list-style-type: none"><li>• High levels of body oils, lotions, soap, etc.</li></ul>	<ul style="list-style-type: none"><li>• Add small amount of defoamer</li></ul>

### RECOMMENDED LEVELS OF CHEMICAL

Chlorine 1.0 - 3.0 ppm

pH 7.2 - 7.8

Total Alkalinity 80 - 150 ppm

Calcium Hardness 180 - 250 ppm

## WHY ARE CHEMICALS IMPORTANT IN A SPA

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1. **Evaporation:** As water evaporates, only pure water evaporates, leaving the salts, minerals, metals, and any unused chemicals behind. Adding water adds more salts, minerals, and metals. In time, the water can become saturated with these dissolved solids and can cause stains or scale to form on the walls of the spa or a scale build up inside the equipment. Colored or cloudy water, and possible corrosion of plumbing and fittings may also occur.
2. **Heat:** Heat causes much quicker evaporation and also will cause minerals and metals to precipitate out of solution.
3. **Air:** Dust and airborne dirt particles are introduced into the spa.
4. **Environment:** The environment surrounding the spa can also impact the water quality. Items such as pollen, grass, sand, dirt, lawn fertilizer, airborne dust, insects, leaves, and pets can all affect the water quality of the spa.

### REMEMBER:

The maintenance routines set forth in this manual may need to be adjusted depending on how much the spa is being used.

## MAINTENANCE RECOMMENDATIONS

---

Your spa requires periodic draining and cleaning to ensure a safe, healthy environment. It is recommended that you clean your spa at least every 180 days. Heavy bather load will require cleaning it more often.

### **DRAINING YOUR SPA**

- See page 11.

### **CLEAN YOUR SPA SURFACE**

- With a soft cloth, wipe down the spa surface with a non-abrasive spa surface cleaner that may be purchased through your local spa dealer. Do not use paper towels. Be sure to rinse residue from spa surface.
- If your spa has developed an oily or chalky residue at the waterline it may require special treatment. Consult your dealer.

### **REFILL YOUR SPA**

- Be sure to close the drain valve.
- Fill the spa with water. Be sure water level is above skimmer opening to the minimum safe water level label.
- Refer to your spas corresponding start-up section with any questions.

### **CLEAN YOUR FILTER ELEMENT** (also reference page 48)

- The filter elements are one of the most important components of your spa. Not only are they essential for clean water, but they also extend the life of the spa equipment. You filter elements should be cleaned on a regular basis, once a month on average with normal usage. With heavy use the filters may need to be cleaned more often.
- Turn off the spa before servicing filters. Never leave to the spa running when removing the filters. Debris can be pulled into the plumbing system and cause unwarranted damage.
- Remove filter element.
- With a garden hose, spray the element under pressure. Periodically, the element needs to be soaked in a filter cleaner compound. Check with your dealer for details on cleaning and/or filter replacement recommendations.
- Replace filter element.
- Be sure water level is adequate.
- Turn spa on.

### **CARE OF YOUR SPA PILLOWS**

- Your spa pillows need to be rinsed periodically to remove any chemical residue. This should help to eliminate pillows becoming stiff and discolored.
- If the swim spa will not be used for a period of time, the pillows should be removed to extend their useful life.

**NOTE: Do not cover the spa for 15 minutes after adding chemicals as the off gas can cause unwarranted damage.**

## WINTERIZING YOUR SPA

---

Many people find they enjoy using their spa more in the winter than any other time. Your spa is designed to be used year round in any type of climate.

\*However, if you decide you don't want to use your spa in the winter, you must drain it and follow the winterizing steps listed below:

- 1.) Drain your spa completely using the drain valve (see "To Drain Your Spa" on page 11) or use an inexpensive submersible pump that you can buy from your dealer or your local hardware store.
- 2.) Use a shop vac to get all standing water out of your unit.
- 3.) Remove access panels from equipment area.
- 4.) Loosen all pump unions
- 5.) Remove winterizing plug from face of the pump(s) where applicable.
- 6.) Using your shop vac in a blowing mode, insert the hose into the nozzle of each jet and blow the trapped water from the lines into the interior of the spa.
- 7.) After this is completed, use the shop vac to remove any standing water in the spa and in the equipment area.
- 8.) Clean the spa with a soft cloth and a non-abrasive spa surface cleaner.
- 9.) Replace access panels.
- 10.) Cover spa to prevent water from entering the spa.

**\* Disclaimer: We do not recommend winterizing your spa. If you choose to do so, any damage that may result is not covered under the spa warranty.**

# SPA - SPECIFICATIONS

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	Spa Dimensions (in.)	Electrical Requirements	Water Capacity (gallons)	Weight Dry/Full (lbs.)	Therapy Pumps	Jet Count
CS 730	84 x 84 x 36	240V, 50 Amp	360	630 / 3,618	1	30
CS 730L	84 x 84 x 36	240V, 50 Amp	345	660 / 3,524	1	30
CS 738	84 x 84 x 36	240V, 50 Amp	360	670 / 3,658	2	38
CS 738L	84 x 84 x 36	240V, 50 Amp	345	700 / 3,564	2	38
CS 862	94 x 94 x 36	240V, 50 Amp	435	775 / 4,386	2	62

# SPA - CONTROLS: MAIN MENUS



## NAVIGATION

Navigating the entire menu structure is done with 2 or 3 buttons on the control panel.

The **WARM** and **COOL** buttons are indicated by a single **Temperature** icon throughout this User Guide. Some panels only have one Temperature Button.

Panels that have two Temperature buttons can use both of them to simplify navigation and programming where a single Temperature icon is shown.

The **LIGHT** Button is also used to choose the various menu and navigate each section.

Typical use of the Temperature button(s) allows changing the Set Temperature while the numbers are flashing in the LCD. Pressing the **LIGHT** button while the numbers are flashing will enter the menus.

The menus can be exited with certain button presses. Waiting for 10 seconds will return the panel to normal operation and a display of spa status.

### Power-up Screens

Each time the System powers up, a series of numbers is displayed.



After the startup sequence of numbers, LINK will appear if no button has been pressed. Press any button to Link the Panel with the System.

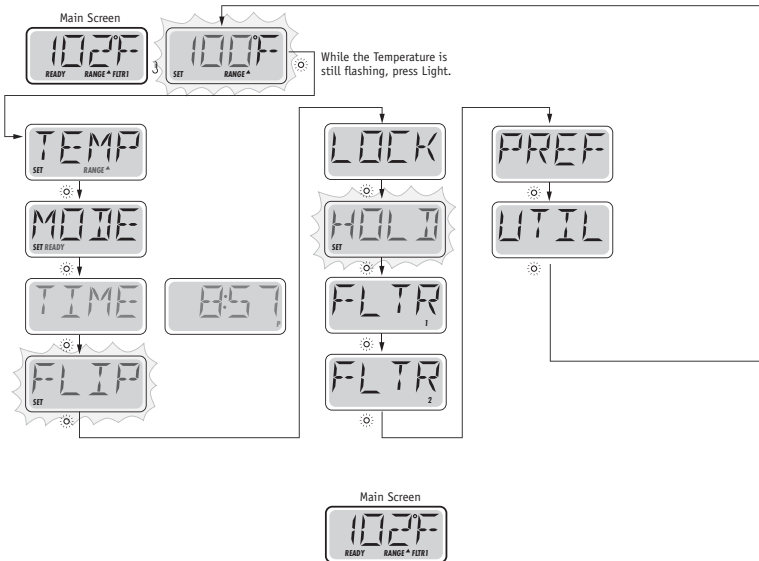
### Key

Indicates Flashing or Changing Segment

A temperature button, used for "Action"

Light or dedicated "Choose" button, depending on control panel configuration

••••• Waiting time - varies depending on function



Waiting Approx. 10 Seconds in the Main Menu will allow the display to revert to the Main Screen

•••••

# SPA - CONTROLS: FILL IT UP

---

## PREPARATION AND FILLING

---

Fill the spa to its correct operating level. Be sure to open all valves and jets in the plumbing system before filling to allow as much air as possible to escape from the plumbing and the control system during the filling process.

After turning the power on at the main power panel, the top-side panel display will go through specific sequences. These sequences are normal and display a variety of information regarding the configuration of the hot tub control.

## PRIMING MODE

---

This mode will last for 4-5 minutes or you can manually exit the priming mode after the pump(s) have primed.



Regardless of whether the priming mode ends automatically or you manually exit the priming mode, the system will automatically return to normal heating and filtering at the end of the priming mode. During the priming mode, the heater is disabled to allow the priming process to be completed without the possibility of energizing the heater under low-flow or no-flow conditions. Nothing comes on automatically, but the pump(s) can be energized by pushing the "Jet" buttons.

If the spa has a Circ Pump, it can be activated by pressing the "Light" button during Priming Mode.

## PRIMING THE PUMPS

---

As soon as the above display appears on the panel, push the "Jet" button once to start Pump 1 in low-speed and then again to switch to high-speed. Also, push the Pump 2 or "Aux" button, if you have a 2nd pump, to turn it on. The pumps will now be running in high-speed to facilitate priming. If the pumps have not primed after 2 minutes, and water is not flowing from the jets in the spa, do not allow the pumps to continue to run. Turn off the pumps and repeat the process. Note: Turning the power off and back on again will initiate a new pump priming session. Sometimes momentarily turning the pump off and on will help it to prime. Do not do this more than 5 times. If the pump(s) will not prime, shut off the power to the spa and refer to page 16.

Important: A pump should not be allowed to run without priming for more than 2 minutes. Under NO circumstances should a pump be allowed to run without priming beyond the end of the 4-5 minute priming mode. Doing so may cause damage to the pump and cause the system to energize the heater and go into an overheat condition.

## EXITING PRIMING MODE

---

You can manually exit Priming Mode by pressing a "Temp" button (Up or Down). Note that if you do not manually exit the priming mode as described above, the priming mode will be automatically terminated after 4-5 minutes. Be sure that the pump(s) have been primed by this time.

Once the system has exited Priming Mode, the top-side panel will momentarily display the set temperature but the display will not show the temperature yet, as shown below. This is because the system requires approximately 1 minute of water flowing through the heater to determine the water temperature and display it.



## **SPA - CONTROLS: SPA BEHAVIOR**

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### **PUMPS**

---

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 pump will turn off after a time-out period. The pump 1 low-speed will time out after 30 minutes. The high-speed will time out after 15 minutes.

On non-circ systems, the low-speed of pump 1 runs when any other pump is on. If the spa is in Ready Mode (See page 36), Pump 1 low may also activate for at least 1 minute every 30 minutes to detect the spa temperature (polling) and then to heat to the set temperature if needed. When the low-speed turns on automatically, it cannot be deactivated from the panel, however the high speed may be started.

### **FILTRATION AND OZONE**

---

Pump 1 low and the ozone generator (if so equipped) will run during filtration.

The system is factory-programmed with one filter cycle that will run in the evening (assuming the time-of-day is properly set) when energy rates are often lower. The filter time and duration are programmable. (See page 36)

A second filter cycle can be enabled as needed.

At the start of each filter cycle, Pump 2 (if there is one) will run briefly to purge its plumbing to maintain good water quality.

### **FREEZE PROTECTION**

---

If the temperature sensors within the heater detect a low enough temperature, then the pump(s) activate to provide freeze protection. The pump(s) will run either continuously or periodically depending on conditions.

# SPA - CONTROLS: TEMPERATURE AND TEMP RANGE

## ADJUSTING THE SET TEMPERATURE

When using a panel with Up and Down buttons (Temperature buttons), pressing Up or Down will cause the temperature to flash. Pressing a temperature button again will adjust the set temperature in the direction indicated on the button. When the LCD stops flashing, the spa will heat to the new set temperature when required.

If the panel has a single temperature button, pressing the button will cause the temperature to flash. Pressing the button again will cause the temperature to change in one direction (e.g. UP). After allowing the display to stop flashing, pressing the Temperature Button will cause the temperature to flash and the next press will change the temperature in the opposite direction (e.g. DOWN).

## PRESS-AND-HOLD

If a Temperature button is pressed and held when the temperature is flashing, the temperature will continue to change until the button is released. If only one temperature button is available and the limit of the Temperature Range is reached when the button is being held, the progression will reverse direction.

## DUAL TEMPERATURE RANGES

This system incorporates two temperature range settings with independent set temperatures. The High Range designated in the display by an "up" arrow, and the Low Range designated in the display by a "down" arrow.





These ranges can be used for various reasons, with a common use being a "ready to use" setting vs. a "vacation" setting. The Ranges are chosen using the menu structure below. Each range maintains its own set temperature as programmed by the user. This way, when a range is chosen, the spa will heat to the set temperature associated with that range.

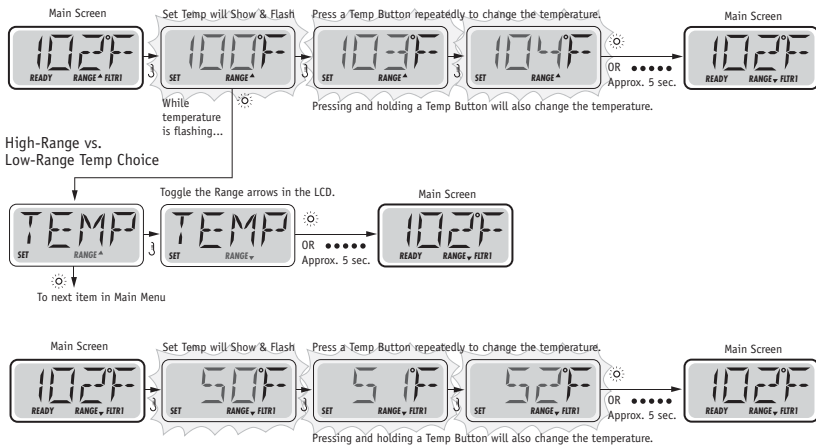
*High Range can be set between 80°F and 104°F.*

*Low Range can be set between 50°F and 80°F.*

*See Ready and Rest on Page 36 for additional heating control information.*

### Key

-  Indicates Flashing or Changing Segment
-  A temperature button, used for "Action"
-  Light or dedicated "Choose" button, depending on control panel configuration
-  Waiting time - varies depending on function



# SPA - CONTROLS: MODE – READY AND REST

In order for the spa to heat, a pump needs to circulate water through the heater. The pump that performs this function is known as the “heater pump.”

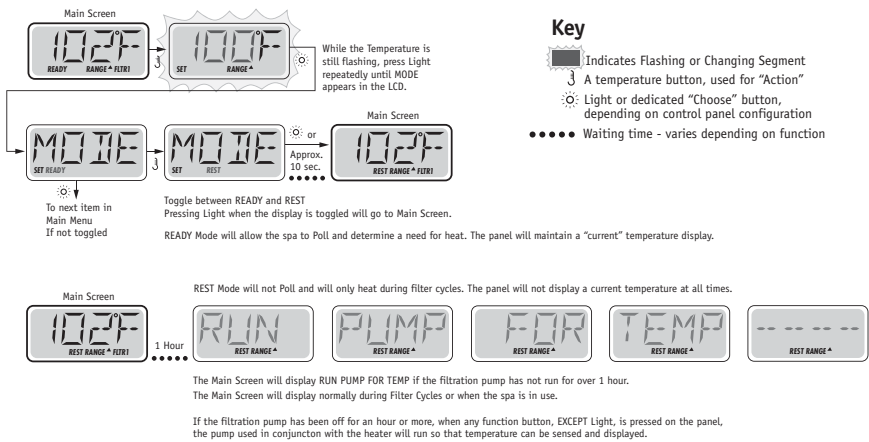
The heater pump can be either a 2-Speed Pump 1 or a circulation pump.

If the heater pump is a 2-Speed Pump 1, READY Mode will circulate water every 1/2 hour, using Pump 1 Low, in order to maintain a constant water temperature, heat as needed, and refresh the temperature display. This is known as “polling.”

REST Mode will only allow heating during programmed filter cycles. Since polling does not occur, the temperature display may not show a current temperature until the heater pump has been running for a minute or two.

If the spa is configured for 24HR circulation, the heater pump generally runs continuously. Since the heater pump is always running, the spa will maintain set temperature and heat as needed in Ready Mode, without polling.

In Rest Mode, the spa will only heat to set temperature during programmed filter times, even though the water is being filtered constantly when in Circulation Mode.



## READY-IN-REST MODE

READY/REST appears in the display if the spa is in Rest Mode and Jet 1 is pressed. It is assumed that the spa is being used and will heat to set temperature. While Pump 1 High can be turned on and off, Pump 1 Low will run until set temperature is reached, or 1 hour has passed. After 1 hour, the System will revert to Rest Mode. This mode can also be reset by entering the Mode Menu and changing the Mode.



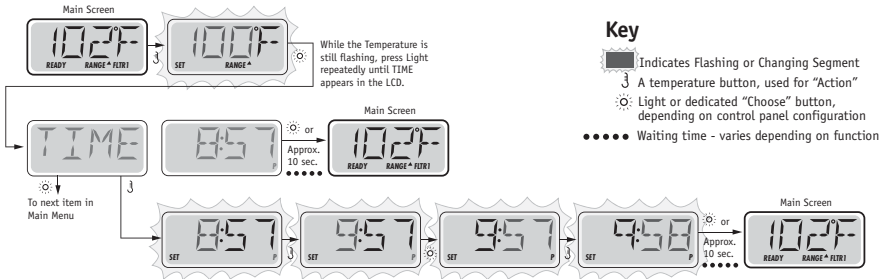
# SPA - CONTROLS: MODE – SHOW AND SET TIME-OF-DAY

## BE SURE TO SET THE TIME-OF-DAY

Setting the time-of-day is important for determining filtration times and other background features.

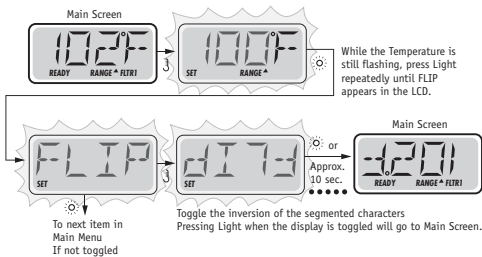
TIME will flash on the display if no time-of-day is set in the memory.

24-hour time display can be set under the PREF menu. (See Page 37)



**NOTE:** If power is interrupted to the system, Time-of-Day will need to be reset.

## FLIP (INVERT DISPLAY)



# SPA - CONTROLS: RESTRICTING OPERATION

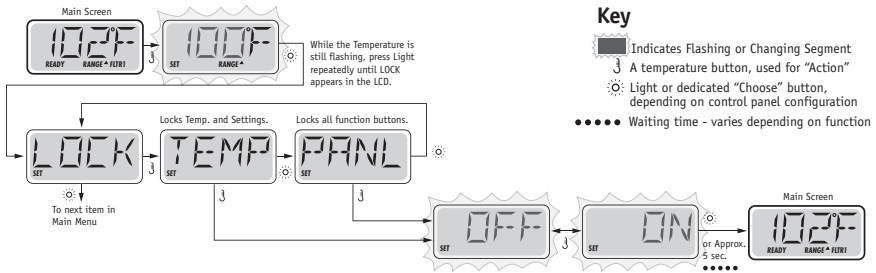
The control can be restricted to prevent unwanted use or temperature adjustments.

Locking the panel prevents the controller from being used, but all automatic functions are still active.

Locking the Temperature allows Jets and other features to be used, but the Set Temperature and other programmed settings cannot be adjusted.

Temperature Lock allows access to a reduced selection of menu items.

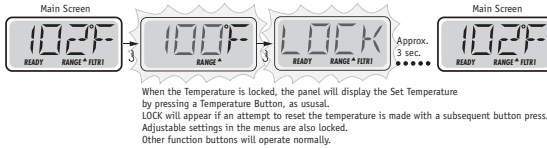
These include Set Temperature, FLIP, LOCK, UTIL, INFO and FALT LOG.



## Panel Locked

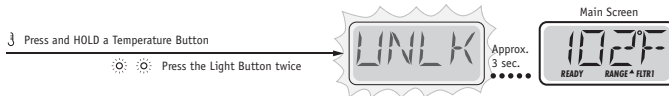


## Temperature Locked



# UNLOCKING

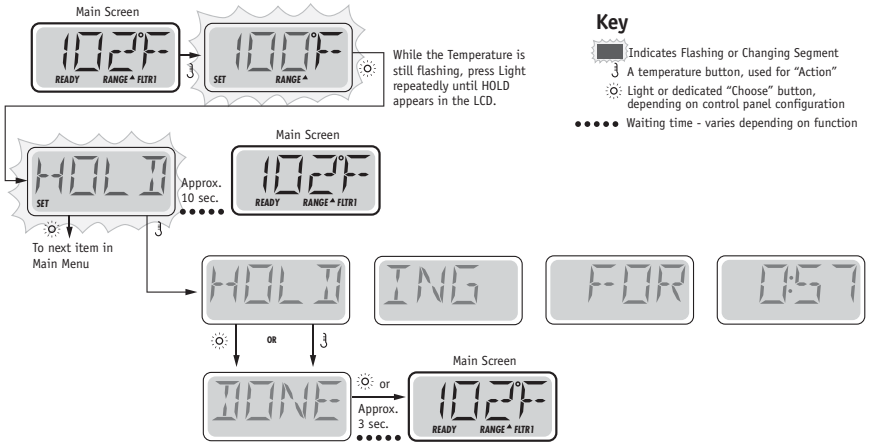
This Unlock sequence may be used from any screen that may be displayed on a restricted panel.



# SPA - CONTROLS: HOLD (STANDBY)

## HOLD MODE

Hold Mode is used to disable the pumps during service functions like cleaning or replacing the filter. Hold Mode will last for 1 hour unless the mode is exited manually.







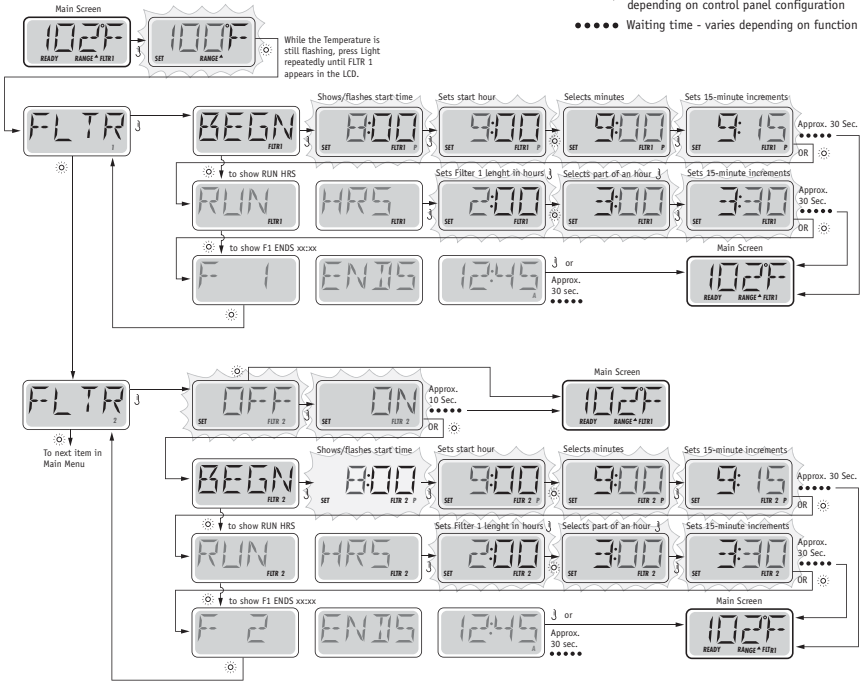
# SPA - CONTROLS: ADJUSTING FILTRATION

## MAIN FILTRATION

Filter cycles are set using a start time and a duration. Start time is indicated by an "A" or "P" in the bottom right corner of the display. Duration has no "A" or "P" indication. Each setting can be adjusted in 15-minute increments. The panel calculates the end time and displays it automatically.

### Key

-  Indicates Flashing or Changing Segment
-  A temperature button, used for "Action"
-  Light or dedicated "Choose" button, depending on control panel configuration
-  ..... Waiting time - varies depending on function



## FILTER CYCLE 2 - OPTIONAL FILTRATION

Filter Cycle 2 is OFF by default.

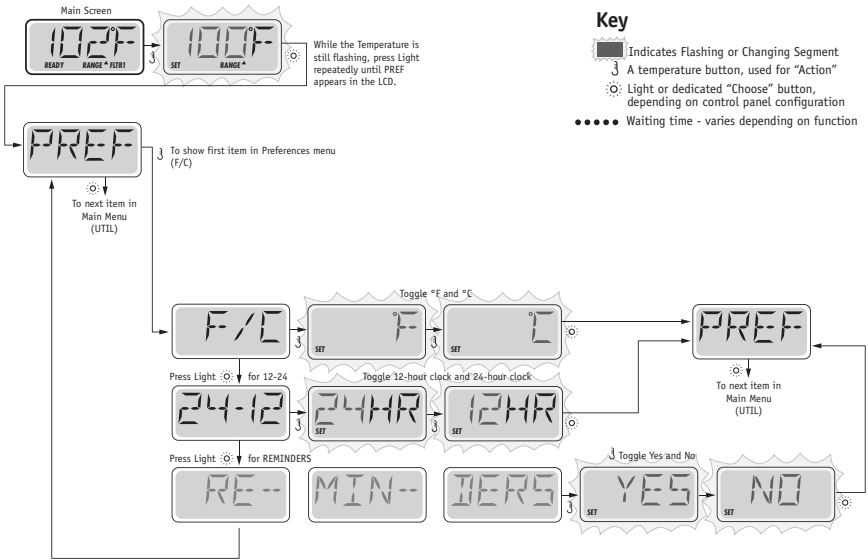
It is possible to overlap Filter Cycle 1 and Filter Cycle 2, which will shorten overall filtration by the overlap amount.

## PURGE CYCLES

In order to maintain sanitary conditions, secondary Pumps will purge water from their respective plumbing by running briefly at the beginning of each filter cycle.

If Filter Cycle 1 is set for 24 hours, enabling Filter Cycle 2 will initiate a purge when Filter Cycle 2 is programmed to begin.

# SPA - CONTROLS: PREFERENCES



## UTILITY MENU

The utility menu is available for trouble shooting purposes only and should not be accessed. Testing modes that are used in this menu can affect the operation of the system and cause it not to function correctly.

## SPA - CONTROLS: GENERAL MESSAGES

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### PRIMING MODE

---

Each time the spa is powered up, it will enter Priming Mode. The purpose of Priming Mode is to allow the user to run each pump and manually verify that the pumps are primed (air is purged) and water is flowing. This typically requires observing the output of each pump separately, and is generally not possible in normal operation. Priming Mode lasts 4 minutes, but you can exit it earlier by pressing any Temp button. The heater is not allowed to run during Priming Mode.

**NOTE:** If your spa has a Circ Pump, it will turn on with Jets 1 in Priming Mode. The Circ Pump will run by itself when Priming Mode is exited.



### WATER TEMPERATURE IS UNKNOWN

---

After the pump has been running for 1 minute, the temperature will be displayed.



### TOO COLD - FREEZE PROTECTION

---

A potential freeze condition has been detected, or the Aux Freeze Switch has closed, and all pumps are activated. All pumps are ON for at least 4 minutes after the potential freeze condition has ended, or when the aux freeze switch opens.

In some cases, pumps may turn on and off and the heater may operate during Freeze Protection.

This is an operational message, not an error indication.



### WATER IS TOO HOT - (OHS)

---

One of the water temp sensors has detected spa water temp 110°F (43.3°C) and spa functions are disabled. System will auto reset when the spa water temp is below 108°F (42.2°C). Check for extended pump operation or high ambient temp.

## SPA - CONTROLS: HEATER-RELATED MESSAGES

---



### HEATER FLOW IS REDUCED (HFL)

---

There may not be enough water flow through the heater to carry the heat away from the heating element. Heater start up will begin again after about 1 min. See "Flow Related Checks" below.



### HEATER FLOW IS REDUCED (LF)\*

---

There is not enough water flow through the heater to carry the heat away from the heating element and the heater has been disabled. See "Flow Related Checks" below. After the problem has been resolved, you must press any button to reset and begin heater start up.



### HEATER MAY BE DRY (DR)\*

---

Possible dry heater, or not enough water in the heater to start it. The spa is shut down for 15 min. Press any button to reset the heater start-up. See "Flow Related Checks" below.



### HEATER IS DRY\*

---

There is not enough water in the heater to start it. The spa is shut down. After the problem has been resolved, you must press any button to reset and restart heater start up. See "Flow Related Checks" below.



### HEATER IS TOO HOT (OHH)\*

---

One of the water temp sensors has detected 118°F (47.8°C) in the heater and the spa is shut down. You must press any button to reset when water is below 108°F (42.2°C). See "Flow Related Checks" below.



### A RESET MESSAGE MAY APPEAR WITH OTHER MESSAGES.

---

Some errors may require power to be removed and restored.

### FLOW-RELATED CHECKS

---

Check for low water level, suction flow restrictions, closed valves, trapped air, too many closed jets, pump and dirty filters.

On some systems even when spa is shut down, some equipment may occasionally turn on to continue monitoring temperature or if freeze protection is needed.

\* This message can be reset from the topside panel with any button press.

## SPA - CONTROLS: SENSOR-RELATED MESSAGES

---



### SENSOR BALANCE IS POOR

---

The temperature sensors MAY be out of sync by 2°F or 3°F. Call for Service.



### SENSOR BALANCE IS POOR\*

---

The temperature sensors ARE out of sync. The Sensor Balance is Poor fault has been established for at least 1 hour. Call for Service.



### SENSOR FAILURE

---

A temperature sensor or sensor circuit has failed. Call for Service.

## MISCELLANEOUS MESSAGES

---



### NO COMMUNICATIONS

---

The control panel is not receiving communication from the System. Call for Service.

\* This message can be reset from the topside panel with any button press.

## SPA - CONTROLS: SYSTEM-RELATED MESSAGES

---



### **MEMORY FAILURE - CHECKSUM ERROR\***

---

At Power-Up, the system has failed the Program Checksum Test. This indicates a problem with the firmware (operation program) and requires a service call.



### **MEMORY FAILURE - PERSISTENT MEMORY ERROR\***

---

Contact your dealer or service organization if this message appears on more than one power-up.



### **MEMORY FAILURE - CLOCK ERROR\***

---

Contact your dealer or service organization.



### **CONFIGURATION ERROR – SPA WILL NOT START UP**

---

Contact your dealer or service organization.



### **A PUMP APPEARS TO BE STUCK ON**

---

Water may be overheated. POWER DOWN THE SPA. DO NOT ENTER THE WATER. Contact your dealer or service organization.



### **A PUMP APPEARS TO HAVE BEEN STUCK ON WHEN SPA WAS LAST POWERED**

---

POWER DOWN THE SPA. DO NOT ENTER THE WATER. Contact your dealer or service organization.

\* This message can be reset from the topside panel with any button press.

## SPA - CONTROLS: REMINDER MESSAGES

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### GENERAL MAINTENANCE HELPS.

---

Reminder Messages can be suppressed by using the PREF Menu. See Page 37.

Reminder Messages can be chosen individually by the Manufacturer. They may be disabled entirely, or there may be a limited number of reminders on a specific model.

The frequency of each reminder (i.e. 7 days) can be specified by the Manufacturer.

Press a Temperature button to reset a displayed reminder message.

Alternates with temperature or normal display.

### APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 7 DAYS.

---

Check pH with a test kit and adjust pH with the appropriate chemicals.

Alternates with temperature or normal display.

### APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 7 DAYS.

---

Check sanitizer level and other water chemistry with a test kit and adjust with the appropriate chemicals.

Alternates with temperature or normal display.

### APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 30 DAYS.

---

Clean the filter media as instructed by the manufacturer. See HOLD on page 36.

Alternates with temperature or normal display.

### APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 30 DAYS.

---

The GFCI is an important safety device and must be tested on a regular basis to verify its reliability.

Every user should be trained to safely test the GFCI associated with the hot tub installation.

A GFCI will have a TEST and RESET button on it that allows a user to verify proper GFCI function.

\* This message can be reset from the topside panel with any button press.

## SPA - CONTROLS: REMINDER MESSAGES (CONT.)

---

CHNG

WATR

Alternates with temperature or normal display.

**APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 90 DAYS.**

---

Change the water in the spa on regular basis to maintain proper chemical balance and sanitary conditions.

CLN

COVR

Alternates with temperature or normal display.

**APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 180 DAYS.**

---

Vinyl covers should be cleaned and conditioned for maximum life.

TRT

WOOD

Alternates with temperature or normal display.

**APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 180 DAYS.**

---

Wood skirting and furniture should be cleaned and conditioned per the manufacturers instructions for maximum life.

CHNG

FLTR

Alternates with temperature or normal display.

**APPEARS ON A REGULAR SCHEDULE, I.E. EVERY 365 DAYS.**

---

Filters should be replaced occasionally to maintain proper spa function and sanitary conditions.

CHNG

CART

Alternates with temperature or normal display.

**AS NEEDED.**

---

Install new mineral cartridge

## OPTIONAL STEREO SYSTEM

---

**Warning:** Never remain in your spa longer than 15 minutes per session when the water temperature is above 98°F. If you wish to spend more time in your spa, whether enjoying music, or just lounging, be sure to keep the spa water at or below body temperature (98.6°F).

*\*Please refer to your stereo Owner's Manual for specific operations.*

Your Spa Stereo System includes a CD/FM stereo with two surface mounted speakers.

When adding chemicals, please be sure to leave your spa cover open for at least 15 minutes after adding chemicals to prevent off gas damage to speakers, pillows and plastic parts.

The speaker compartment of your spa has a drain at the bottom of the spa frame to prevent water from accumulating and sitting stagnant. Please note that this drain runs down to the corner of the spa and will leak out should water collect in these compartments. Please also note that should the drain become blocked, water will not drain out, causing your marine grade speaker to become completely submerged in water. Any damage caused by this is not warranted.

**Note: If you are installing your spa indoors, always be aware that if you splash water into the speaker compartments of the spa, water will run down through the speaker drain which drains below the spa in the corner where the speakers are located. Please be aware of this as any damage is not covered by the warranty. This could cause unwarranted damage.**

**Note: Do not place wet CDs into the stereo at anytime.**

**Note: AM channels will be very limited in reception and in most cases unavailable.**

**CAUTION** – Risk of Electric Shock. Do not leave compartment door open.

**CAUTION** – Risk of Electric Shock. Replace components only with identical components; and

Do not operate the Audio / Video controls while inside the spa.

**WARNING** – Prevent Electrocution. Do not connect any auxiliary components (for example cable, additional speakers, headphones, additional Audio / Video components, etc.) to the system.

**NOTE: These units are not provided with an outdoor antennae; when provided, it should be installed in accordance with article 810 of the National Electrical Code, ANSI / NFPA 70.**

**NOTE: 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.**

# SPA TROUBLE-SHOOTING GUIDE

---

## **NOTHING ON THE SPA OPERATES**

- 1.) Check the control panel display for any messages. If there is a message, refer to the diagnostic section. There you will find the meaning of the message and what action is to be taken.
- 2.) If there is no message on your control panel, check and reset the GFCI and house breaker.



*\*The GFCI should be located in a weather proof box close to the spa, but no closer than 5 ft.*

If the spa does not respond, contact your local service company.

## **PUMP(S) DO NOT OPERATE**

- 1.) Press the "Jets" button on your control panel.  
If you hear the pumps trying to operate:
  - A. Pump may need to be primed. See page 16.If you do not hear anything from the pump, contact your local service company.

## **POOR JET PERFORMANCE**

- 1.) Make sure pump is operating
- 2.) Check that the water level is adequate (up to minimum safe water level side)
- 3.) Make sure that the jets and air controls are open.
- 4.) Check for dirty filter. Clean if necessary.

# SPA TROUBLE-SHOOTING GUIDE

---

## SPA NOT HEATING

\* If the spas heater has failed, the majority of the time it will trip the GFCI breaker. If the spa is not heating and has not tripped the breaker, please follow these steps:

- 1.) Check the control panel for diagnostic messages. Refer to spa diagnostic message area in previous sections. Follow steps to alleviate message.
- 2.) Check water set temperature at control panel.
- 3.) Check for dirty filter. Clean if necessary.
- 4.) Check "heat mode" the spa is set in. Spa should be in standard mode.
- 5.) Check the control panel for heater light indicator. If the light is on, the spa should be heating. Wait a reasonable amount of time (approximately 1 hour) to see if the water temperature is changing.
- 6.) Check to make sure that the pump is primed.
- 7.) Reset power to the spa at GFCI breaker.
- 8.) If spa is still not heating, contact your dealer for service.



## GFCI IS TRIPPING

A ground fault circuit interrupter (GFCI) is required by the National Electrical Code for your protection. The tripping of the GFCI may be caused by a component on the spa or by an electrical problem. Electrical problems include but are not limited to, a faulty GFCI breaker, spa component, power fluctuations, or improper wiring. It may be necessary to contact an electrician if your dealer recommends doing so.

# REGULAR MAINTENANCE PROCEDURES

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**Note:** These maintenance procedures are the responsibility of the spa owner to perform. These procedures are not covered by the spa warranty.



## CLEANING JETS

The majority of jets in your spa can individually be turned on/off. If any of these jets become hard to turn, it will be necessary to remove the jet to clean it as grit/sand and mineral deposit may be present.

Jets are removed by turning the collar and then pulling out the jet. The jets in your spa can be removed for cleaning by unscrewing them (counter clockwise) and then pulling out the jet. Some jets may not be removable depending on the model.

## TO CLEAN JETS

Place the jet(s) in a bucket, fully immerse in white vinegar. Let the jet(s) soak overnight and then rinse with water. Reinstall the jet(s). It may be necessary to clean grit and deposits from the white jet body (mounted in the spa shell) by using a small bristled brush.



## DRAINING YOUR SPA

The drain is located behind the front panel on the far right side, grasp the hose bib cap and turn it counter clockwise. Attach a garden hose, if desired. Turn the black knob on the side of the valve a quarter turn. Draining times may vary by model using the external hose bib. A sump pump may also be used to drain the spa quickly.

# REGULAR MAINTENANCE PROCEDURES

---

## CARE OF YOUR SPA COVER

Always cover your spa when not in use. This will greatly reduce energy consumption and will cause spa water to heat more rapidly. Water loss and chemical usage will also be reduced.

- Be sure to lock down all straps on cover after each use to prevent wind damage.
- Do not allow spa to sit uncovered in direct sunlight. This may cause damage to exposed surfaces of spa and possible discoloration of spa fittings.
- Periodically hose off both sides of spa cover for maximum life of cover. Once a month use a vinyl cleaner and conditioner on the vinyl portion of your cover. Rinse residue off.
- Keep cover open for 15 min. after adding chemicals to prevent off gas damage.

**NOTE: IF YOUR SPA IS GOING TO BE LEFT EMPTY FOR PROLONGED PERIODS, DO NOT REPLACE COVER DIRECTLY ON SURFACE OF SPA. PLACE 2"-3" BLOCKS BETWEEN COVER AND SPA. THIS ALLOWS FOR ADEQUATE VENTILATION OF COVER AND SPA.**

**NOTE: Do not cover the spa for 15 minutes after adding chemicals as the off gas can cause unwarranted damage.**

## CARE OF YOUR SPA CABINET

Your quality Polymer Skirt simply needs to be hosed off periodically. No other maintenance is required.



Fig. 1



Fig. 2

## FILTER CLEANING

**NOTE:** Never operate the spa without filter in place. If done, damage will result to pumps and other components. We recommend having an extra filter to install when cleaning the filter.

- 1.) Turn power off to the spa.
- 2.) Remove any large or floating debris from the filter area.
- 3.) Remove the gray top assembly by gently lifting up while rotating. This will release the top. (See figure 1). Lift up and remove the screen assembly (see figure 2). This will allow access to the filter cartridge. The filter cartridge can be lifted straight up and removed for replacement or cleaning.

**CAUTION:** Always make sure that the filter assembly is completely reassembled before operating the spa.

# SPA CARE AND MAINTENANCE RECORD

---

DATE DATE DATE DATE DATE DATE DATE DATE

Drain & Clean Spa								
Clean Filter Cartridge								
Soak Filter Cartridge in Solution								
Test GFCI								
Clean and Condition Spa Cover								
Miscellaneous Service								
Miscellaneous Service								

# SPA CARE AND MAINTENANCE RECORD

---

DATE DATE DATE DATE DATE DATE DATE DATE

Drain & Clean Spa								
Clean Filter Cartridge								
Soak Filter Cartridge in Solution								
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Drain & Clean Spa								
Clean Filter Cartridge								
Soak Filter Cartridge in Solution								
Test GFCI								
Clean and Condition Spa Cover								
Miscellaneous Service								
Miscellaneous Service								



# SPA OWNER'S MANUAL

**The Contractor Series Spas**  
are manufactured by Master Spas,  
one of the world's leading spa manufacturers.

6927 Lincoln Parkway  
Fort Wayne, IN 46804  
800.860.7727

**The manufacturer reserves the right to change specifications or features without notice.** As a manufacturer of spas and related products we stand behind every product we produce pursuant to those representations which are stated in our written limited warranty. Your dealer is an independent business person or company and not an employee or agent of the manufacturer. We cannot and do not accept any responsibility or liability for any other representations, statements or contracts made by any dealer beyond the provisions of our written limited warranty.