



## Owner's Manual



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## Key To Symbols



**Danger!** Proceed with extreme caution to prevent the risk of severe injury and/or death.



**Details** - Step by step instructions for important procedures.



**Warning!** Proceed with care to prevent avoidable accidents and potential risks.



**Keys to Success** - Details, tips and tricks from industry professionals.

Please record the following information about your spa purchase here and store it in a safe place so it is readily available in the event you need to file a warranty claim or need to contact your dealer to service in the future. Most of this information can be found on your original purchase receipt.

Spa Model \_\_\_\_\_

Spa Serial Number \_\_\_\_\_ Date of Purchase \_\_\_\_\_

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

Approximate Date of Spa Installation \_\_\_\_\_

**Read, Save and Follow All Instructions !**



## Safety Information



### **DANGER!**

#### **Risk of Electrocution**

##### ***ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A LICENSED ELECTRICIAN.***

Ground Fault Circuit Interrupter installed in compliance with section 680-42 of the National Electrical Code, ANSI/NFPA 70-1993 is required for user safety and equipment protection. You should inspect the Ground Fault Circuit Interrupter before each use to be sure it is functioning properly, in good condition and that the wiring is connected properly. To ensure the spa functions properly and that your warranty is not compromised by improper installation, a licensed electrician must install all electrical components and make electrical connections. Connect only to a grounded source a minimum of five feet (1.5m) from any metal surface. Solid copper bonding conductors must be in compliance with local ordinances and located between the ground terminal inside the spa control box and any metal equipment, including pipes, electrical equipment enclosures, and conduit within five feet (1.5m) of the spa. To prevent death or serious injury from electrocution that can occur if an appliance falls into the spa, do not permit any electrical appliances, such as lights, telephones, mP3 players, radios or televisions to be within five feet (1.5m) of the spa unless they were installed by the manufacturer.

- Disconnect the spa from the power supply before draining and servicing components.
- Test the Ground Fault Interrupter(s) before each use.
- Replace damaged wires and cords immediately to reduce the risk of electric shock. Failure to do so may result in death or serious permanent injury by electrocution.
- Do not bury wire without electrical conduit approved for underground use.
- Equipment compartment doors must be properly installed before using the spa.
- Replace components with components identical to components supplied by the manufacturer.
- Do not operate the audio or television equipment while you are inside the spa.
- Unless it was installed and provided by the manufacturer, audio and video equipment and other electrical appliances should not be used within 5 feet (1.5m) of the spa. Do not connect auxiliary components (i.e. headphones) to the system.
- Do not open the spa control box unless instructed to do so by your dealer.



### **DANGER!**

#### **Risk of Children Drowning**



Extreme caution must be used to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use the spa unless they are supervised at all times. To reduce risk of injury, do not allow children to use this product unless they are closely supervised at all times. To reduce the risk of injury, lower water temperature when spa is used by children. Lower water temperatures are recommended since children are especially sensitive to hot water.

- Make sure child resistant locks on the spa cover are engaged after use. The spa cover that comes with your spa meets the ATSM F1346-91 Standard for Safety Covers. However, use of the cover, locking clips or actual locks will not prevent access to the spa, so children should not be left unattended.
- Children are especially sensitive to hot water. Lower water temperatures are recommended for children. Test the water temperature with a thermometer or your hands to be sure it's comfortable before allowing children to enter the spa.
- Remind children that wet surfaces are slippery. Make sure that children are careful when entering and exiting the spa.
- Check with local authorities regarding fencing requirements for spas in your area.
- Keep children and pets off the spa cover. Most spa covers have a maximum weight load of 20 lbs. They will not support the weight of people or pets. Sitting on the cover may cause the foam inserts to break.
- Children should always be in the company of a responsible adult and should not have unattended access to the spa.



### **DANGER!**

#### **Risk of Drowning or Serious Injury from Suction Fittings, Filters and Skimmers**



Keep clothing, hair or hanging jewelry away from suction fittings, rotating jets or other moving components. Never operate the spa if the filter(s), filter lid(s), skimmer(s), or skimmer assembly(ies) are missing. Do not remove basket(s) or filter(s) while spa is running. The suction fittings have a specific water flow rating. Replacement suction fitting must be compatible with the flow rate marked on the original suction fitting. Never operate the spa if the suction fittings are broken or missing. Please contact your local dealer for service and replacements or repair.



### **DANGER!**

#### **Risk of Hyperthermia**



Prolonged immersion in hot water can result in HYPERTHERMIA, a dangerous condition occurring when the internal temperature of the body reaches a level above normal (98.6°F). The symptoms of hyperthermia include unawareness of impending hazard, failure to perceive heat, failure to recognize the need to exit the spa, physical inability to exit the spa, fetal damage in pregnant women, and unconsciousness resulting in a danger of drowning. The use of alcohol, drugs or medication can greatly increase the risk of fatal hyperthermia.

- The Consumer Products Safety Commission has stated that the water in the spa should never exceed 104°F (40°C). Water temperatures between 100°F (38°C) and 104°F (40°C) are considered safe for a healthy adult.
- Lower water temperatures are recommended for extended use (exceeding 10 minutes) and for young children. Extended use at higher temperatures can cause hyperthermia.
- Pregnant or possibly pregnant women should consult a physician before using a spa.
- Pregnant women should reduce the water temperatures to no more than 100°F (38°C). Failure to do so may result in permanent injury to your baby.

## Safety Information



### WARNING!

#### **Adverse Affects with Certain Medical Conditions**



You should consult your physician if you are pregnant or possibly pregnant, obese, have a medical history of heart disease, low or high blood pressure, circulatory problems, infectious diseases, immune deficiencies, infections skin irritations, or diabetes.



### WARNING!

#### **Increased Side Effects of Medication**



The use of drugs, alcohol, or medication before or during spa use may lead to unconsciousness with the possibility of drowning. Anyone using medication should consult a physician before using a spa; some medication may cause a user to become drowsy, while other medication may affect the heart rate, blood pressure or circulation. Anyone taking medications which induce drowsiness, such as tranquilizers, antihistamines or anticoagulants should not use a spa.



### WARNING!

#### **Maintaining Well Balanced Water Chemistry**



To reduce the possibility of contracting a waterborne illness, always maintain water chemistry within the parameters in this manual. Keep the water clean and sanitized with correct chemical balance to help maintain safe water and prevent possible damage to spa components and bathers. If other bathers are negatively affected, discontinue use and consult a physician. The recommended levels for your spa are:

Free Available Chlorine (FAC):	3.0 to 4.0 ppm
Free Available Bromine (FAB):	2.0 to 4.0 ppm
Total Alkalinity	80 to 120 ppm
Water pH	7.2 to 7.8
Calcium Hardness	150 to 250 ppm

- Always shower before and after using a spa.
- Refer to Water Chemistry and Maintenance section for further information and complete instructions about water and spa care.
- When adding chemicals, turn the primary pump on for at least 15-30 minutes after adding any spa chemicals.
- Replace or clean the filter cartridge regularly to remove debris and mineral buildup which may affect the performance of jets, limit the water flow, or trip the high limit thermostat which will automatically turn off the entire spa to prevent further damage to the spa.
- Stay out of the spa if you have open wounds or an infectious disease.

### **IMPORTANT SAFETY REMINDERS**

- Wet surfaces can be slippery. To reduce the risk of injury, exercise care when entering and exiting the spa. Give children instructions about how to safely enter and exit the spa.
- Remove all jewelry and put long hair in a bathing cap or hair tie before you enter the spa.
- Measure the water temperature with an accurate thermometer before entering the spa to verify the topside control displays the correct temperature. The tolerance of regulating devices may vary as much as +/- 5°F (2°C).
- Test the water with your hand to be sure it's comfortable before entering the spa.
- Remove debris from filter baskets and suction drains.
- Do not allow glass, sharp or other breakable objects in or near the spa area.
- Do not use alcohol or drugs before or during spa use. Drink plenty of water to stay well hydrated. If you have had diarrhea in the last 14 days you should not enter the spa.
- If you are going to be in the spa for more than 10 minutes, you should reduce the temperature of the spa to 100°F (40°C) or lower.
- Do not use the spa immediately after strenuous exercise.
- Never use your spa when you are alone.
- Stay out of the spa if you have open wounds or an infectious disease.
- Consult a physician if you are pregnant, have a medical condition or are taking medication before using a spa.
- Never leave the spa unattended if the cover is not locked securely in place whether it is empty or filled with water. Exposure to sunlight, rain, snow and high temperatures may cause permanent damage to the spa.
- Leave the cover partially open for 15-30 minutes when adding chemicals to allow chemical vapor to escape.
- Do not leave the spa unattended when the cover is off.
- Brush heavy snow loads off the cover with a soft brush. Spa covers are not designed to hold weight loads of more than 20 pounds.
- Reinforce your cover with wind straps during periods of high wind. The tie downs sewn on the cover will not hold your cover in place if wind speeds are excessive.
- Use only approved and recommended accessories, chemicals and cleaners.
- Never allow children or pets to sit or stand on the spa cover.
- Always lift or carry the cover by using the handles, not the skirt or tie downs.
- It is not recommended to use the spa for more than 30 minutes at any one time without getting out and allowing your body temperature to cool.
- Temperature should never exceed 104°F
- Cynuric acid levels should never exceed 100 ppm

# Site Preparation, Delivery & Installation Recommendations

## CHOOSING A LOCATION

Choosing the right location for your spa requires careful consideration of esthetics and convenience in addition to the care and maintenance that is required over the life of your spa. Planning and preparation are critical, but following a few basic guidelines will ensure a lifetime of enjoyment.



### Site Selection Considerations



- Make sure the installation meets your local codes, covenants and restrictions. Many communities require that spa installations be done with the same security precautions, like fences with locking gates, as swimming pools.
- Make sure the location is free of obstacles that may interfere with delivery and installation. The overall dimensions are an important consideration when planning for delivery & installation. A clear pathway from the curb to the installation site makes delivery a breeze. The pathway should be free of obstruction from things like walls, fences, tree limbs, heat pumps, and power lines. Check to be sure gate openings are wide enough for the spa to pass through without damaging the spa.
- Normal use of your spa will mean lots of splashing. Choose a location that allows water to easily drain away from the base of the spa rather than pooling around the spa. Close proximity to a water hose will allow you to easily top off the spa after each use.
- Consider the proximity to the doors of the house, especially in cold weather. Be sure there is a pathway to the spa that can be easily maintained in inclement weather.
- Keep your spa away from landscaping sprinklers, roof overhangs, guttering, and powerlines. Adequate drainage that prevents standing water near the foundation of the spa is critical.
- But you should also consider the negative effects of wind, exposure to the sun and the location of trees to minimize the effects of falling debris, excessive sunlight and shade.
- Choose a location that allows easy access for maintenance and repairs. You should leave 24" of clearance on the side of the spa with the electronics and 18" of clearance on all other sides to allow easy access for maintenance and repairs. Some periodic maintenance steps require access to the electrical equipment area.

## MANUFACTURER'S RECOMMENDED GENERAL INSTALLATION INSTRUCTIONS

*It's very important to follow the manufacturer's guidelines for site preparation, installation and leveling of your new spa. Failure to follow these instructions may result in structural damage to the spa that is not covered under your warranty.*

### SITE PREPARATION FOR OUTDOOR SPAS

- The manufacturer recommends that you hire a qualified, licensed professional to install a level, concrete pad reinforced with steel bars that will adequately support the weight of the spa when it's filled with water and all of the bathers.
- Before you begin, contact your local gas, electric, water and cable companies to be sure there are no underground lines in the site you have chosen. For best results, site preparation should begin with digging an area that is at least 8" wider and longer than the overall dimension of the spa. The site should be level and 6" to 8" deeper than the final desired elevation of the spa. Depending on the depth of the site, the area should be filled with between 3" and 4" of crushed stone, followed by 3/8" steel reinforcement bars on a 16" grid, then 3" to 4" of poured concrete. Level the concrete and finish with a course broom to ensure it is slip resistant.
- If you live in a climate with freeze/thaw zones or prone to ground shift because of the kind of dirt or low/high water tables, we recommend installing poured concrete footings that extend below the freeze line or water table prevent the possibility of shifting.
- Make sure the site is away from areas that are prone to flooding or standing water and there is adequate drainage away from the spa. Never backfill the sides of the spa with dirt. If necessary, you should incorporate a retaining wall into the site design that will help ensure the cabinet and electrical components remain dry at all times.
- If your site plan includes decking to give the appearance the spa is recessed, you should choose slip resistant materials for everyone's safety. Water splashing onto the surrounding surface is a normal and should be taken into consideration when choosing decking materials. You should also design the deck to include removable or locking, hinged panels to allow easy access on all four sides for maintenance and service. Remember, making the spa accessible for service is not covered under the warranty.

### SITE PREPARATION FOR INDOOR SPAS

- If you are placing your spa indoors you should plan well in advance to prevent the delivery and installation issues that may occur when attempting to get the spa indoors.
- A licensed contractor should confirm the load bearing capacity of the floor is adequate, make modifications like widening the entry point if necessary, installing a floor drain to eliminate standing water, and add a convenient water supply so the water level can be properly maintained.
- Floor coverings should be slip resistant with some ability to grip when the floor is wet.
- The location and floor covering must be able to handle draining all of the water which is part of routine maintenance.
- You should consider installing a ventilation system. Humidity and moisture should be considered. If floor coverings trap water or the drainage is inadequate, wood, paper, and drywall, may get damp creating mold and mildew.
- Some spa chemicals may have an adverse reaction to some household metals. Again, adequate load bearing capacity for the weight of the spa when filled with water and bathers is vital.

## Site Preparation, Delivery & Installation Recommendations

### **PREPARING FOR THE DELIVERY AND OFF LOADING YOUR SPA**

- It is important to speak with your sales representative about what to expect at the time of delivery well in advance of the delivery date so you can plan and be prepared on the day of delivery. Failing to adequately prepare in advance will result in delayed delivery. Your spa leaves the manufacturing facility wrapped with protective materials, shrink wrapped with the bottom of the spa banded to a wooden pallet.
- If you arranged for delivery at the time of purchase, you should discuss potential delivery obstacles like steps, fences and small gate openings with your sales representative in advance so the delivery agent arrives properly equipped and prepared to place your spa without delay.
- If your spa is shipping from the manufacturing facility, it will arrive in a 53' common carrier closed box trailer. The carrier is responsible only for curbside delivery to an address that is accessible not removal or placement of your spa. You will need several people to help remove the spa from the truck on the day of delivery.
- If the prepared site is accessible, hiring a local towing service with a tilting flat bed is a convenient and affordable way to place your spa. You may want to consider meeting the towing service at the destination terminal to inspect the spa and allow the carrier to move the spa onto the flat bed. This is typically an efficient way to coordinate a convenient delivery schedule for everyone and eliminates additional expenses other service providers may charge if the carrier is late for the delivery appointment.
- If placing your spa requires a crane, choose a reputable crane service with spa experience. If the spa is not properly stabilized or the straps are too tight or improperly placed, the spa components and structure may be compromised or broken, even if there is no visible damage at the time. Crane services who are familiar with spa placement know how to properly place spreaders and straps, ensuring the frame is adequately supported.

**NEVER PUT THE SPA ON ITS TOP OR ITS SIDES.**

**NEVER FLIP THE SPA END OVER END.**

When moving the spa on its side, the side that was against the pallet during transit must be facing down to prevent damage to the structure, the acrylic and the components.

**The manufacturer's warranty does not cover damage that is the result of improper removal or installation of the spa.**

### **LEVELING YOUR SPA**

- You should verify the spa is completely level when it has been positioned into place.
- Do not use shims. Shims may create pressure points and damage the spa.
- Damage caused by improper installation is not covered under the warranty.



## Electrical Requirements and Recommendations

### 240V ELECTRICAL INSTALLATION



***NEVER TURN THE GFCI ON BEFORE FILLING YOUR SPA WITH WATER!***  
***ALWAYS TURN THE GFCI OFF BEFORE SERVICING OR DRAINING YOUR SPA!***



#### **DANGER!** **Risk of Electrocutation**

***All electrical connections must be performed by a qualified licensed electrician in accordance with the National Electric Code (NEC) following state and local electrical codes in effect at the time of the installation.***

- Connecting the spa to an improperly wired circuit will eliminate many of the spa's built in safety features which may result in fire, electrocution, or other risk of injury. Damages to the spa which are the result of improper wiring are not covered under the manufacturer's warranty and will terminate all listings from independent listing agencies.
- The electrical supply for your spa must be housed in a weatherproof junction box and include a suitably rated switch and Ground Fault Circuit Interrupter between the main service entrance and the spa to open all ungrounded supply conductors in compliance with Section 422-20 of the National Electrical Code/USA, ANSI/NFPA/70 and in compliance with independent listing agencies. This might be used as a shut off switch, and must be installed so that it is accessible to the spa occupants, but not within 5 feet (1.5m) of the spa.
- The wiring specifications in this manual are for standard installations where the main power supply is within 40 feet of the spa. If the main power supply is more than 40 feet away, the electrician must make appropriate modifications.
- The electrical instructions and diagrams contained in this manual and inside the spa control box are included as a guideline for the licensed electrician installing the electrical connections and vary by model. Please refer to the wiring diagram inside the spa control box for model specific connection instructions. All wiring connections must be watertight.
- All connections must be made using copper conductors only. Do not use aluminum wire. Connection wires, circuit breakers, and/or fuses, must all be sized to accommodate the Total Ampere load.
- Never turn power on to the spa when it is not filled with water. **DO NOT** connect power to the empty spa. When power is supplied to the spa, it automatically activates critical components within the spa, such as the pumps, controls and the heating. If power is supplied to the components before it is filled with water, the components may be damaged instantly. Damage that occurs to the spa because power was supplied before it is filled with water is not covered by the manufacturer's warranty.
- Prior to performing any service, turn OFF all primary electrical equipment at the main circuit breaker or disconnect panel.
- Your spa must be permanently connected (hard wired) to a power supply that is protected by a Ground Fault Circuit Interrupter (GFCI). Power supplied to your spa must be a dedicated circuit with no other appliances, lighting, or other electronic components powered by the circuit.
- Do not permit any electrical appliances like lights, telephones, mP3 players, radios or televisions within five feet (1.5m) of the spa unless they were built in by the manufacturer. Failure to maintain a safe distance may result in death or serious injury from electrocution if the appliance should fall into the spa.
- Do not use head phones while using the spa
- All metal components or accessories that are permanently installed, like handrails, ladders, drains and hardware that are within 5 feet (1.5 m) of the spa must be bonded to the equipment grounding bus with copper conductors no smaller than No. 6 AWG.

#### **WIRING REQUIREMENTS FOR 240V SPAS**

- The minimum wire size for 40 and 50 amp systems is # 6/3 c/w ground (6 gauge/4 conductor) if the main power supply is within 40 feet of the spa. If the main power supply not within 40 feet, your electrician should make the appropriate modifications.
- The spa must have dedicated 240V service from the main power supply. Do not attempt to share service with other appliances. Use only a class 'A' double-pole Ground Fault Circuit Interrupter (GFCI).
- To access the spa controls, remove the cabinet panel and store it safely. Do not replace the access panel until the spa is filled with water and you are sure it is operating properly.

Electrical Service Requirements			
Number of Pumps	Voltage	Breaker	Connection
1	120V	20 amp	Plug In
1	240V	40 amp	Hard Wired
2	240V	50 amp	Hard Wired
3	240V	50 amp	Hard Wired



## Electrical Requirements and Recommendations

### 240V ELECTRICAL CONNECTIONS

Installation of the GFCI and circuit breaker, including ampere sizing and selection of conductor size and type must be performed by a qualified, licensed electrician in accordance with the National Electrical Code, and all Federal, State and Local codes and regulations in effect at the time of installation. *All wiring schematics are provided as a reference and are intended only for use only by qualified, licensed electricians.*

### **MODEL SPECIFIC HARD WIRING INSTRUCTIONS ARE LOCATED INSIDE THE SPA CONTROL BOX.**

Correct wiring of the electrical service box, GFCI box and pack terminal block is required. Your spa requires a 4-wire, 40 or 50 amp (depending on the spa model), 240 volt sub feed in non metallic pipe to the spa equipment compartment. Installation instructions for your GFCI vary by manufacturer. It is imperative that your GFCI be installed in accordance with the installation instructions provided by the manufacturer of the GFCI you purchased. The GFCI wiring diagrams included with this manual are included as a reference only and illustrate installation variances between GFCI manufacturers.

Hard wire the spa controls following the model specific diagram inside spa control box lid. In most models, the spa controls are inside the access panel underneath the spa's top side control pad.

### 120V ELECTRICAL REQUIREMENTS AND INSTALLATION

**Outlet must be installed in accordance with the National Electric Code (NEC), state and local electrical codes in effect at the time of the installation.**

ELECTRICAL REQUIREMENTS	
Voltage	120
Breaker	Dedicated 20 Amp
Poles	2
Wires	3

### **DANGER - Risk of Electric Shock**

Connecting the spa to an improperly wired circuit will eliminate many of the spa's built in safety features which may result in fire, electrocution, or other risk of injury. Damage to the spa that is the result of improper electrical installation is not covered under the manufacturer's warranty and will terminate all listings from independent listing agencies.

- An appropriately rated GFCI cord is attached and shipped from the manufacturer inside the cabinet panel under the top side controls.
- Electrical appliances including audio and video equipment should not be used within 5 feet (1.5m) of the spa.
- Never touch or come into contact the electrical cord or any electrical accessory when your body is wet.
- Do not operate the audio or television equipment while you are inside the spa.
- Test the GFCI on the cord before each use.
- Never alter the plug.
- Do not bury the cord.
- Replace damaged cords immediately to reduce the risk of electric shock. Failure to do so may result in serious permanent injury or death by electrocution.
- Keep the cord away from lawn mowers, weed eaters and other equipment that may damage the cord.

### **THIS SPA MUST BE FILLED WITH WATER BEFORE IT IS PLUGGED IN.**

Plugging in the spa automatically activates critical components such as the pumps, controls and the heating. Supplying power to the components before the spa is filled with water damages the components instantly. Damage that occurs to the spa because it was plugged in before it was filled with water is not covered by the manufacturer's warranty.

- The power supplied to your spa must be a dedicated circuit with no other appliances, lighting, or other electronic components shared by the circuit.
- This spa must be plugged directly into the outlet. Do not use an extension cord or surge protector. Low voltage may cause damage that is not covered under the manufacturer's warranty.
- Do not unplug this spa under normal conditions. Your spa is engineered for optimal energy efficiency and is equipped to automatically perform routine maintenance cycles that require a permanent connection to the power supply.

### **THIS SPA MUST BE UNPLUGGED BEFORE DRAINING, PERFORMING MAINTENANCE OR SERVICING.**

- Do not open the spa control box without the assistance of your dealer.
- To access the spa controls, remove the cabinet panel and store it safely. Do not replace the access panel until the spa is filled with water and you are sure it is operating properly.
- Never use the spa with the equipment compartment door removed. Equipment compartment doors and cabinet panels must be properly installed before using the spa.
- Replace components with components identical to those supplied by the manufacturer.

## Getting to Know Your Spa

### The Electronic Components

The Spa Pack is the computer that controls the spa functions. Not only does the pack respond to user commands a button on the topside control is pressed, it's also programmed to automatically take care of many of the maintenance and safety features so you don't have to. For example, when it's time for the filtration cycle to begin, the spa pack turns the pumps on automatically to circulate the water and automatically turns them off when the cycle is complete.



#### Diagnostic Testing



The spa pack is programmed to run and retain the results of diagnostic testing, ensuring your spa is operating efficiently. If a problem is detected, an error message will be displayed on your topside control making you aware that your spa requires attention. Error messages can often be resolved simply by turning the GFCI "OFF" for 30 minutes and turning it back "ON", known as a System Reset. If an error message is displayed after resetting the system, please refer to the troubleshooting guide in this manual or call your local dealer for additional assistance. ALWAYS turn the GFCI "off" before performing service or repairs.

The Topside Control is like the keyboard for a computer. Pressing a button on the topside control relays a command to the spa pack to perform a specific function. Water temperature, filtration cycles, lighting, energy saving features and jet functions are all controlled by pressing buttons on the topside control. In addition to controlling the functions, the topside control also relays diagnostic and error messages to alert you if a problem is detected.



#### Primary and User Controlled Functions



During heating, filtration and other maintenance cycles some of the buttons on the topside control are disabled. For example, if the water temperature falls below the programmed temperature allowance while you're using the spa, a heating cycle will begin automatically and the water will circulate on low speed until the correct temperature is reached. Pressing the "pump" button will not turn the pump off or change the circulation speed when the heater is on. Because the pack is programmed to prioritize safety and maintenance functions, any user controlled functions that interfere are disabled until they are completed.

The Spa Heater warms the water. Once your temperature settings have been programmed your water temperature will be maintained automatically. When the water temperature falls below the temperature allowance, the spa pack will turn the heater and pump(s) on and off automatically when the correct temperature is reached.



#### High Water Temperatures During Warm Weather



During warm summer months, it's a good idea to reduce your water temperature settings. Spas are designed to retain heat, and aren't equipped to cool the water. When the ambient temperature is high and it doesn't get cold enough for your water temperature to fall, your water temperature may be higher than the temperature you programmed. Reducing your programmed temperature not only resolves this, it also conserves energy and reduces operating costs. If you want to reduce the water temperature quickly, remove the cover for a short time allowing some of the heat to escape or drain some of the warm water from your spa and replace it with cool water. If you drain water from your spa, turn the GFCI "off" and follow the instructions when refilling it and balancing your water chemistry.

The Spa Pump(s) push the water through the plumbing lines and into the spa. The pump(s) are turned on and off by pressing the button(s) on the topside controls. The number and speed of the pumps varies by spa model.



#### Air in the Plumbing Lines and Pumps



The pumps are designed to pump water, not air. Air trapped the pump or the plumbing lines prevents circulation of the water. Letting your pumps run with an air lock will instantly destroy the pump(s). Following the manufacturer's instructions to fill your spa properly and soaking new filters for 30 minutes before powering the spa on will help prevent air locks. If you hear a "humming" sound, if the jets don't work or if the jets only work in part of the spa when you press the jets button, it is likely you have an air lock and need to prime the pump. *Never allow a pump that is not primed to run for more than 2 minutes.*



#### Using the Air Release Screw to Bleed Air from the Pumps



1. Insert a screw driver into the air release screw located on the pump
2. Loosen the air release screw. Turn counter clockwise until water begins to trickle. DO NOT REMOVE SCREW!
3. When water is trickling steadily, turn the screw clockwise to tighten the screw and stop the flow of water.

## Getting to Know Your Spa

### The Plumbing Components



*The Slice Valves (Gate Valves, “T” Stems) allow the spa to be serviced without draining the water. Slice valves or “T” stems are installed in the plumbing lines near the electronic components. Pushing the “T” stem down creates a seal between the “T” stems. When service is complete, the “T” stems are raised and locked in the up position allowing water to flow again. Slice valves must be locked in the “up” position before power is applied to the spa. Applying power to the spa when the slice valves are closed can damage the spa immediately. Each time you change the water in the spa, make sure the locks are in good condition; replace the locks if they will not hold the “T” stem in the “up” position. Do not use the spa until they have been replaced.*



*The Plumbing Unions connect the plumbing lines to the components. Unions can become loose in transit and when seasons change. During the initial installation and each time you drain your spa, you should hand tighten all plumbing unions. The main cause of leaks inside the spa cabinet is plumbing unions that need to be tightened or seals that need to be re seated or replaced. Do not use tools or overtighten plumbing unions.*



*The Filter Assembly consists of the filter, the filter basket and the cover. The filter basket catches large debris, the filter catches fine particulates and oil. You should check the filter assembly on a regular basis making sure the basket is free of debris and the filter is clean and in good condition. Flow will be restricted if the filter assembly is obstructed or the filters are dirty which can damage the spa. Using the spa without the filter assembly in place is a drowning hazard. If any part of the filter assembly is damaged, do not use the spa until it has been replaced. Please call your local dealer for replacement parts. Before removing the filter assembly to fill the spa or change the filter, manually power the GFCI “OFF”. Turn the filter cover counter clockwise until it stops. Lift the cover, raise and remove the basket. Lift the filter from filter housing. Replace the filter, basket and cover. Turn the cover clockwise until it stops and is locked in place. The manufacturer recommends that you replace the filter every three months. Soak new filters in water for 30 minutes before installing to prevent air in the plumbing lines.*



*The Suction Drain Covers are on the sides in the foot well of the spa. They are caps that cover the suction lines, reducing the risk of drowning and debris entering the plumbing lines. If the suction drain covers are obstructed, flow is restricted which can damage your spa. Keep hair, clothing and children away from the suction drains when using the spa. It is important to check them on a regular basis making sure they are good condition. Do not use the spa if they need to be replaced. Replacement parts can be obtained by contacting your local dealer. You should avoid contact with the suction drain covers when the GFCI is powered “on”.*

### Air, Diverter, and Waterfall Valves



*The appearance of air, water and diverter will vary depending upon the model purchased.*

*The Air Valve is a small rotating dial on the acrylic surface that looks like a smaller diverter valve that increases or decreases air flow through the jets. Increasing air flow creates “bubble action” in the spa. When the air valve is positioned in the center, there is moderate air flow with moderate “bubble action”. When the air valve is turned to one direction, or closed, there is less air flow and fewer bubbles. If the air valve is turned fully to the opposite direction, the air valve is fully open creating the most bubbles. The air valve rotates right and left.*

*The Diverter Valve is a large rotating dial on top of the acrylic surface that controls the flow of water in seating areas serviced by the same pump. When the diverter valve is positioned in the center, water flow will be spread evenly throughout each seat sharing that pump. Turning the diverter valve all the way to one side will restrict the water flow from one section and force all of the flow into the other section. Turning the diverter valve all the way to the other side will reverse the flow of water to the opposite side of the spa.*

*The Waterfall Valve is used to increase and decrease flow through the waterfall. The waterfall valve rotates right and left. When the waterfall valve is placed in the center, there is moderate flow through the waterfall. If the valve is turned all the way in one direction, there is no flow through the waterfall. If the valve is turned all the way in the opposite direction, the flow is increased to allow maximum flow through the waterfall.*



### Difficulty Turning Waterfall & Diverter Valves



When the jets are turned on, excessive pressure in the plumbing lines can make rotating the air, waterfall and diverter valves difficult. Turn the jets off and rotate the valves back and forth to the desired position and turn the jets back on. Do not force the valves past the natural stopping point. Forcing them to rotate beyond the built in “stop” or when there is excessive pressure in the lines will damage the spa.



*The Drain Valve is used to remove the water from the spa. The drain valve is in the base of the spa near one of the corners. When you fill your spa, make sure it's completely closed and no water is draining from it.*

## Filling your Spa with Water

Your spa has been tested during the manufacturing process and some water may remain in the plumbing lines after testing leaving spots on the acrylic or cabinet. Wipe the spa and cabinet with a clean soft rag. Do not use household cleaners that contain bleach or ammonia (including most glass cleaners) because they will have an adverse effect on the surfaces and do not mix with chemicals used to maintain water chemistry. Never use abrasive cleaners on the cabinet, cover or acrylic surface. They may do permanent, irreversible damage. To remove incidental dust, dirt and debris that may have accumulated in the plumbing lines during shipping and installation, open the drain bib and remove the filters, and run water through the filtration canister and jet lines until the water coming from the drain bib runs clear. Never attempt any kind of service or cleaning when power is applied to the spa. Each time you remove the spa cabinet for any reason, manually turn the GFCI off. Never leave the spa unattended while the exterior panels or cover are off the spa.



### Step by Step Instructions to Fill the Spa with Water



4. Remove all of the screws that attach the access panel to the spa frame. In most models, the access panel is on the same side as the topside controls.
5. Check for obvious signs of damage inside the cabinet including loose wires or broken pipes. If you see damage inside the spa cabinet, call your local dealer for assistance.
6. Hand tighten the plumbing unions and check to be sure the slice valves are locked and in the “up” position. If they aren’t, pull the “T” stem all the way up until you hear a “click” and attach the clip locks. Never operate the spa when the slice valves are closed. Damage that occurs because the spa was powered on when the slice valves were closed is not covered by the manufacturer’s warranty.
7. Remove the filter cover and basket from the filter assembly and store in a safe place.
8. Place the filter(s) inside the foot well while the spa fills with water. Never install dry filters in your spa.
9. Place a garden hose in the empty filter canister. Turn the water on. Filling the spa through the filter canister fills the pumps and internal plumbing lines with water, reducing the risk of an air lock in the pumps(s) when power is applied. When the lower plumbing lines are filled, water will begin flowing into the foot well, moving upward inside the spa. Continue filling the spa until the water level is approximately one inch over the highest jets, excluding jets that are designed for neck and shoulder massages. Failure to add enough water prevents adequate flow which will damage the pumps and heater. Damage that occurs because the spa is not filled properly or from improper water levels is not covered under the manufacturer’s warranty.
10. Remove the garden hose and turn the water off.
11. Check the drain valve to be sure no water is leaking from it and that it’s properly sealed.
12. Replace the filter, skimmer basket and filter cover.
13. Check for leaks inside the spa cabinet, especially at the plumbing unions near pump(s), and pack. Hand tighten unions if necessary. If the spa is leaking and the unions are tight **DO NOT** turn the GFCI on. Call your local dealer for assistance and repair before applying power to the spa.
14. If there are no visible leaks inside the cabinet, turn the GFCI “on”
15. When power is applied to the spa, the spa controls will immediately begin a self check cycle, which can take up to 30 minutes.

**Do not touch the buttons on your topside controls until “PR” appears on the topside display!**

Make sure water is circulating through all jets, that the air controls, diverter and waterfall valves are functioning properly. If the spa is functioning properly and there are no leaks inside the spa cabinet, reinstall the cabinet access panel.



### The Water Level



There’s a fine line between too much water and not enough. If the water level is too low, air is sucked into the plumbing lines which causes serious damage to the spa. If the water level is too high, lighting and audio components become submerged causing them to fail prematurely. So how do you know when enough is actually enough?

It’s important to pay attention to the water level as bathers enter and exit the spa. The number of gallons displaced by one person is lower than the number of gallons displaced by six people and the number of gallons displaced by six children who weigh 50 pounds is lower than the number of gallons displaced by six adults who weigh 150 pounds. What may be the perfect water level for six children may cause the spa to overflow with six adults, but six children might splash out more water than six adults displace. You should expect to add or remove water depending upon use. Every time you exit the spa, check the water level and add water if necessary. *The water level will vary depending upon the spa model you purchased. As a general rule, when the spa is empty the water level should be at least 4 inches over the filter basket and below the perimeter lighting and audio*



### Disposing of Water



*components.*

Follow State, Local and Community requirements when disposing of the water in your spa. Because heavily treated water may be harmful to the environment and some areas are prone to flooding some communities regulate or restrict the disposal of the water from your spa. Typically, if the pH & chemical levels are correct, you can drain the water on your own lawn provided it does not enter storm drains and there is no potential of erosion or flooding to surrounding properties.

### Re-Filling your Spa with Water

Follow these step by step instructions every time you re-fill the spa to ensure successful start up. If you need to replace the screws on

## Maintaining Water Quality

the cabinet, use stainless steel screws which do not rust.

### **THE IMPORTANCE OF GOOD WATER CHEMISTRY**

For your health and safety, it is imperative to have clean, clear, water. Water maintenance will vary depending on many things like the base water quality, how often the spa is used and how many people use the spa. Remember, when it comes to water chemistry, filtration is not the same as sanitation. Following a regular schedule will help you achieve and maintain good water chemistry. Bacteria and viruses grow quickly in water when it is not properly maintained. Maintaining your water is necessary not only for proper sanitation, but preventing buildup and deposits that will harm your spa.

**A leading preventable cause of spa malfunction is poor water chemistry.** Too many chemicals will cause the components, acrylic surface and the spa cover to deteriorate. Not enough sanitation allows impurities to accumulate, which will hinder performance and can permanently damage the spa. Water can become unsanitary very quickly if chemicals are not used to adequately sanitize. Incorrect pH or calcium levels can lead to corrosion and scale build up on integral spa components.

The following guidelines have been established for spas by the Association of Pool and Spa Professionals:

pH	7.2 to 7.8
Free Chlorine	3.0 to 4.0 ppm
Free Bromine	2.0 to 4.0 ppm
Total Alkalinity	80 to 120 ppm
Calcium Hardness	150 to 250 ppm

### **COMMON SENSE WATER CHEMISTRY**

Without chemicals, the warm water in your spa is the perfect environment for germs, bacteria and other living organisms. Chemicals added to your spa water are utilized as they destroy the bacteria from dead skin cells, sweat and other bodily fluids. Routine addition of sanitizers kept at constant levels keep your water clean and safe to use. Maintaining water chemistry is different in every spa and for every spa user. Your water chemistry changes constantly. When the water in your spa evaporates, dissolved solids like calcium, salt and metal remain, they do not evaporate with the water. Adding more water adds more dissolved solids which may leave deposits on the acrylic surface and inside the spa components. When the cover is off, pollen, dust and dirt change the water chemistry. A spa once a day will require more chemicals than the same spa filled with water from the same source that's only used once a week. What it takes to balance your water chemistry in January will be different in July.

#### **The major considerations in water chemistry are:**

- The base water quality
- The number of gallons of water in the spa
- The number of people using the spa
- The number of hours the spa is being used

### **Base Water Quality**

What's in your water? The answer is different for just about everyone. Water provided by public utility systems must meet strict standards requiring chemical treatment before it flows through your faucets. Even though quality standards are similar regardless of where you live, the treatment required to meet that standard, and the residual chemicals that remain in your water after treatment can vary greatly. Water flowing from faucets in Washington State is different than the water flowing from faucets in Oregon, Texas and Florida. Water delivered directly from a well is untreated and water that passes through a softening system receives an additional treatment. Whether your water is treated or untreated, filtered or unfiltered, all water delivers trace amounts of something that can negatively affect the performance of your spa.

**Do not** use hot water when you fill your spa.

**Do not** use water that has passed through a water softener system.

**Using well water is not recommended.** Well water often has higher mineral, metal and bacterial content that will damage the spa components and makes water chemistry maintenance difficult. If you must use well water to fill your spa, you should get professional assistance.

**If you are having difficulty with your water chemistry,** you should consider having your water tested locally to determine the appropriate treatment.



## Maintaining Water Quality

***In short, more water used by more people for longer periods will require more chemicals.***

### **TESTING AND TREATING YOUR WATER**

Whether you have used your spa or not, you should test your water twice a week. Regular testing lets you to make adjustments before your water chemistry is out of control. When it comes to chemicals, more is not better. Adding chemicals changes the pH. Fluctuations in the pH change the way chemicals react. The addition of too many chemicals may mean your only option is to drain the spa and start over. Depending on how many people use the spa and how often the spa is used, you should replace the water every four to six months to ensure your comfort and safety. Replacing the water will also help protect the spa components from damage caused by dissolved solids that build up over time.

#### **Ozone Generators**

Your spa may have come with an ozone generator which will help reduce dissolved solids and increase oxygen in the water, but it will not sanitize the water without chemicals. You must use a sanitizer in tandem with the ozone generator. The ozone generator is designed to make chemicals more efficient and maintaining good water chemistry easier.

#### **Chlorine Generators**

Your spa may have come with an optional salt system, also known as a chlorine generator. This system is designed to maintain water chemistry by converting salt into sanitizer without using any chemicals. Since the system does not create any residual chlorine, testing water with strips will not provide an accurate assessment of sanitation levels. Test strips can only be used to test and maintain adequate levels of alkalinity, pH and water hardness when you have a chlorine generator.

### **BREAKING DOWN THE BASICS**

Each step of a water maintenance program is dependent upon the previous steps. Omission of any step or failing to reach the recommended ranges may cause an imbalance in water chemistry. Unbalanced water may cause damage to the spa components and create discomfort for bathers. To measure the quality of your water, immerse a test strip in water following the instructions on the container. Do not touch the test strips as it may affect the results. Compare the test strip and the label to determine the condition of the spa water.

#### **Step 1.) Balancing Total Alkalinity (TA)**

The recommended total alkalinity levels are between 80 and 120 ppm. The Total Alkalinity is the measurement of carbonates, bicarbonates, hydroxides and other alkaline substances in the water. TA is referred to as the water's "pH buffer". It is a measure of the water's ability to resist changes in the pH level. If the TA is too low, the pH level will fluctuate quickly, easily and greatly. Changes in pH can cause corrosion or scaling on the spa components. You can correct low Total Alkalinity by adding sodium hydrogen carbonate (pH/Alkalinity Up).

#### **Step 2.) Balancing Calcium Hardness (CH)**

The recommended calcium hardness (CH) level for your spa is 150-250 ppm. Calcium Hardness is a measurement of the total amount of dissolved calcium in the water. Calcium helps control the corrosive nature of the spa's water. Calcium-low water (commonly known as "soft" water) is not recommended. It is highly corrosive to the components and can stain the acrylic surface. If the CH is too high (commonly known as "hard" water), formation of scale on the spa and the components can result. CH can be decreased by using a mixture of 75% "hard" water and 25% "soft" water; this will usually yield a reading of the correct range. If "soft" water is not available or practical for you, a stain and scale inhibitor should be added to the water according to the label instructions. If CH is too low, add a CH increaser. Once the CH is balanced, it normally remains stable. Adding small quantities of water should not change the CH level. When the Calcium Hardness is within recommended range, proceed to the next step.

#### **Step 3.) Balancing the pH**

The pH level is the measure of how basic or acidic. It is imperative to have a slightly alkaline pH level between 7.2 and 7.8. Problems become proportionately more severe the further outside this range the water gets. Values above 7 are alkaline; those below 7 are acidic. Maintaining proper pH level is extremely important for optimizing the effectiveness of sanitizer, maintaining water comfort for the users, and prevention of equipment deterioration. If the pH level in the water is too low, the sanitizer will dissipate rapidly, the water may become irritating to users, and the spa equipment may corrode. If the pH is too low, it can be increased by adding sodium hydrogen carbonate (pH/Alkalinity Up) to the spa water. If the pH level is too high, the sanitizer is less effective, scale may form on the spa and the spa components, the water may become cloudy and pores in the filter cartridge will become clogged and obstructed. If the pH is too high, it can be decreased by adding sodium bisulfate (pH/Alkalinity Down) to the spa water. Wait two hours after adding sodium hydrogen carbonate or sodium bisulfate before testing the pH levels again. It is important to check the pH level on a weekly basis. The pH will be affected by the bather load, the addition of new water, the addition of chemicals and the type of sanitizer used. When the pH is within the recommended range, proceed to the final step.

#### **Step 4.) Maintaining the Sanitizer Levels**

Sanitizer is extremely important. It kills algae, bacteria and viruses while preventing unwanted organisms from growing in the spa. At the same time, if the sanitizer levels are too high it may cause irritation to the skin, lungs and eyes. Always maintain the sanitizer level in your spa at the recommended levels specified for each type of sanitizer. You should check the your sanitizer and pH levels before each use

## Maintaining Water Quality

and at least twice each week even if the spa is not in use.

### **WARNING!**

#### **Risk of Chemical Reaction and Noxious Fumes**

- Handle Spa Chemicals with Care
- Never pre mix dry chemicals
- Always follow instructions on the label
- Always wear safety goggles and gloves to prevent injury.
- High levels of sanitizer can cause discomfort to eyes, lungs and skin.
- Never enter the spa if chemical levels exceed the recommendations.

Do not use tri-chlor chlorine, bromo-chlor-dimethyl-hydantoin (BCDMH) or any type of compressed bromine or chlorine, acid or any sanitizer not recommended by your dealer.



#### **Step by Step Instructions to Add Chemicals to Your Spa**



1. The water temperature must be at least 80°F before adding chemicals to prevent damage to the acrylic surface.
2. Remove the cover.
3. Fill a large bucket (minimum 2 gallon capacity )with warm water from the spa. Use care not to splash chemicals onto the spa cabinet, or the acrylic surface of the spa.
4. Carefully measure the recommended amount of each chemical, one at a time, following the instructions on the label. Replace the lid on the chemical container.
5. Thoroughly mix the chemical with the bucket of warm water from the spa. Remove the filter basket assembly and filter.
6. Press the Primary Pump button to turn the pump on high speed.
7. With the pump running on high speed, being careful not to get too close, add warm water and chemical mixture into the filtration canister.
8. Repeat this procedure with each chemical you add.
9. When all chemicals have been added and with the cover off the spa, run the pumps on high speed for ten minutes.
10. After 10 minutes, reduce the pump speed to low for one full cycle.
11. When the jet cycle is complete, replace the filter and the filter assembly.
12. Replace and lock the cover. Never leave the spa unattended when the cover is off.

### **HEAVY CLEANING OR DECONTAMINATION**

On occasion, it may be necessary to “Super Sanitize” your spa. If algae develops, simply replacing the filter, draining and refilling the spa will not kill the algae. It will be necessary for you to decontaminate the spa before it can be used safely.

### **Warning!**

#### **Risk of Chemical Reaction and Noxious Fumes**

- During the decontamination process, excessive chemical vapors are produced.
- Wear gloves and a protective mask during the decontamination process.
- Keep children and pets away from the spa.
- Remove the spa cover, all pillows and cover the plastic valves to protect them.
- If your spa is indoors, open the windows and doors. Use a fan to circulate the air and force the vapors out of the room.



#### **Step by Step Instructions to Decontaminate your Spa**



1. Remove the filter basket assembly, filter and spa pillows. Before adding chemicals, make sure all pumps are operable. Check to be sure all jets and air valves are open. Cover the diverter, air and waterfall valves are covered to protect them from splashes.
2. Rotate the waterfall valve for maximum flow and the diverter valves to the center position for even circulation throughout the entire spa.
3. Turn all pumps on low speed. Fill a large bucket (at least 2 gallon capacity) with warm water. Carefully add 2.5 ounces of sodium dichlor for every 100 gallons of water in the spa and mix thoroughly. For example, if there are 400 gallons of water in your spa, add 10 ounces of sodium dichlor to the large bucket filled with warm water. Turn all of the pumps on low speed. Gently pour the warm water and chemical mixture into the filter housing. After all of the sodium dichlor mixture has been added, turn all pumps on their highest speed and allow the water to circulate for one hour. Do not replace the cover over the spa during decontamination. Never leave the spa unattended while it is uncovered.
4. After the spa has been allowed to run for one hour, turn off all of the pumps and manually turn the GFCI “off”. Drain the spa. Follow the instructions to fill the spa. Remember to put a new filter in the foot well of the spa allowing it to saturate as the spa fills with water.
5. Add chemicals as needed to maintain proper water chemistry.



## **Maintaining Water Quality**

### **Filter Care and Replacement**

The filter catches debris that is too small for the filter basket, like hair, lotion and body oil. A dirty filter means dirty water. Filters are made of compressed fibers that decompress over time. After the fibers break down and become saturated with dirt and oil allowing contaminants and debris to enter the spa, causing unnecessary strain on the pumps and damaging the components. You should have to have a supply of replacement filters on hand, in addition to chemicals used to maintain your water. Extra filters are affordable, can be purchased from your local dealer. Your filter needs to be cleaned or replaced when:

- You notice reduced flow from the jets
- The water is hazy, cloudy or discolored
- The heater is running more frequently but the water is not heating evenly or normally

### **Cleaning your filter**

Your filters should be cleaned every two to four weeks, depending on use. Manually turn the GFCI “off”. Following the steps to remove the filter assembly, remove the filter. With a garden hose equipped with a high pressure spray nozzle, rinse the filter making sure to spray between each pleat.

### **Deep Cleaning your Filter**

Filter cleaners may help remove some collected dirt, lotion and body oils that rinsing won’t remove. Following the instructions on the bottle of filter cleaner, carefully place the filter in the cleaning solution. Let the filter soak in the solution following the instructions on the cleaner label. Remove the filter and thoroughly rinse making sure to spray between each pleat. Allow the filter to dry completely. When the filter is dry, brush between each pleat with a fine hair brush. After brushing between the pleats, place the filter in a bucket filled with water or in the spa until the filter is saturated. Replace the filter and reassemble the filter assembly.

- Never use a wire brush on the filter.
- Never put your filter in the dishwasher.
- Never put a dry filter in the filter housing.

### **Replacement Filter Cartridges**

Deep cleaning dirty filters is time consuming, requires the use of additional chemicals and may not remove all residual dirt, body oil and bacteria if not done properly. Depending on use and bather load, the manufacturer recommends that you replace your filters every 3 months.

### **IMPORTANT SAFETY REMINDERS**

- Wash your hands after handling chemicals. In case of accidental contact, follow the emergency advice on the product label. If a doctor is needed, take chemical containers with you to the hospital so the substances can be identified.
- Clean up spilled chemicals immediately using water from a water hose. Saturate the surrounding area thoroughly, especially areas used by children and pets to ensure safety.
- Keep chemicals in their original container with the lid replaced properly after using. Keep containers closed when not in use.
- Keep chemicals away from children and pets. Allow a responsible person to handle spa chemicals; use care when handling chemicals.
- Store chemicals in a cool, dry, well ventilated place.
- Follow local laws when disposing of the water in your spa.
- Never allow the water drained from your spa to run into public water sources.
- Add chemicals when the water temperature is 80°F or higher
- Never smoke when handling chemicals. Some of the chemicals are highly flammable and smoking can lead to serious injury.
- Do not store chemicals in the spa cabinet
- Never expose spa chemicals to extreme temperatures or bright light.
- Do not allow anyone in the spa while adding chemicals. Inhaling fumes or contact with your eyes, nose or mouth is very dangerous.
- Never use swimming pool chemicals, muriatic acid or household bleach, or chlorine tablets (trichlor) in your spa. It can be extremely corrosive. Damage caused by use of trichlor is not covered under the manufacturer’s warranty.
- Never use a vacuum cleaner to clean up chemical spills

## **Caring for Your Spa**

- Immediately remove chemical spills from surrounding surfaces and landscaping.

Your spa was manufactured with the highest quality materials and care available in the spa industry, making sure you spend more time enjoying your spa than you do taking care of it. Just as a healthy body requires an occasional check up, a healthy spa requires some maintenance and attention. Developing a regular routine of care ensures your spa's health and your peace of mind.

### **Caring for the Acrylic Surface**

Your spa was cast from Lucite® Acrylic making it durable and resilient. It is dirt and stain resistant. Using household cleaners and detergent may leave a dulling residue. When needed, wipe the surface with warm water and a soft cloth. *Never use abrasive, ammonia or citrus based cleaners because they will damage the acrylic.* Chemicals in some cleaners may have react negatively with the chemicals used to maintain water chemistry.

### **Caring for the Cabinet Panels**

Your spa cabinet is water and weather resistant. It is virtually maintenance free. You will never need to wax, paint or seal the cabinet. When necessary, rinse the cabinet with water from a water hose equipped with a moderate pressure nozzle. More stubborn dirt can be removed by rubbing with a damp, soft cloth. *Never use abrasive cleaners or a high pressure hose which may scar the cabinet.*

### **Caring for the Pillows**

The pillows in your spa are covered in water resistant vinyl. To prevent discoloration, they should be wiped off periodically to remove chemical residue and treated with a non-alcohol based vinyl protector. Many vinyl protectors are oil based and should be avoided. Using oil based products will adversely affect water clarity and chemistry which can be difficult to correct. If you are not using your spa for a prolonged period, pillows should be removed from the spa, dried off and stored. If the vinyl is punctured and the foam is exposed they should be replaced. Replacement pillows are available from your local dealer.

### **Caring for the Jets**

Many of the jets are interchangeable with other jets that are the same size and can be turned on and off when the jet is rotated. To prevent damage that can occur when excessive pressure builds up in the plumbing lines, it's a good idea to leave all of the jets open. When jets become difficult to rotate, they should be cleaned. With the GFCI in the "off" position, rotate each jet counter clockwise until it reaches its built in "stop" and gently pull the jet outward, removing it from the jet housing. Place all of the jets in a bucket filled with equal parts water and white vinegar overnight. Rinse with warm water. Stubborn dirt on the white part of the jet body can be removed with a soft bristle brush. Do not use steel wool or a wire brush. You should clean your jets each time you drain your spa. If the white jet body on the back of the jet is damaged it should be replaced. Replacement jets are available from your local dealer.

### **Caring for the Lights**

The lense cover over the underwater light is permanently installed. Do not attempt to remove the lense cover. When the spa has been drained, wipe the light lense with a cloth designed for cleaning eye wear to prevent scratching the lense cover. If the other side of the large underwater light is also dirty, remove the cabinet panel, remove the bulb from the lamp holder and wipe with a cleaner and cloth designed for cleaning eye wear. Replace the bulb. Make sure the bulb was properly replaced and the light works before reinstalling the cabinet panel. If you need a replacement bulb, please call your local dealer.

*Do not attempt to clean the back sides of the perimeter lighting lense covers.*

### **Caring for Audio/Video Systems**

If your spa is equipped with an audio or video system, you will hear your selection from the built in speakers. You should wipe chemical residue from the speaker covers with a soft cloth to prevent discoloration. The sub-woofer is enclosed in the spa cabinet and does not require routine maintenance. The built in audio/video components and docking station compartment should be cleaned with a soft, dry cloth. While you are outside the spa, place your selection in the player, push play, and select the volume from the device. Before you enter the spa, plug in your MP3 player and place it in the docking station. Close the docking station door for your safety and to protect your device.

*Never place your MP3 player or other electronic devices on the side of the spa.*

*Never handle audio/video devices while inside the spa.*

*Never use headphones in the spa.*

### **Caring for the Spa Cover**

The foam cores in your spa cover are designed to protect your spa from the elements, reduce heat loss, keep unwanted debris out of the spa, and to prevent evaporation. You should clean the vinyl with a small amount of mild dish soap diluted in warm water and a soft sponge 3 or 4 times a year. Allow to dry and wipe with an oil free, non-alcohol based vinyl protector. Many vinyl protectors are oil based and should be avoided. Using oil based products will adversely affect water clarity and chemistry which can be difficult to correct. Using alcohol or chlorine based cleaning products will cause the stitching to deteriorate and damage the UV inhibitors built into the vinyl. The locking tie downs are not designed to keep the cover in place in heavy winds. You should consider using wind straps to stabilize the cover and protect the spa. Use the handles to remove and replace the cover. The cover is sturdy but should never be dragged and is not designed to hold heavy weight loads. Heavy snow loads should be brushed off with a clean soft bristle broom. Never stand on or allow

## Caring for Your Spa

children or pets on the spa cover. When the spa is not in use, the cover should be locked in place with the tie downs.

### Caring for the spa in cold weather

Your spa is well insulated to make it economical to operate even in the coldest climate. As long as it is filled with water and power is supplied, the spa will function in January just as it did in July. Keeping your spa fully operational at all times is the best way to protect it from damage that can occur during cold weather. The manufacturer does not recommend draining your spa and disconnecting the power supply in the winter. If you choose to shut your spa down for winter because you live in an extremely cold climate or an area where power outages are common and the spa is subjected to freezing temperatures, you are encouraged to hire a professional to winterize your spa safely. ALL of the water must be removed from the filter housing, pumps, heater, jets and plumbing lines. Simply draining the water as you would for normal maintenance will not provide adequate protection from freezing. Damage that occurs if the spa freezes is not covered under the warranty.



### Step by Step Instructions to Safely Winterize your Spa



1. **Unplug the spa from the electrical outlet. 115V SPA: Unplug from the electrical outlet. 240V SPAS: Turn the GFCI off.**
2. Follow the instructions on page 21 to drain all of the water from the spa being careful to properly dispose of the water.
3. When the spa is empty, drain the water from the heater, each pump by loosening the plumbing unions on both sides.
4. Remove the filter cover, basket and filter from the spa. With the wet dry vacuum set to blow, not vacuum, put the hose inside the filter canister and blow all of the water out of the filter canister. **DO NOT REINSTALL WET FILTER!**
5. Place the hose over each suction fitting for 30 seconds to blow out water in the suction lines.
6. Open all of the jets. Moving in a clockwise direction and starting at the top of each seat working down, blow each jet until all of the water is removed. Repeat this process at least twice, moving all the way around the spa from the top to the bottom of each seat until all of the water is removed.
7. Vacuum all standing water in the seats, foot well, and inside the spa cabinet.
8. Clean the surface thoroughly with a soft cloth and wipe down until completely dry,
9. Replace the drain cap, close the drain, and tighten the plumbing unions on both sides of each component.
10. Allow the cabinet to air dry before replacing the cabinet panel.
11. Replace and lock the cover, securing it in place. Cover the spa to protect it from harsh weather and debris.

\* The manufacturer does not recommend using antifreeze which may damage your spa. Even with thorough flushing, residual antifreeze may irritate skin and eyes and make water chemistry difficult to balance when the spa is refilled.

\*\* When the spa is empty, o-rings and seals dry out. When the spa is refilled, inspect plumbing unions for leaks. Re seat and/or replace damaged seals.

### **System Failure During Freezing Temperatures**

If you experience system failure and the spa is exposed to freezing temperatures, your spa may function normally after you manually turn the GFCI "off" for 30 minutes before turning it back on again. If that fails, call your local dealer. If the system failure occurs after normal business hours and your pumps will not circulate the water, you should place a low wattage space heater inside the cabinet near the spa equipment to help prevent freezing. *To avoid the risk of fire or injury, do not leave the spa unattended when the heater is inside the cabinet. If you leave home, turn the heater off.*

## Troubleshooting Water Chemistry

Problem	Could be Caused By	Could be Solved By
Water Will Not Balance	Well, Untreated Municipal, Softened, or Old Water	SEEK LOCAL PROFESSIONAL ASSISTANCE. The manufacturer does not recommend filling the spa with well, untreated or softened water.
Cloudy Water	Dirty Filter Excessive Organic Matter Bacteria on Cover Dripping into Spa Improper Sanitization Suspended Organic Matter End of Water Life / Calcium pH Imbalance	Replace Filter Add Shock Clean Cover with Approved Cleaner Add Sanitizer Clean or Replace Filter, Add Shock, Run Jets Drain & Refill Spa, Replace Filter
Green or Brown Water	Excessive Metal /Algae	Add Metal Sequestering Agent
Excessive Foam	Accumulation of oil, cosmetics and detergent	Add Defoamer Clean or replace filter Run extra rinse cycle when washing swim wear
Water has Bad Smell	Excessive Organic Matter - Bacteria Growth Improperly Sanitized Low pH Chloramines	Add Shock Add Sanitizer Adjust pH Add Oxidizing Shock
Smells Musty	Bacteria Growth	Add Shock. If the problem persists, perform Spa Decontamination
Ring Around Spa	Build Up of Oil & Dirt	Wipe surface with cloth, drain and refill spa.
Algae	High pH / Leaving Cover Off Low Sanitizer Level	Add pH Reducer Add Shock & Sanitizer
Eye or Skin Irritation and/or Rash	Improper Sanitation Combined Chlorine Too Much Chlorine Dirty Filter or pH Imbalance	Test Water. Add Shock & Sanitizer as Needed Add Water Causing Sanitizer Levels to Drop Clean or Replace Filter Clean or Replace Filter
Stains on Acrylic Surface	High Alkalinity or Low pH High Mineral Content High Metal Content	Adjust Alkalinity and pH Accordingly Use Stain & Scale Reducer Use Metal Sequestering Agent
Scale Build Up	High Calcium Levels	Adjust Alkalinity; Use Stain and Scale Reducer

## Spa Troubleshooting Guide

### **THE FIRST STEP IN THE TROUBLESHOOTING PROCESS IS TO CHECK THE TOPSIDE CONTROLS FOR DIAGNOSTIC MESSAGES.**

If you do not see the solution to your problem , please call your local dealer for assistance.

***Always turn the GFCI "off" before servicing or draining your spa.***

Problem	May be Caused By	Might Be Solved By
LED Display is blank	Power is off or fuse is blown	Reset GFCI and Main Service. Replace blown fuses
Spa Will Not Power Off	Spa is heating	Lower temperature settings
	Spa is filtering	Normal function of spa
Spa Leaking	Loose unions	Hand tighten unions
GFCI Tripping	Improper wiring	Get Electrician to check neutral wiring connections at GFCI
Pump(s) Not Working	Air Lock	Bleed the pump(s)
	Pump Cycle has ended	Press button to turn pump on
	Slice Valves Closed	Open Slice Valves
	No Power	Check pump connection in spa control box
	Blockage in line	Clear obstructions in filter assemblies
Pump(s) run hot	Pump running dry	Call your local dealer.
	Flow restricted	Remove debris from filter basket and suction valves.
Pump Surges	Water level too low	Add water
	Blockage or restriction	Empty filter basket and clean suction drain covers
No or Low Heat	Spa is at correct temperature	Normal function of spa
	Operating Mode	Check to be sure the spa is not in Economy Mode
	Temperature Setting	Check LED display to see if Heater Icon is illuminated
	Breaker(s) off	Reset GFCI and Main Breaker
	Dirty Filter	Change filter
	Air Lock or Closed Slice Valve	Make sure slice valves are open and pumps are not air locked
	Improper Line Voltage	Have an electrician check voltage
Heats, but not High Enough	Thermostat turned down	Increase temperature setting
	Dirty filter	Change filter
	Slice valve closed	Open slice valves
	Spa cover shifted	Reposition spa cover
Over Heat Message on LED	Filtration settings	Reduce number and duration of filtration cycles
	Outside temperature high to allow cooling	Temporarily remove cover and/or add cold water
Lights Don't Work	Bulb or fuse burned out	Replace bulb or fuse
	Loose, dirty connection	Check light connections
Jets Don't Work	Air lock in pump(s)	Bleed pump(s)
	Slice valve(s) closed	Open slice valves
	Diverter valve closed	Rotate diverter until desired pressure is achieved
	Jet Closed	Rotate outer rim of jet clockwise to open
	Dirty Filter	Change filter
Low Water Flow	Spa heating or filtering	Normal spa function
	Diverter valve position	Rotate diverter valve to increase flow
	Air valve closed	Rotate air valve to open
	Dirty filter	Clean or replace filter
	Slice valve(s) closed	Open slice valves
	Improper Line Voltage	Have an electrician check voltage

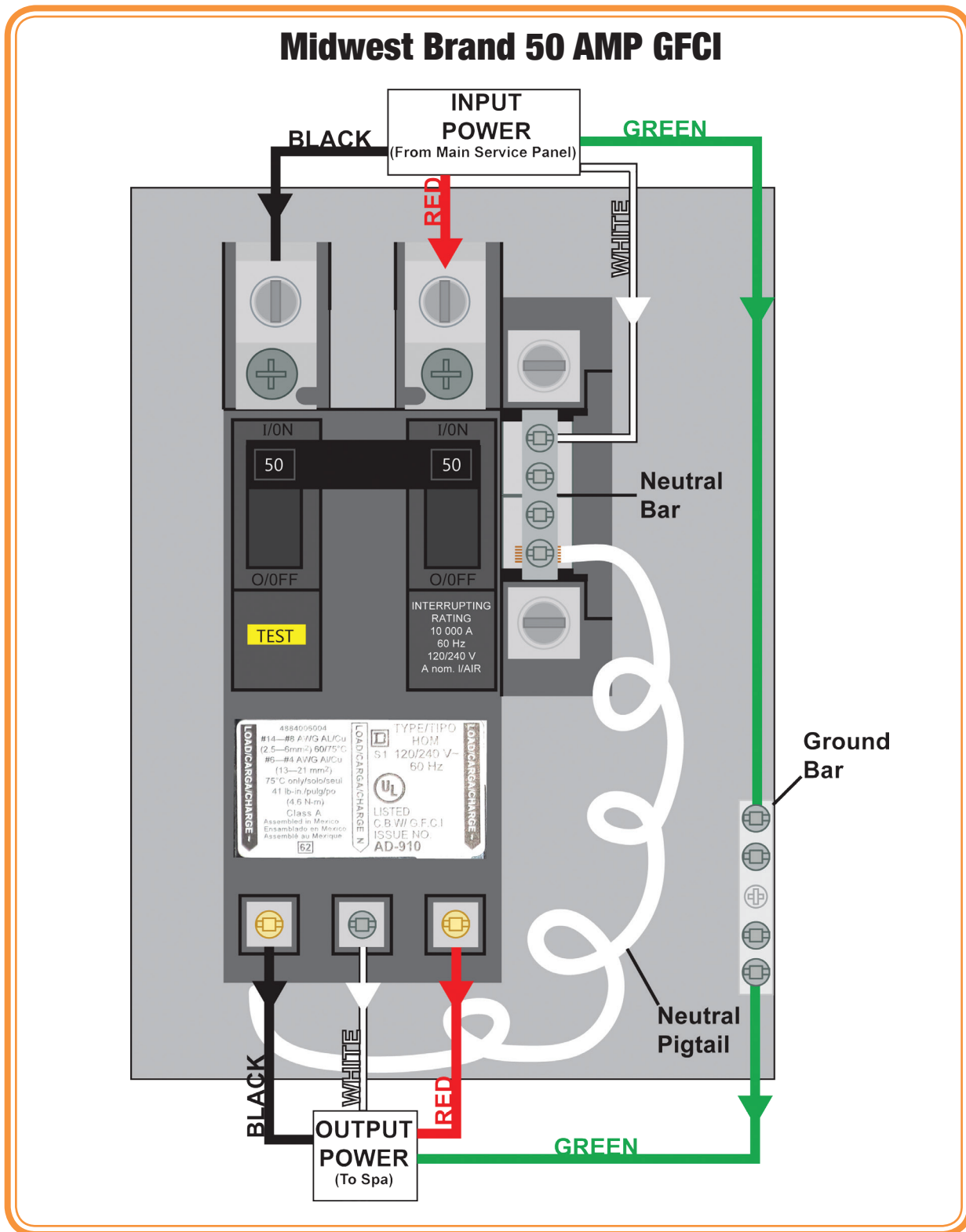
# GFCI INSTALLATION ON 220V SPAS

**The primary cause of component failure in spas is an improperly installed Ground Fault Circuit Interrupter.**

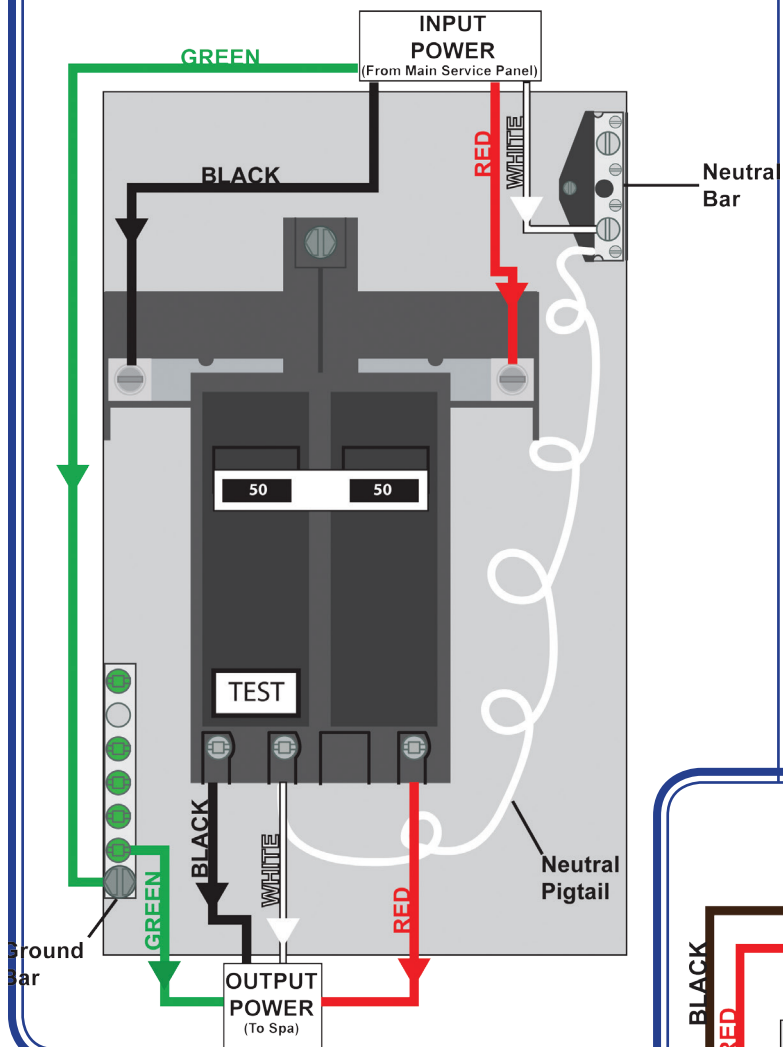
For the health and safety of your family and your spa, it is **IMPERATIVE** that all of your wiring and electrical connections be installed correctly by a *qualified licensed electrician* and that a properly rated Ground Fault Circuit Interrupter is installed between your main power supply and your spa. If your spa is not connected properly, the safety features built in to prevent the risk of death by electrocution or fire may be disabled and the electronic components in your spa may be damaged beyond repair. *Damage to your spa that occurs because it wasn't connected properly is not covered under your warranty.*

GFCIs are readily available at home improvement, hardware, and electrical supply stores nationwide and can be also be purchased online. The wiring diagrams from some of the most commonly purchased brands illustrate that the input and output locations along with the locations of grounding lugs, neutral blocks and wiring connections vary by manufacturer.

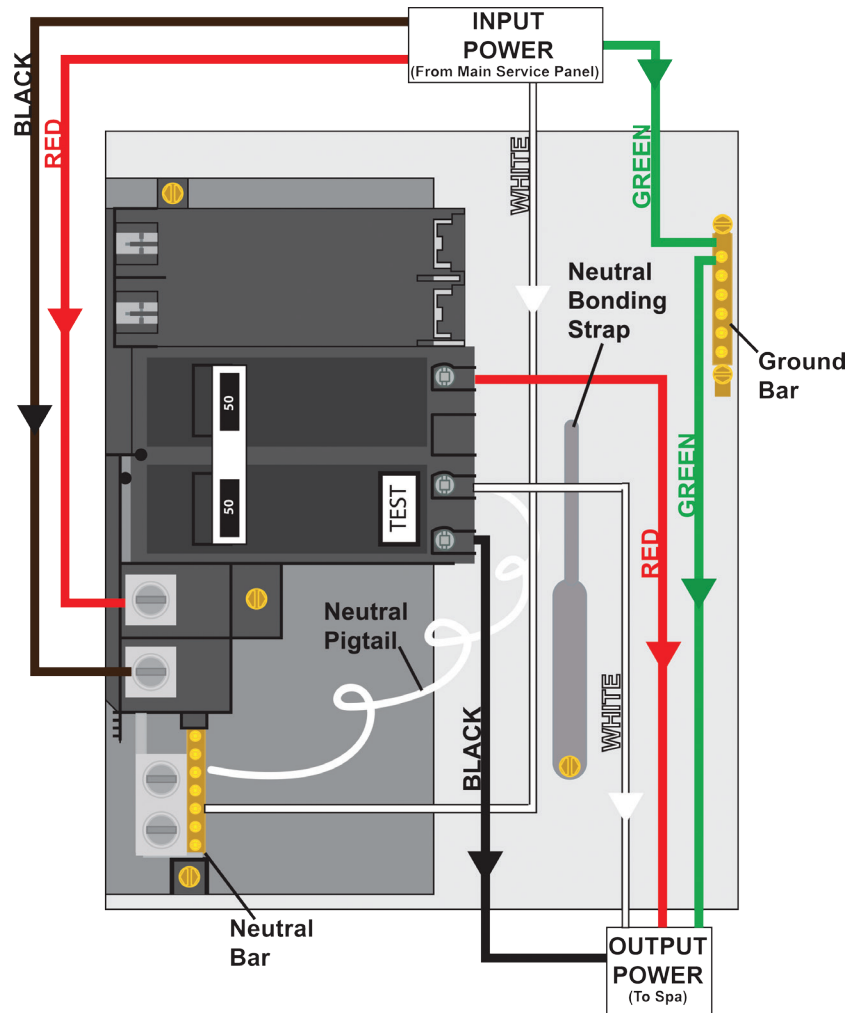
**ALWAYS FOLLOW THE INSTALLATION INSTRUCTIONS THAT ARE INCLUDED WITH THE GFCI YOU PURCHASE.**



## Eaton Brand 50 AMP GFCI



## Square D 50 AMP GFCI



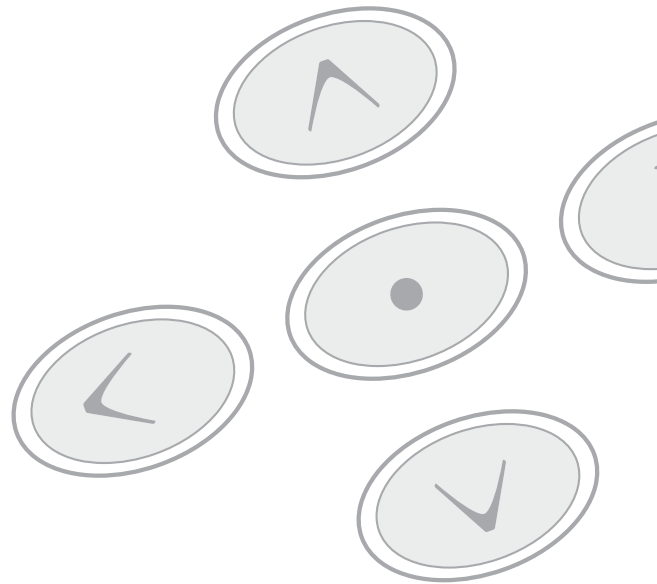
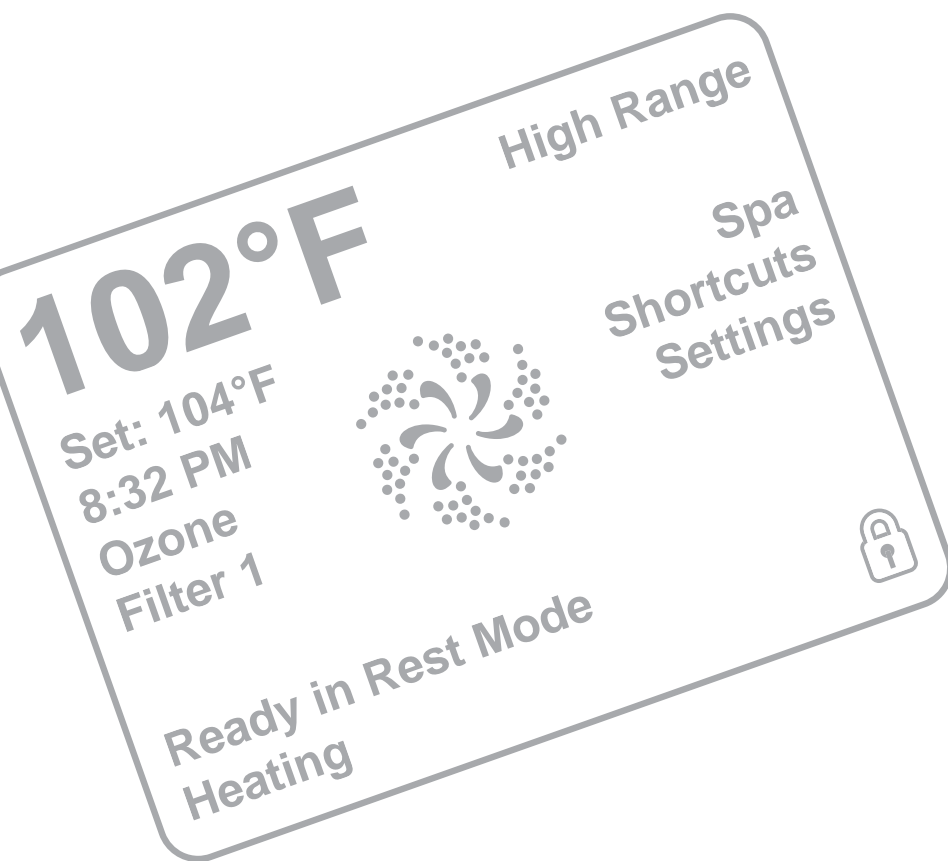


# TP800 and TP900 Series Control Panels

## Balboa Water Group Colossus Series

### User Interface and Programming Reference

System Model:	BP2500 / 2600	
Software Version:	5.0 and later	
Panel Model:	TP900 Series	TP800 Series
Software Version:	2.0 or later	1.9 or later



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Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. All material copyright of Balboa Water Group.

# The Main Screen

## Spa Status

Important information about spa operation can be seen quickly from the Main Screen.

The most important features, including Set Temperature adjustment, can be accessed from this screen.

The actual water temperature can be seen in large text and the desired, or Set Temperature, can be selected and adjusted.

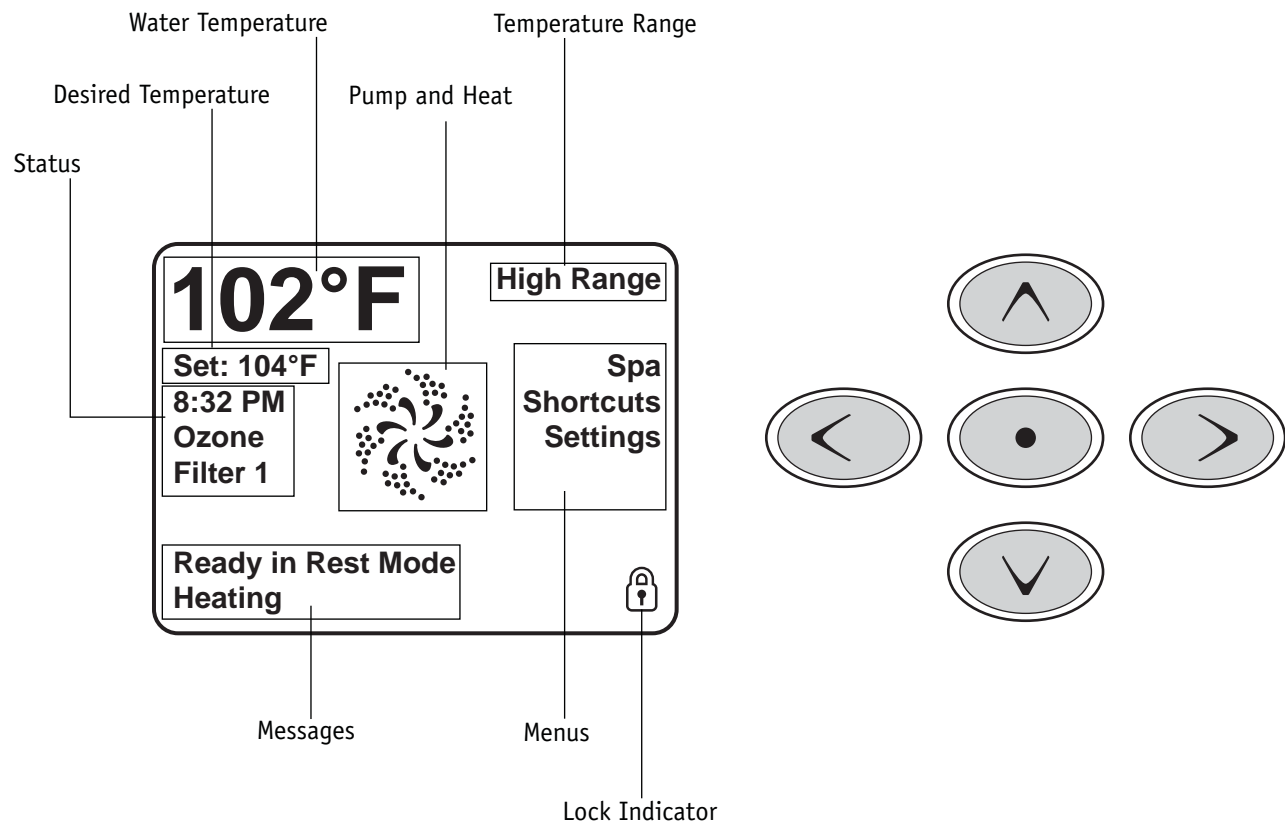
Time-of-day, Ozone operation and Filter Operation status is available, along with other messages and alerts.

High Temperature Range vs. Low Temperature Range is indicated in the upper right corner.

The Jets Icon in the center will spin on a TP900 if any pump is running and changes color when the heater is on. (The icon does not spin on a TP800, but still indicates pump and heater function)

A Lock icon is visible if the panel or settings are locked.

The Menu choices on the right can be selected and the screen will change to show more detailed controls or programming functions.



# The Main Screen

## Navigation

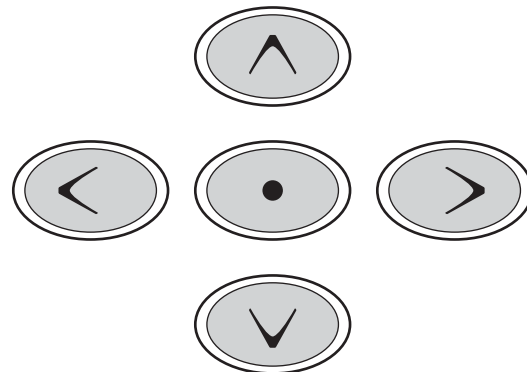
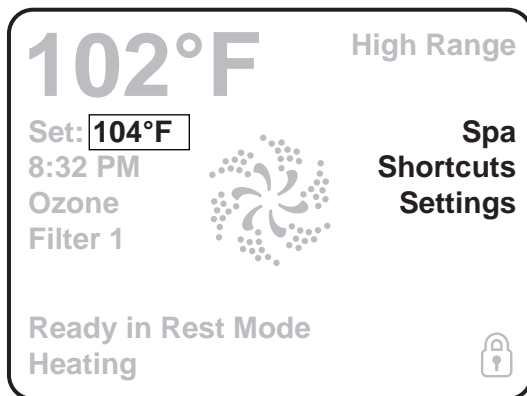
Navigating the entire menu structure is done with the 5 buttons on the control panel.

When a text item changes to white during navigation, that indicates the item is selected for action.

Operating or changing a selected item is generally done with the center or "Select" button.

The only item that can be changed on the left side of the Main Screen is the Set Temperature. Press the Left Arrow button to change the Set Temperature number to white. The Set Temperature can then be adjusted with the up and down buttons. Pressing the Select button or the Right Arrow button will save the new set temperature.

On the right side of the screen, the menu selections can be selected with the Up and Down Buttons. Use the Select Button to choose an item. Selecting one of these items will change to a different screen with additional controls.



## Messages

At the bottom of the screen, messages may appear at various times. Some of these messages must be dismissed by the user (see page 17).

## Press-and-Hold

If an Up or Down button is pressed and held when the Set Temperature is selected, the temperature will continue to change until the button is released, or the Temperature Range limits are reached.



# The Spa Screen and Shortcut Screen

## All Equipment Access

The Spa Screen shows all available equipment to control, as well as other features, like Invert, in one easy-to-navigate screen. The display shows icons that are related to the equipment installed on a particular spa model, so this screen may change depending on the installation.

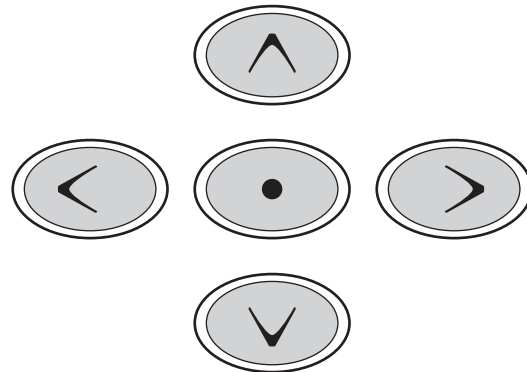
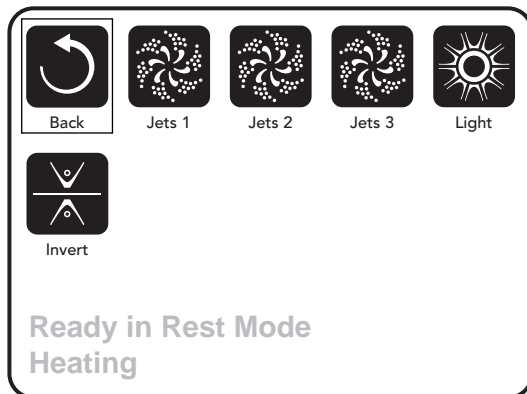
The navigation buttons are used to select an individual device. The device that is chosen is highlighted with a white outline and the text under the icon changes to white. Once a device is selected, it can be controlled using the center Select Button.

Some devices, like pumps, may have more than one ON state, so the icon will change to reflect the state that the equipment is in. Below are some examples of 2-speed Pump indicators.



If the Spa has a Circ Pump, a Circ Pump Icon will appear to indicate its activity, but outside of Priming Mode, the Circ Pump cannot be controlled directly.

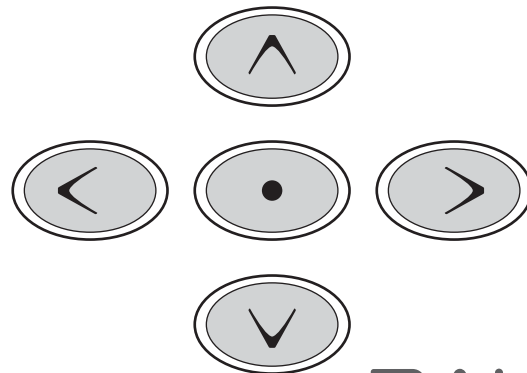
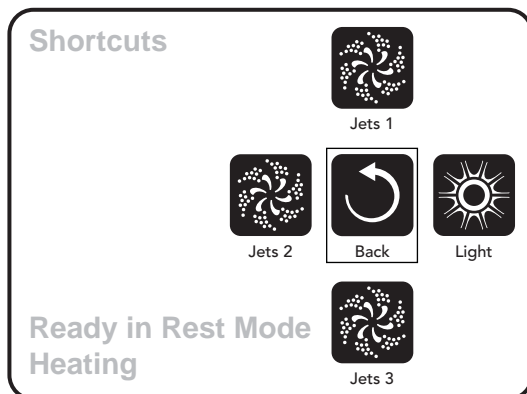
NOTE: The icon for the pump that is associated with the heater (Circ or P1 Low) will have a red glow in the center when the heater is running.



## One-Press Activation

The Shortcut Screen requires no navigation. Each button is fixed on a specific function and can be used as a very simple user interface for the spa.

Each button function is illustrated in the display and mapped according to the manufacturer's instructions.



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# The Settings Screen

## Pressing a “Button”

When instructions are given to “press a button” any of the following can be done:

- Navigate to the desired item on any Screen. When the desired item is highlighted, press the Select Button.
- Press the button for that device while on the Shortcuts Screen, if the device is one of the 4 functions available.

## Programming, Etc.

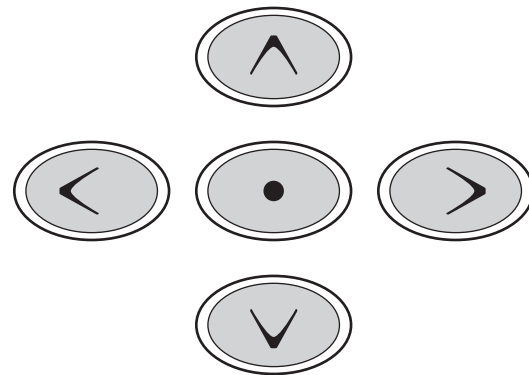
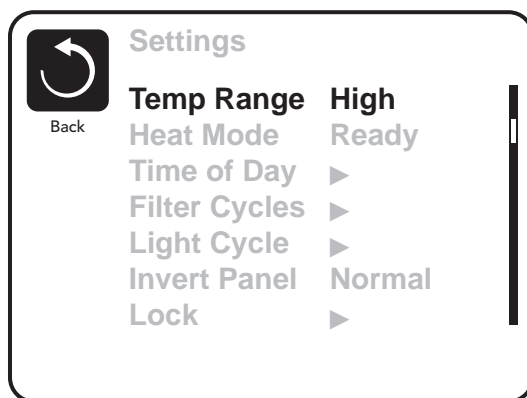
The Settings Screen is where all programming and other spa behaviors are controlled.

This screen has several features that can be acted on directly. These features include Temp Range, Heat Mode, and Invert Panel. When one of these items is highlighted, the Select Button is used to toggle between two settings.

All other menu items (with an arrow pointing to the right) go to another level in the menu.

## Press-and-Hold

If an Up or Down button is pressed and held when an item in a Menu List is highlighted, the list can be scrolled quickly from top to bottom. The scroll bar on the right side of the screen indicates the relative position of the highlighted item in the list.



## Dual Temperature Ranges (High vs. Low)

This system incorporates two temperature range settings with independent set temperatures. The specific range can be selected on the Settings screen and is visible on the Main Screen in the upper right corner of the display.

These ranges can be used for various reasons, with a common use being a “ready to use” setting vs. a “vacation” setting. 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 99°F.*

*More specific Temp Ranges may be determined by the Manufacturer.*

*Freeze Protection is active in either range.*



# The Settings Screen – Continued

## Heat Mode – Ready vs. 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 (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.”

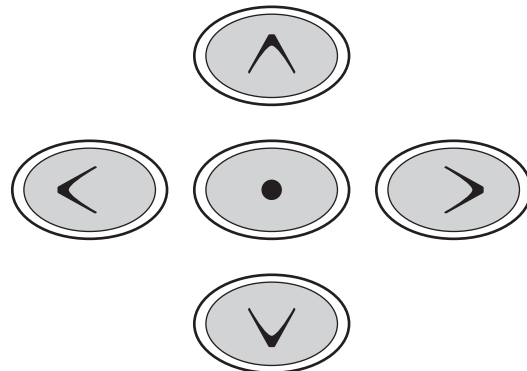
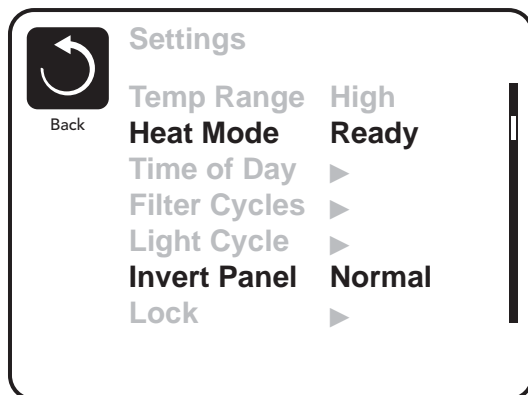
REST Mode will only allow heating during programmed filter cycles. Since polling does not occur, the temperature display may not show a current temperature until the heater pump has been running for a minute or two.

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.

### Circulation Mode (See Page 8, under Pumps, for other circulation modes)

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 the Jets 1 Button 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 Settings Menu and changing the Heat Mode.

# Fill it up!

## Preparation and Filling

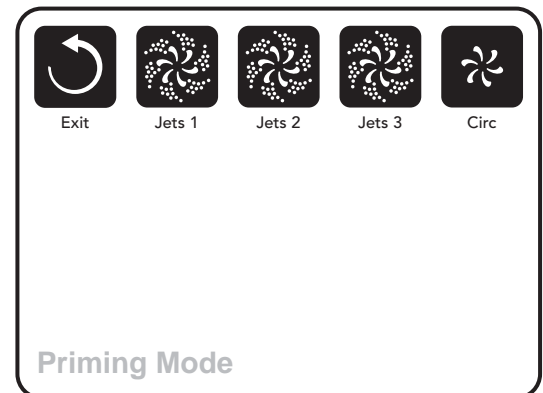
Fill the spa to its correct operating level. Be sure to open all valves and jets in the plumbing system before filling to allow as much air as possible to escape from the plumbing and the control system during the filling process.

After turning the power on at the main power panel, the top-side panel will display a splash, or startup screen.

## Priming Mode – M019\*

After the initial start-up sequence, the control will enter Priming Mode and display a Priming Mode screen. Only pump icons appear on the priming mode screen. The system will automatically return to normal heating and filtering at the end of the priming mode, which lasts 4-5 minutes. 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 selecting the “Jet” buttons. If the spa has a Circ Pump, it can be turned on and off by pressing the “Circ Pump” button during Priming Mode. In addition, if the spa has a Circ Pump, it can be activated by pressing the dedicated “Light” button during Priming Mode when using a TP800.

Manually exit Priming Mode by pressing the “Exit” Button.



## Priming the Pumps

As soon as the Priming Mode screen appears on the panel, select the “Jets 1” button once to start Pump 1 in low-speed and then again to switch to high-speed. Also, select the other pumps, to turn them on. The pumps should 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 call for service.

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 navigating to the “Back” button on the Priming Mode Screen. 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 display the Main Screen, 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.

— — —°F    — — —°C

\*M019 is a Message Code. See Fault Log on Page 13.

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# Spa Behavior

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## Pumps

On the Spa Screen, select a “Jets” button once to turn the pump 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 the blower or any other pump is on. If the spa is in Ready Mode (See page 6), 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.

### Circulation Pump Modes

If the system is equipped with a circ pump, it will 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, A programmable circ pump will come on when the system is checking temperature (polling), during filter cycles, during freeze conditions, or when another pump is on.

The specific Circulation Mode that is used has been determined by the Manufacturer and cannot be changed in the field. Other device options may be available, like Blower, Light, Mist, etc.

## Filtration and Ozone

On non-circ systems, Pump 1 low and the ozone generator will run during filtration. On circ systems, the ozone will generally run with the circ pump, but can be limited to filtration cycles.

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 10)

A second filter cycle can be enabled as needed.

At the start of each filter cycle, the water devices like blower, mist device (if these exist) and other pumps will run briefly to purge the plumbing to maintain good water quality.

## Freeze Protection

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

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. Auxiliary freeze sensor protection acts similarly except with the temperature thresholds determined by the switch. See your dealer for details.

## Clean-up Cycle (optional)

When a 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 30 minutes or more, depending on the system. On some systems, you can change this setting. (See the Preferences section on page 14)



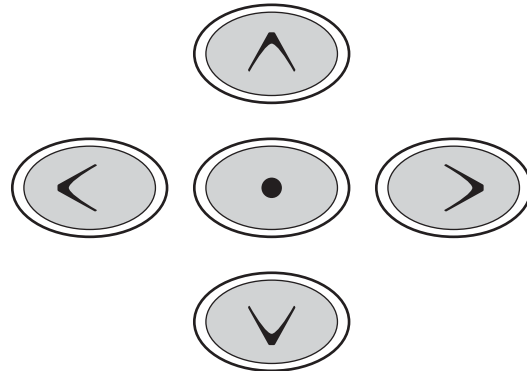
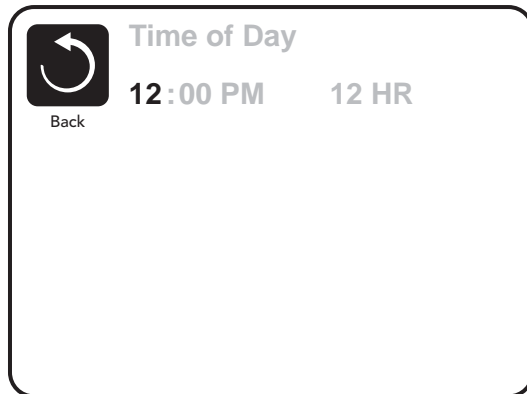
# Time-of-Day

## Be sure to set the Time-of-Day

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

"Set Time" will appear on the display if no time-of-day is set in the memory.

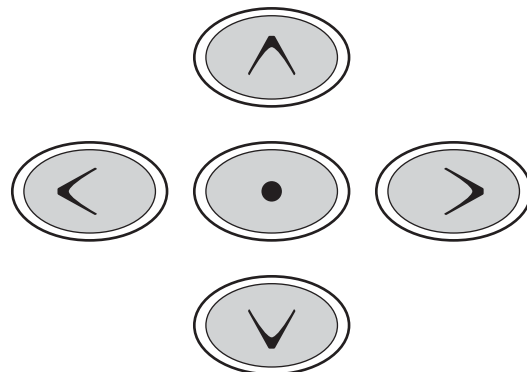
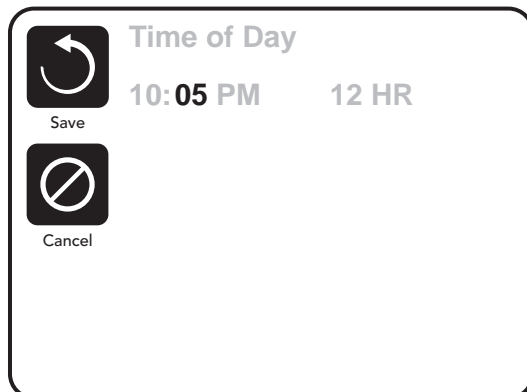
On the Settings Screen, select the Time-of-Day line. On the Time-of-Day screen, simply navigate right and left to select the Hour, Minutes, AM/PM and 12/24 Hour segments. Use the Up and Down Buttons to make changes.



## Saving Settings

The Time-of-Day screen is a simple, editable screen that illustrates a feature of the control that applies to all other editable screens as well.

When changes are made, the icon to go "Back" changes to "Save" and a new icon for "Cancel" appears under the Save icon. Navigating to the left will highlight the Save icon, and navigating down from there will allow the user to cancel the pending change. Pressing the "Select" button will save or cancel the changes and go back to the previous screen.



## Note:

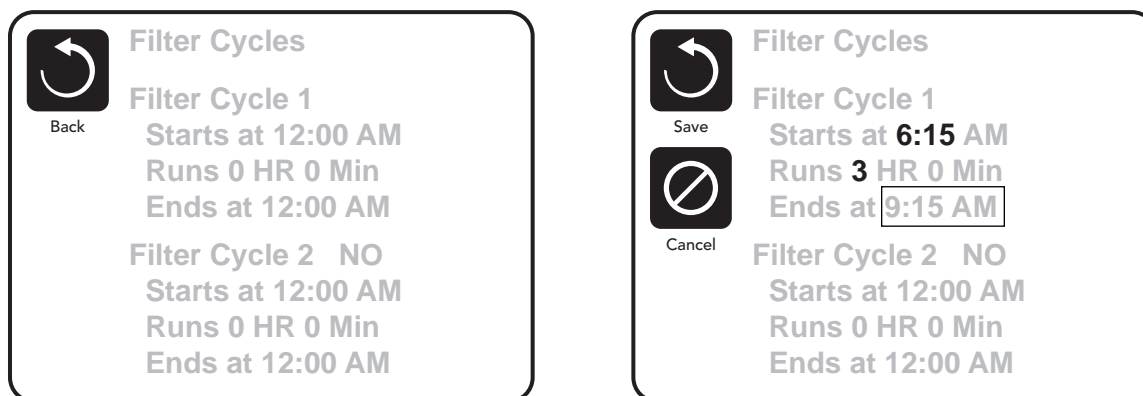
If power is interrupted to the system, Time-of-Day will be maintained for several days.



# Adjusting Filtration

## Main Filtration

Using the same navigation and adjustment as Setting the Time, Filter Cycles are set using a start time and a duration. Each setting can be adjusted in 15-minute increments. The panel calculates the end time and displays it automatically.



## Filter Cycle 2 - Optional Filtration

Filter Cycle 2 is OFF by default.

Simply navigate to the Filter Cycle 2 line by pressing the Right Navigation Button, and when "NO" is highlighted, press Up or Down to toggle Filter Cycle 2 on and off. When Filter Cycle 2 is ON, it can be adjusted in the same manner as Filter Cycle 1 by navigating to the right.

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

## Circulation Pump Modes

Some spas may be manufactured with Circ Pump settings that allow programming filtration cycle duration. Some circ Modes are pre-programmed to operate 24 hours a day and are not programmable. Refer to the spa manufacturer's documentation for any Circ Mode details.

## Purge Cycles

In order to maintain sanitary conditions, as well as protect against freezing, secondary water devices will purge water from their respective plumbing by running briefly at the beginning of each filter cycle.

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



# Additional Settings

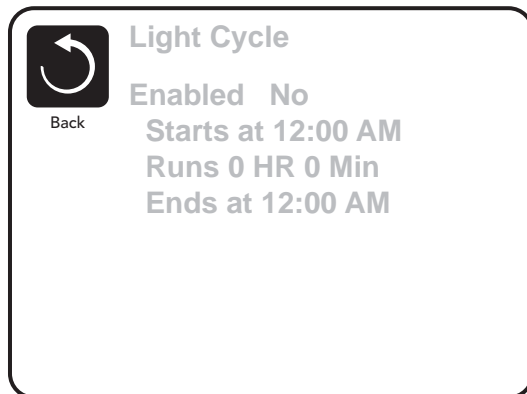
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## Light Cycle Option

If Light Cycle does not appear in the Settings Menu, the Light Timer feature is not enabled by the manufacturer.

When available, the Light Timer is OFF by default.

The settings can be edited the same way that Filter Cycles are edited (see page 10).



## Invert Panel

Selecting Invert Panel will flip the display and the buttons so the panel can be easily operated from inside or outside the hot tub.

# Dedicated Buttons

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## Specific Buttons for Specific Devices

If the panel has dedicated function buttons (TP800) or the spa has an Auxiliary Panel(s) installed, pressing those buttons will activate the device indicated for that button.

These dedicated buttons will operate just like the Spa Screen buttons (see page 4) and the equipment will behave in the same manner with each button press.



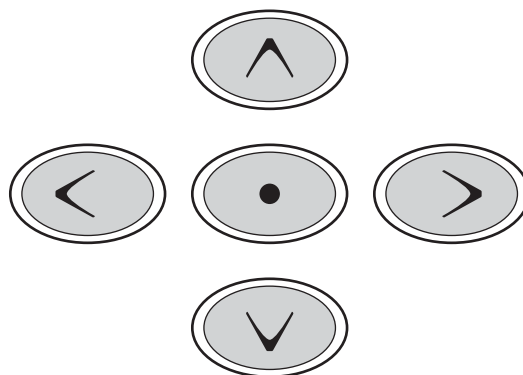
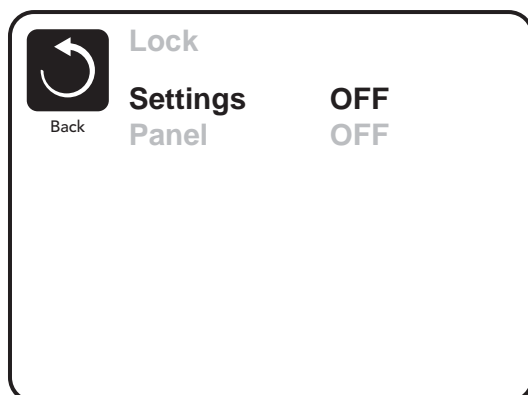
# Restricting Operation

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

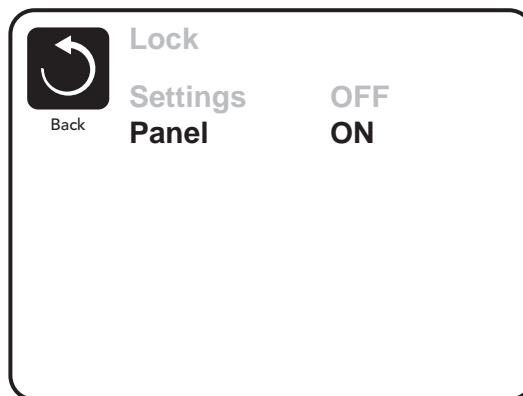
Locking the Panel prevents the controller from being used, but all automatic functions are still active.

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

Settings Lock allows access to a reduced selection of menu items. These include Set Temperature, Invert, Lock, Utilities, Information and Fault Log. They can be seen, but not changed or edited.



## Unlocking



An Unlock Sequence using the navigation buttons can be used from the Lock Screen. The Unlock Sequence is the same for both Panel Lock and Settings Lock.



# Additional Settings

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## Hold Mode - M037\*

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. If spa service will require more than an hour, it may be best to simply shut down power to the spa.

## Drain Mode

Some spas have a special feature that allows Pump 1 to be employed when draining the water. When available, this feature is a component of Hold Mode.

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## Utilities

The Utilities Menu contains the following:

### A/B Temps

When this is set to On, the temperature display will alternate to display temperature from Sensor A and Sensor B in the heater.

### Demo Mode

Demo Mode is not always enabled, so it may not appear. This is designed to operate several devices in a sequence in order to demonstrate the various features of a particular hot tub.

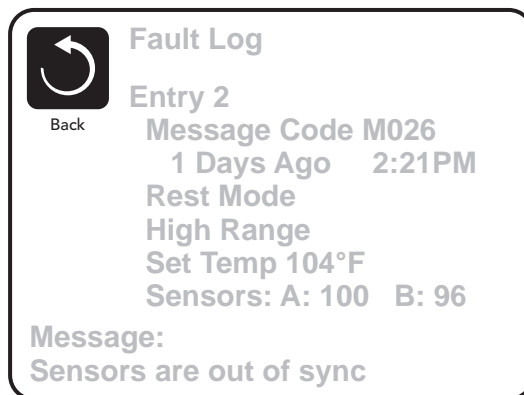
### Fault Log

The Fault Log is a record of the last 24 faults that can be reviewed by a service tech.

### GFCI Test

#### (Feature not available on CE rated systems.)

GFCI Test is not always enabled, so it may not appear. This screen allows the GFCI to be tested manually from the panel and can be used to reset the automatic test feature. If the GFCI Test Feature is reset, the device will trip within 7 days. (See Page 16)



\*M036 is a Message Code. Codes like this will be seen in the Fault Log



# Additional Settings

## Preferences

The Preferences Menu allows the user to change certain parameters based on personal preference.

### Temp Display

Change the temperature between Fahrenheit and Celsius.

### Time Display

Change the clock between 12 hr and 24 hr display.

### Reminders

Turn the reminder messages (like “Clean Filter”) On or Off.

### Cleanup

Cleanup Cycle Duration is not always enabled, so it may not appear. When it is available, set the length of time Pump 1 will run after each use. 0-4 hours are available.

### Dolphin II and Dolphin III (Applies to RF Dolphin only)

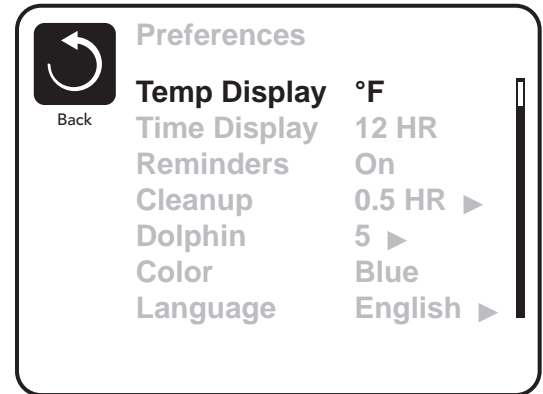
When set to 0, no addressing is used. Use this setting for a Dolphin II or Dolphin III which is factory set for no address by default. When set between 1 and 7, the number is the address. (See the Dolphin manual for details.)

### Color

Pressing the Select Button when Color is highlighted will cycle through 5 background colors available in the control.

### Language

Change the language displayed on the panel.





# Information

## System Information

The System Information Menu displays various settings and identification of the particular system. As each item in the menu is highlighted, the detail for that item is displayed at the bottom of the screen.

### Software ID (SSID)

Displays the software ID number for the System.

### System Model

Displays the Model Number of the System.

### Current Setup

Displays the currently selected Configuration Setup Number.

### Configuration Signature

Displays the checksum for the system configuration file.

### Heater Voltage (Feature not used on CE rated systems.)

Displays the operating voltage configured for the heater.

### Heater Wattage as Configured in Software (CE Systems Only.)

Displays a heater kilowatt rating as programmed into the control system software (1-3 or 3-6).

### Heater Type

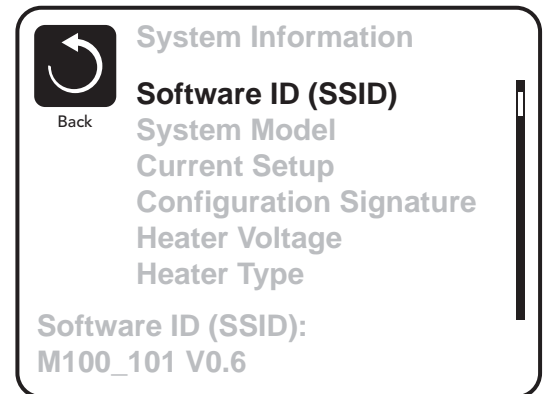
Displays a heater type ID number.

### Dip Switch Settings

Displays a number that represents the DIP switch positions of S1 on the main circuit board.

### Panel Version

Displays a number of the software in the topside control panel.



# Utilities – GFCI Test Feature

The Ground Fault Circuit Interrupter (GFCI) or Residual Current Detector (RCD) is an important safety device and is required equipment on a hot tub installation.

**(The GFCI Test Feature is not available on CE rated systems.)**

## Used for verifying a proper installation

Your spa may be equipped with a GFCI Protection feature. If your spa has this feature enabled by the manufacturer, the GFCI Trip Test must occur to allow proper spa function.

Within 1 to 7 days after startup, the spa will trip the GFCI to test it. (The number of days is factory programmed.) The GFCI must be reset once it has tripped. After passing the GFCI Trip Test, any subsequent GFCI trips will indicate a ground fault or other unsafe condition and the power to the spa must be shut off until a service person can correct the problem.

## Forcing the GFCI Trip Test (North America Only)

The installer can cause the GFCI Trip Test to occur sooner by initiating it using the above menu.

The GFCI should trip within several seconds and the spa should shut down. If it does not, shut down the power and manually verify that a GFCI breaker is installed and that the circuit and spa are wired correctly. Verify the function of the GFCI with its own test button. Restore power to the spa and repeat the GFCI Trip Test.

Once the GFCI is tripped by the test, reset the GFCI and the spa will operate normally from that point. You can verify a successful test by navigating to the above menu. PASS should appear after a temp button is pressed from the GFCI screen.

## Warning:

The end-user must be trained to expect this one-time test to occur and how to properly reset the GFCI.

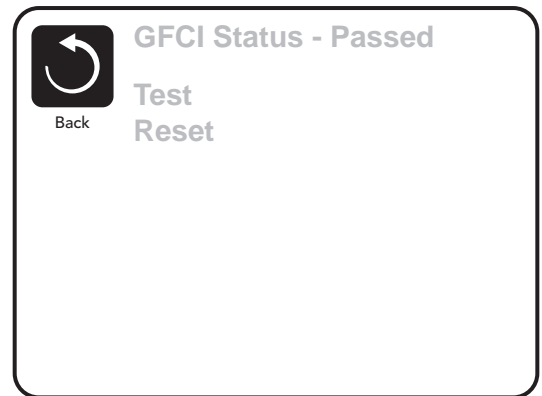
If freezing conditions exist, the GFCI or RCD should be reset immediately or spa damage could result.

## CE Product:

CE registered systems do not have an RCD Test Feature due to the nature of the electrical service.

Some UL registered systems do not have the GFCI Test Feature activated.

The end-user must be trained how to properly test and reset the RCD.



# General Messages

---

Most messages and alerts will appear at the bottom of the normally used screens. Several alerts and messages may be displayed in a sequence.

**Some messages can be reset from the panel.** Messages that can be reset will appear with a “right arrow” at the end of the message. This message can be selected by navigating to it at pressing the Select button.

Clean the filter 

--°F --°C

## Water Temperature is Unknown

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

---

## Possible freezing condition

A potential freeze condition has been detected, or the Aux Freeze Switch has closed. All water devices are activated.

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.

---

## The water is too hot – M029

The system has detected a spa water temp of 110°F (43.3°C) or more, 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.

---

M0XX numbers are Message Codes. See Page 13.

\* This message can be reset from the topside panel.



# Heater-Related Messages

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## **The water flow is low – M016**

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.

---

## **The water flow has failed\* – M017**

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.

---

## **The heater may be dry\* – M028**

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.

---

## **The heater is dry\* – M027**

There is not enough water in the heater to start it. The spa is shut down. After the problem has been resolved, you must clear the message to restart heater start up. See “Flow Related Checks” below.

---

## **The heater is too hot\* – M030**

One of the water temp sensors has detected 118°F (47.8°C) in the heater and the spa is shut down. You must clear the message when water is below 108°F (42.2°C). See “Flow Related Checks” below.

---

## **Flow-Related Checks**

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

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

M0XX numbers are Message Codes. See Page 13.

\* This message can be reset from the topside panel.



# Sensor-Related Messages

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## **Sensors are out of sync – M015**

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

---

## **Sensors are out of sync -- Call for service\* – M026**

The temperature sensors ARE out of sync. The fault above has been established for at least 1 hour. Call for Service.

---

## **Sensor A Fault, Sensor B Fault – Sensor A: M031, Sensor B: M032**

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

---

# Miscellaneous Messages

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## **Communications error**

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

---

## **Test software installed**

The Control System is operating with test software. Call for Service.

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## **°F or °C is replaced by °T**

The Control System is in Test Mode. Call for Service.

MOXX numbers are Message Codes. See Page 13.

\* This message can be reset from the topside panel.



Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. All material copyright of Balboa Water Group.

# System-Related Messages

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## **Program memory failure\* – M022**

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.

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## **The settings have been reset (Persistent Memory Error)\* – M021**

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

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## **The clock has failed\* – M020**

Contact your dealer or service organization.

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## **Configuration error (Spa will not Start Up)**

Contact your dealer or service organization.

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## **The GFCI test failed (System Could Not Test the GFCI) – M036**

(North America Only) May indicate an unsafe installation. Contact your dealer or service organization.

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## **A pump may be stuck on – M034**

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

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## **Hot fault – M035**

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.

---

M0XX numbers are Message Codes. See Page 13.

\* This message can be reset from the topside panel.



Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. All material copyright of Balboa Water Group.

# Reminder Messages

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## General maintenance helps.

Reminder Messages can be suppressed by using the Preferences Menu. See Page 14.

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.

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## Check the pH

May appear on a regular schedule, i.e. every 7 days.

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

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## Check the sanitizer

May appear 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.

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## Clean the filter

May appear on a regular schedule, i.e. every 30 days.

Clean the filter media as instructed by the manufacturer. See HOLD on page 13.

---

## Test the GFCI (or RCD)

May appear on a regular schedule, i.e. every 30 days.

The GFCI or RCD 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 or RCD associated with the hot tub installation.

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

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## Change the water

May appear 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.

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## Clean the cover

May appear on a regular schedule, i.e. every 180 days.

Vinyl covers should be cleaned and conditioned for maximum life.

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## Treat the wood

May appear 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.

---

## Change the filter

May appear on a regular schedule, i.e. every 365 days.

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

Reminder messages can be reset from the topside panel.

Additional messages may appear on specific systems.



# Warning! Qualified Technician Required for Service and Installation

## Basic Installation and Configuration Guidelines

Use minimum 6AWG copper conductors only.

Torque field connections between 21 and 23 in lbs.

Readily accessible disconnecting means to be provided at time of installation.

Permanently connected power supply.

Connect only to a circuit protected by a Class A Ground Fault Circuit Interrupter (GFCI) or Residual Current Device (RCD) mounted at least 5' (1.52M) from the inside walls of the spa/hot tub and in line of sight from the equipment compartment.

CSA enclosure: Type 2

Refer to Wiring Diagram inside the cover of the control enclosure.

Refer to Installation and Safety Instructions provided by the spa manufacturer.

**Warning:** People with infectious diseases should not use a spa or hot tub.

**Warning:** To avoid injury, exercise care when entering or exiting the spa or hot tub.

**Warning:** Do not use a spa or hot tub immediately following strenuous exercise.

**Warning:** Prolonged immersion in a spa or hot tub may be injurious to your health.

**Warning:** Maintain water chemistry in accordance with the Manufacturers instructions.

**Warning:** The equipment and controls shall be located not less than 1.5 meters horizontally from the spa or hot tub.

## Warning! GFCI or RCD Protection.

The Owner should test and reset the GFCI or RCD on a regular basis to verify its function.

## 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.

## CSA Compliance/Conformité

### Caution:

- Test the ground fault circuit interrupter before each use of the spa.
- Read the instruction manual.
- Adequate drainage must be provided if the equipment is to be installed in a pit.
- For use only within an enclosure rated CSA Enclosure 3.
- Connect only to a circuit protected by a Class A ground fault circuit interrupter or residual current device.
- To ensure continued protection against shock hazard, use only identical replacement parts when servicing.
- Install a suitably rated suction guard to match the maximum flow rate marked.

### Warning:

- Water temperature in excess of 38°C may be injurious to your health.
- Disconnect the electrical power before servicing.

### Attention:

- Toujours vérifier l'efficacité du disjoncteur différentiel avant d'utiliser différentiel avant d'utiliser le bain.
- Lire la notice technique.
- Lorsque l'appareillage est installé dans une fosse, on doit assurer un drainage adéquat.
- Employer uniquement à l'intérieur d'une clôture CSA Enclosure 3.
- Connecter uniquement à un circuit protégé par un disjoncteur différentiel de Class A.
- Afin d'assurer une protection permanente contre le danger de shock électrique, lors de l'entretien employer seulement des pièces de rechange identiques.
- Les prises d'aspiration doivent être équipées de grilles convenant au débit maximal indiqué.

### Avertissement:

- Des températures de l'eau supérieures à 38°C peuvent présenter un danger pour la santé.
- Déconnecter du circuit d'alimentation électrique avant l'entretien.

### Warning/Advertissement:

- Disconnect the electric power before servicing. Keep access door closed.
- Déconnecter du circuit d'alimentation électrique avant l'entretien. Garder la porte fermée.





