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Basic Information

Water Care

**IMPORTANT:** Caring for your water by ensuring proper chemical usage is the single most important thing you can do to keep your hot tub in good condition.

**WARNING:** Improper chemical usage and maintenance will quickly lead to severe issues with your spa and can effect the spas equipment, jets, pumps and all other components in contact with the spa water. All hot tubs and swim spas are susceptible to damage from unbalanced spa water.

Always maintain your spa’s water chemistry within the following parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
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<tbody>
<tr>
<td>pH</td>
<td>7.2 - 7.8</td>
</tr>
<tr>
<td>Chlorine</td>
<td>1.0 - 3.0 ppm</td>
</tr>
<tr>
<td>Bromine</td>
<td>2.0 - 5.0 ppm</td>
</tr>
<tr>
<td>Total Alkalinity</td>
<td>100 - 120 ppm</td>
</tr>
<tr>
<td>Calcium Hardness</td>
<td>150 - 250 ppm</td>
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</tbody>
</table>

Electrical

All self contained spas use 120VAC or 240VAC electrical spa packs.

**120VAC:** Requires an isolated 20 Amp circuit breaker, an isolated circuit with no other appliances or lights on the circuit at any time. Extension cords are not to be used in conjunction with the operations of the spa. Low voltage damage could result and this is not covered by warranty. **IMPORTANT:** Hot Tubs with 110V means that the jets and heater will not work at the same time.

**NOTE:** All components must be 120V. No 240V components allowable.

**240VAC:** Depending on the model of spa, it will require either a 40 Amp or 50 Amp dedicated circuit breaker, GFCI, with the proper wire size based on the length of the run.

The electrical circuit must be installed by a certified electrician and approved by a local building or electrical inspector.

Surface

Your new portable spa must be placed on a firm, flat and level surface, so the spa weight is supported uniformly. We recommend no less than a 3” (93 mm) thick concrete slab. Wood decking or balconies must be constructed to support 150 pounds per square foot (730 kg/m²). Refer to local and current building codes in your area. Consult an engineer for live loads in your area. Should your new spa need to go through a gate, the opening should be a minimum of 48 inches and up to 8.5’ overhead clearance depending on the size of the unit.

**NOTE:** Damage caused by alternate decking methods may avoid the spa warranty. Contact your dealer if you have any questions regarding spa location or placement.

Transport

Your new spa has left the factory cleaned and polished and ready to begin operation after passing our many quality and operational tests. However, depending on your location in the world, your spa may have spend days or even weeks in transit before arriving at your home. Please ensure that before filling or operating your hot tub that you check all electrical and plumbing connections are securely connected in the equipment area as they might have loosened during shipping. If any dirt has accumulated, you will want to remove with a clean cloth or sponge using warm water.
**PREP FOR FILLING**

1. Clean out any dirt that has accumulated during shipping/transport.
2. Ensure all plumbing and electrical connections are securely connected and tightened as they can come loose during transit.
3. Ensure that any gate/knife valves are fully open.
4. Remove floating weir and basket from filter assembly.
5. Remove filter by turning counter-clockwise. Remove plastic filter transport bag.

**FILLING YOUR SPA**

1. Place fill hose into open filter canister and fill spa until water is 5” (12.5cm) from the top “lip” of the hot tub.
2. When filled all massage jets should be under water. Remove fill hose from filter canister.
3. Re-install filter by screwing into canister clockwise.
4. Re-install floating weir and basket assembly.

**POWERING UP YOUR SPA**

1. Turn power on at the main breaker.
2. PR - Priming Mode: Your spa will now run a diagnostic test. Do not press any buttons while test is running (4 - 6 minutes).
3. Once test is complete, you will see the temperature display on your hot tub control panel.
4. Set your hot tub temperature. Get ready to enjoy!
IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY

DANGER: Risk of Injury. The suction fittings in this hot tub are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure that the flow rates are compatible. Never operate the hot tub if the suction fittings are broken or missing. Never replace a suction fitting with one rated less than the flow rate marked on the original suction fitting.

DANGER: Risk of Accidental Drowning. Do not allow children to be in or around the spa without adult supervision. Keep the spa cover on and locked when not in use. See instructions enclosed with the cover for locking procedures.

DANGER: Risk of Electrical Shock. The electrical supply for this product must include a suitably rated switch or circuit breaker to open all un-grounded supply conductors to comply with section 422-20 of the National Electrical Code, ANSI/NFPA 70. The disconnect must be readily accessible and visible to the hot tub occupant but installed at least 5 feet (1.5 m) from the hot tub water.

READ, FOLLOW AND SAVE THESE INSTRUCTIONS

a) A green colored terminal or a terminal marked G, Gr, Ground, Grounding or the symbol * is located inside the supply terminal box or compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors that supply this equipment.

b) At least two lugs marked “Bonding Lugs” are provided on the external surface or on the inside of the supply terminal box compartment. To reduce the risk of electric shock, connect the local common bonding grid in the area of the hot tub to these terminals with an insulated or bare copper conductor not smaller than No. 6 AWG.

c) All field-installed metal components such as rails, ladders, drains or other similar hardware within 5 feet (1.5 m) of the hot tub shall be bonded to the equipment grounding buss with copper conductors not smaller than No. 6 AWG.

WARNING: To Reduce the Risk of Injury: The water in a hot tub should never exceed 104 °F (40 °C). Water temperatures between 100 °F (38 °C) and 104 °F (40 °C) are considered safe for a healthy adult. Lower water temperatures are recommended for young children and when hot tub use exceeds 10 minutes. Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit hot tub water temperatures to 100 °F (38 °C). If pregnant, please consult your physician before using a hot tub. Before entering the hot tub, the user should measure the water temperature with an accurate thermometer since the tolerance of water temperature regulating devices may vary as much as +/- 5 °F (2 °C). Persons suffering from obesity or a medical history of heart disease, low or high blood pressure, circulatory system problems or diabetes should consult a physician before using a hot tub.

CAUTION: Risk of Hyperthermia: Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6 °F (37 °C). The symptoms of hyperthermia include drowsiness, lethargy, and an increase in the internal temperature of the body. Prolonged immersion in hot water may induce hyperthermia. A description of the causes, symptoms, and effects of hyperthermia are as follows:

- Unawareness of impending hazard;
- Failure to perceive heat;
- Failure to recognize the need to exit hot tub;
- Physical inability to exit hot tub;
- Fetal damage in pregnant women; and
- Unconsciousness and danger of drowning.

WARNING: Children should not use hot tubs without adult supervision.

WARNING: Do not use hot tubs unless all suction guards are installed to prevent body and hair entrapment.

WARNING: People with infectious diseases should not use a hot tub.

WARNING: To avoid injury, exercise care when entering or exiting the hot tub.

WARNING: Do not use drugs or alcohol before or during the use of a hot tub to avoid unconsciousness and possible drowning. The use of alcohol or drugs can greatly increase the risk of fatal hyperthermia in hot tubs.

WARNING: Pregnant or possibly pregnant women should consult a physician before using a hot tub.

WARNING: Water temperature in excess of 38 °C (100 °F) may be injurious to your health. Before entering the hot tub, measure the water temperature with an accurate thermometer.

WARNING: Do not use a hot tub immediately following strenuous exercise.

WARNING: Prolonged immersion in a hot tub may be injurious to your health.

WARNING: Do not permit electric appliances (such as lights, telephone, radio, television, etc.) within 5 feet (1.5m) of this hot tub unless such appliances are built-in by the manufacturer.

WARNING: People using medication and/or having an adverse medical history should consult a physician before using a spa or hot tub.

CAUTION: Observe a reasonable time limit when using the hot tub. Long exposures at higher temperatures can cause high body temperature. Symptoms may include dizziness, nausea, fainting, drowsiness, and reduced awareness. These effects could possibly result in drowning.

CAUTION: Enter and exit the hot tub slowly. Wet surfaces can be very slippery.

CAUTION: Proper chemical maintenance of hot tub water is necessary to maintain safe water and prevent possible damage to hot tub components. Maintain water chemistry in accordance with manufacturer’s instructions.

CAUTION: Use the straps and clip tie downs to secure the cover when not in use. This will help to discourage unsupervised children from entering the hot tub and keep the hot tub cover secure in high-wind conditions. There is no representation that the cover, clip tie-downs, or actual locks will prevent access to the hot tub.

CAUTION: For exercise, the water should not exceed 90 °F (32 °C).

CAUTION: When using this electrical equipment, basic safety precautions should always be followed.
PREPARATION AND SET-UP FOR YOUR NEW SPA LOCATION FOR YOUR NEW SPA:

- You want to keep in mind how you intend to use the spa and plan the location accordingly.
- How close is the spa from the exit or entrance to your house? (consider the cold weather)
- Is the path to your spa clean of debris, sand, grass? (so as not to track into the spa)
- Is there protection from wind, inclement weather?
- Can neighbors or passersby see the spa?

NOTE: Allow for service access: Many spa owners enjoy placing their spa in a decorative enclosure or a deck. Keep in mind that you need to have access to the equipment for maintenance and the spa should be able to be moved or lifted without destroying the special enclosure or its surroundings. You should discuss this with your dealer when designing the location. Extension cords are not to be used in conjunction with the operations of the spa. Low voltage damage could result and this is not covered by warranty. NOTE: All components must be 120V; No 240V components allowable.

240VAC: Depending on the model of spa, it will require either a 40 Amp or 50 Amp dedicated circuit breaker, GFCI, with the proper wire size based on the length of the run. The electrical circuit must be installed by a certified electrician and approved by a local building or electrical inspector.

ELECTRICAL REQUIREMENTS

All self contained spas use 120VAC or 240VAC electrical spa packs. These instructions describe the only acceptable electrical wiring procedures. Spas wired in any other way will void your warranty and may result in serious injury. All installations should be completed by a certified electrician. Failure to comply with state and local codes may result in serious injury. All installations should be completed by a certified electrician and approved by a local building or electrical inspector.

240VAC: Depending on the model of spa, it will require either a 40 Amp or 50 Amp dedicated circuit breaker, GFCI, with the proper wire size based on the length of the run. The electrical circuit must be installed by a certified electrician and approved by a local building or electrical inspector.

SURFACE AND PAD REQUIREMENTS

Your new portable spa must be placed on a firm, flat and level surface, so the spa weight is supported uniformly. We recommend no less than a 3” (93 mm) thick concrete slab. Wood decking or balconies must be constructed to support 150 pounds per square foot (730 kg/m²). Refer to local and current building codes in your area. Consult an engineer for live loads in your area. Should your new spa need to go through a gate, the opening should be a minimum of 48 inches and up to 8.5’ overhead clearance depending on the size of the unit.

NOTE: Damage caused by alternate decking methods may avoid the spa warranty. Contact your local dealer if you have any questions regarding spa location or placement.

DRAINING AND WINTERIZING

DRAINING YOUR SPA

After a period of 3-4 months, detergent residues from bathing suits and soap film will build up in your spa water. Once this happens, your spa water will appear cloudy and should probably be replaced.

- Turn power OFF at the breaker.
- Locate the drain valve (usually in the equipment area).
- Remove the safety cap and attach garden hose.
- Drain water to a convenient area. (Spa water may harm grass or plants if sanitizer levels are high.)
- When water begins to flow out of the hose, open the air relief valve located on filter lid (Hydro-Cyclonic Filtration) or Air Bleeder Valve (Skim Filtration)
- Your spa will drain except for a small portion left in the foot well. This can be removed with a sponge and pail.
- Once empty, clean as required.
- To finish, remove garden hose and attach safety cap.

WINTERIZING YOUR SPA

In many areas of the world the temperature may drop below 32°F (0°C). We recommend the spa is always filled with water and running at normal spa temperatures. By doing this you will minimize the risk of freezing within your spa. If it is necessary to leave your spa unattended for long periods of time during cold weather conditions, you should drain your spa to avoid accidental freezing caused by power outages.

Your local dealer can perform the following winterizing procedures, if you are not completely comfortable with them.

- Ensure that you have fully drained the spa (Refer to the DRAINING YOUR SPA section)
- After draining, your spa may still have water remaining in the equipment and plumbing fittings. Disconnect the hand-tightened union fittings going to and from the jet pumps. Be careful not to lose the o-rings between the unions and pump housing.
- Leave drain valve in the open position and safety cap off.
- To completely drain the plumbing lines, a wet/dry shop vacuum can be used to draw out any remaining water. Place the vacuum hose over the jet fittings in the

NOTE: Many spa owners enjoy placing their spa in a decorative enclosure or a deck. Keep in mind that you need to have access to the equipment. Low voltage damage could result and this is not covered by warranty.

IMPORANT (Cascade Series Only): There will be an additional drain valve. This is connected directly to the tank reservoir and you will see the water level go down on the sight tube in the equipment area.
spa as well as the plumbing lines in the equipment area. You should also disconnect the plug on the crystal clear inspection tube (if installed)

- Remove the filter cartridge and store in a warm, dry area.
- Clean the spa shell and place spa cover on spa. Be sure to lock the cover in place in case of high winds or rain.

**WARNING:** The instructions above should be followed accordingly when winterizing your spa however they are guidelines and potential freeze damage may still occur. All freeze damage is the sole responsibility of the spa owner and will not be covered by the warranty should it occur.

**EMERGENCY SITUATIONS:** To eliminate freezing in the event of equipment failure, use a 100-watt light bulb or small heater via extension cord and place it in the equipment area, keeping it away from plumbing lines. This will help for a short period of time until proper service can be rendered.

**FILTER MAINTENANCE**

The spa filter is one of the most important maintenance items of a hot tub. The filter is there to remove debris from the water and needs to be cleaned on a regular basis. Failure to do so may result in poor performance, poor water clarity and could prevent the spa from heating. Filtration starts as soon as flow is steady through the filter. As the filter cartridge removes the debris from the spa water, the accumulated debris causes flow resistance.

**CLEANING AND REPLACING FILTER CARTRIDGE**

Your spa filter has been designed for quick and easy maintenance. The filter cartridge should be rinsed by hose once a week and cleaned with a cartridge cleaner once a month. A second filter cartridge is recommended and will speed up this process. This can be purchased from your local dealer. Look for these specialized cleaning attachments at your local dealership.

**FRONT ACCESS SKIMMER/FILTER**

- Turn power OFF at the breaker.
- Pull open skimmer weir door.
- Reach in and remove skimmer basket.
- Pull straight up and out to remove basket. Clean out debris.
- Remove diverter plate.
- Remove filter cartridges.
- Clean with a garden hose and high-pressure nozzle. Periodically you may need to soak your filter in a cartridge filter cleaner to remove excess minerals and/or oils.
- Rinse filter thoroughly before installing.
- Reverse this procedure to re-install the filter cartridges.
- Put pump one on low speed this will help pull the cartridge into place.

**WATER QUALITY MAINTENANCE**

Maintaining the quality of the water within the specified limits will serve to enhance your enjoyment and prolong the life of the hot tub’s equipment. It is a fairly simple task, but it requires regular attention because the water chemistry involved is a balance of several factors. There is no simple formula, and there is no avoiding it. An indifferent approach to water maintenance will result in poor and potentially harmful conditions for soaking and even damage to your hot tub investment. The most important thing to keep in mind is that preventing poor water chemistry is much easier than correcting poor water chemistry. For specific guidance on maintaining water quality, consult your Authorized Dealer who can recommend appropriate chemical products for sanitizing and maintaining your hot tub.

**MAINTAIN HEALTHY SPA WATER**

**Important!** When maintaining your hot tub’s water chemistry, ensure that your cover is removed during any aggressive treatments to allow for dissipation into the air. Take care to remove the cover slowly and let chemicals deplete if you are uncertain if your water is properly balanced. Always maintain your hot tub’s water chemistry within the following parameters:

**pH:** pH is a measure of relative acidity or alkalinity of water and is measured on a scale of 0 to 14. The midpoint of 7 is said to be neutral, above which is alkaline and below which is acidic. In hot tub water, it is very important to maintain a slightly alkaline condition of 7.2 to 7.8. Problems become proportionately severe the further outside of this range the water gets. A low pH will be corrosive to metals in the hot tub equipment. A high pH will cause minerals to deposit on the interior surface (scaling). In addition, the ability of the sanitation agents to keep the hot tub clean is severely affected as the pH moves beyond the ideal range. That is why almost all hot tub water test kits contain a measure for pH as well as sanitizer.

**Sanitizer (Chlorine or Bromine):** To destroy bacteria and organic compounds in the hot tub water by breaking them down into non-harmful levels which get filtered out. A sanitizer must be used regularly, either
chlorine or bromine. Sanitizing your spa water is the most important spa maintenance you can do for yourself.

**Total Alkalinity:** This refers to the ability of the hot tub water to resist changes in pH. Controlling alkalinity can help keep your pH in the appropriate range thereby lessening the need for pH balancing. If the TA is too low the pH level will fluctuate rapidly from high to low. If the TA is too high the pH will tend to be too high and will be very difficult to bring back down.

**Calcium Hardness:** This is a measurement of dissolved calcium in the water. Calcium will help control the corrosive nature of the spa’s water.

**WARNING:** Never store chemicals inside the equipment area of your spa.

**IMPORTANT:** Do not use Hydrogen Peroxide based sanitizers in your spa. When using Chlorine or Bromine tablets you must use a floating dispenser. These chemicals can have an extremely corrosive effect on certain materials in the spa. Damage caused by use of these chemicals, or improper use of any chemicals, is not covered under the spa’s warranty.

**OTHER ADDITIVES:** Many other additives are available for your spa. Some are necessary to compensate for out-of-balance water, some aid in cosmetic water treatment and others simply alter the feel or smell of the water. Your Authorized Dealer can advise you on the use of these additives.

**MICROSILK**

**ABOUT MICROSILK**
MicroSilk produces a silky white cloud of micro bubbles that are small enough to enter the pores of your skin. When the micro bubbles enter the pores of your skin they absorb foreign contaminants and release oxygen. This process improves collagen production, leaving skin feeling smooth and healthy. Using the MicroSilk System on a regular basis greatly reduces the appearance of wrinkles and your skin will appear younger and firmer after only a short period of time.

**TREATING SKIN CONDITIONS**
MicroSilk is used to treat various skin conditions including: Eczema, Psoriasis, Ichthyosis and aids in reducing scar tissue. More information is available from your local dealership.

**OPERATION**
MicroSilk is produced by a unique piece of equipment, the MicroSilk Generator, that roughly resembles a jet pump and is located in your equipment area. The MicroSilk generator is powered by your hot tub and controlled using your main control panel.

There is an adjustment valve along the water supply line to the MicroSilk Generator that varies the air/water ratio that enters into the system. This adjustment is extremely sensitive and turning the adjustment valve only 1 mm can greatly effect the level of MicroSilk production. When your spa leaves the factory, it has been tested and the valve position marked for optimum MicroSilk production.

Once activated, you will be able to see a white cloud of silky water coming from the specialized fitting in your spa. Depending on the size of your hot tub you should see your entire spa filled with oxygen rich micro bubbles within minutes (more water capacity equals a longer duration until the entire hot tub fills with white silky water).

**TROUBLESHOOTING**
If your spas’ MicroSilk production seems slow, or lower than normal:
- Ensure that the air supply line is clear of any debris.
- Verify that water is flowing to the MicroSilk generator.
- Check the air/water mixture valve. Return to factory settings by aligning factory placed marks. **To adjust:** make incremental (1 mm) turns and wait at least 90 seconds before making further adjustments.
- Shut power off at breaker and make sure all electrical, water and air lines have a good connection to the MicroSilk Generator.
## WATER CLARITY TROUBLESHOOTING

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<th>PROBLEM</th>
<th>PROBABLE CAUSE</th>
<th>POTENTIAL SOLUTIONS</th>
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<tr>
<td>Water Odor</td>
<td>• Improper sanitization</td>
<td>&gt; Add sanitizer</td>
</tr>
<tr>
<td></td>
<td>• Excessive organics in water</td>
<td>&gt; Shock spa with sanitizer</td>
</tr>
<tr>
<td></td>
<td>• pH is too low</td>
<td>&gt; Adjust pH</td>
</tr>
<tr>
<td>Chlorine Odor</td>
<td>• Chloramines are too high</td>
<td>&gt; Shock spa with sanitizer</td>
</tr>
<tr>
<td></td>
<td>• pH is too low</td>
<td>&gt; Adjust pH</td>
</tr>
<tr>
<td>Musty Odor</td>
<td>• Bacteria or Algae growth</td>
<td>&gt; Shock spa with sanitizer</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Drain and refill spa water</td>
</tr>
<tr>
<td>Scale</td>
<td>• Total alkalinity is too high</td>
<td>&gt; Adjust total alkalinity</td>
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<tr>
<td></td>
<td>• pH is too high</td>
<td>&gt; Adjust pH</td>
</tr>
<tr>
<td></td>
<td>• High calcium content in water</td>
<td>&gt; Use stain and scale product</td>
</tr>
<tr>
<td>Stains</td>
<td>• Total alkalinity is too low</td>
<td>&gt; Adjust alkalinity</td>
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<tr>
<td></td>
<td>• pH is too low</td>
<td>&gt; Adjust pH</td>
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<tr>
<td></td>
<td>• High metal content in water</td>
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<tr>
<td>Cloudy Water</td>
<td>• Poor filtration</td>
<td>&gt; Clean filter cartridge</td>
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<td></td>
<td>• pH is too high</td>
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<tr>
<td></td>
<td>• Hardness is too high</td>
<td>&gt; Adjust hardness</td>
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<tr>
<td></td>
<td>• Total alkalinity is too high</td>
<td>&gt; Adjust total alkalinity</td>
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<tr>
<td></td>
<td>• Suspended particles</td>
<td>&gt; Drain and refill spa water</td>
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<tr>
<td>Algae Growth</td>
<td>• pH is too high</td>
<td>&gt; Adjust pH</td>
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<tr>
<td></td>
<td>• Sanitizer is too low</td>
<td>&gt; Shock spa with sanitizer</td>
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<td></td>
<td></td>
<td>&gt; Adjust sanitizer level</td>
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<tr>
<td>Eye Irritation</td>
<td>• pH is too low</td>
<td>&gt; Adjust pH</td>
</tr>
<tr>
<td></td>
<td>• Sanitizer is too low</td>
<td>&gt; Shock spa with sanitizer</td>
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<tr>
<td></td>
<td></td>
<td>&gt; Adjust sanitizer level</td>
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<tr>
<td>Skin Rash/Irritation</td>
<td>Free chlorine level too high</td>
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<tr>
<td></td>
<td>• Unsanitary water</td>
<td>&gt; Shock spa with sanitizer</td>
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<tr>
<td></td>
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<td>&gt; Adjust sanitizer level</td>
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</tbody>
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PRODUCT & CARE GUIDE

Your Authorized Dealer carries a wide variety of care and maintenance products. For more information please contact your Dealer.

REQUIRED FILTER MAINTENANCE

Your new hot tub is equipped with a filter cartridge. To ensure maximum water quality at all times, you should replace the filter cartridge every six months, or earlier as necessary. The filter cartridge is designed to be thrown away! Attempts to re-use the filter cartridge may result in the re-release of unwanted particles back into the hot tub.

REQUIRED WATER REPLACEMENT

You should replace the hot tub’s water every 3-6 months. The frequency will depend on a number of variables including frequency of use, number of bathers and attention paid to the water quality maintenance. You will know it is time for a change when you can no longer get the normal feel or sparkle to the water, even though the key water balance measurements are all within the recommended ranges.

HEADREST / PILLOW CARE

The pillows can be removed for easy cleaning and maintenance. All pillows have plugs within the pillow itself. To remove the pillow, grab the bottom edge firmly and pull outward. This will allow the pillows to pop out from the receptacle in the spa shell. To reinstall the pillow you will align the pillow plug with the receptacle. Press/hit the front side of the pillow firmly, which will insert the plug back into the receptacle.

- Proper water chemistry must be maintained. Your hot tub pillows are easily and quickly damaged when exposed to unbalanced spa water. If you suspect that your chemicals may be unbalanced, remove your pillows immediately until the water has been restored to suggested conditions.
- Do not sit on the pillows
- Do not pull on the pillows
- Pillows should be cleaned using a soft cloth and mild soap, then wiped with a conditioner. We recommend that pillows be washed each time you drain your spa.

HOT TUB INTERIOR

Your hot tub has a fiberglass reinforced acrylic shell. Generally dirt and stains will not adhere to the surface. To properly clean the surface, we recommend wiping it with a soft damp cloth (or sponge) using household soap or liquid detergent and rinsing thoroughly with fresh water. Stubborn dirt or stains may be removed by using Spic & Span adequately dissolved in water. Contact your dealer and inquire about maintenance packages.

DO NOT use any cleaning products containing abrasives or solvents, since these could damage the surface. Harsh chemicals should never be used on acrylic surfaces. Damage to the shell due to the use of harsh chemicals is not covered under the warranty.

DO NOT leave your hot tub drained and in direct sunlight for extended periods of time. Extreme heat could cause damage to the acrylic surface and may induce an effect known as “crazing”.

STAINLESS STEEL CONTROLS AND COMPONENTS ABOVE THE WATER LINE

To preserve the stainless steel finish of the controls and components above the water line, we recommend they be wiped with a dry soft cloth after each use of your hot tub. In addition, off-gas your tub by removing the cover for approximately 30 minutes multiple times per week (if not in use) and after every shock treatment.

COVER CARE

A well cared for spa cover is a thing of beauty in its own right. Be sure to clean and condition your cover at least once a month – more often if needed. Your cover needs to be cleaned and conditioned because vinyl can be dry and become brittle, spoiling your spa’s appearance. Dry, brittle vinyl can also tear at the seams and stress points. Quality materials, internal sewn reinforcing and careful workmanship can only go so far against the ravages of Mother Nature. See the specific Warranty card enclosed with your cover for further details.

- When you shock your spa you need to remove the cover for a minimum of 30 minutes to ensure that the chemical gas off can escape from the spa.
- You are required to keep the spa covered at all time when not in use to protect the shell from harmful UV rays.
- A covered spa will use less electricity when maintaining the desired water temperature
- See the manual that comes with the cover for proper mounting of the cover locks
- The cover should remain locked at all times to prevent unauthorized entry into the spa and potential drowning.
- Do not Sit, Stand or Lie on your cover. Nor should you place any heavy object on top of the cover as this may damage the structure.

VERY IMPORTANT: We recommend a vinyl conditioner for your spa cover. Your local dealer carries a wide variety of care and maintenance products. Choose a pleasant day each month to remove your cover from the spa and lay it on a flat surface accessible by garden hose. Douse the cover with a healthy amount of water from the hose or a bucket to rinse away loose dirt or debris. Using a soft bristle brush and a mild solution of dishwashing liquid (about one teaspoon of detergent to two gallons of water), and with a gentle circular motion, scrub the cover clean. Be careful not to let any areas of the cover dry before they’re thoroughly rinsed. Now apply the vinyl conditioner as directed on the container. Massage the conditioner into the cover in a gentle but firm manner. Before replacing the cover on your spa, wipe and rinse any dirt from the bottom of the cover. When you are ready, put the cover on the spa.

NOTE: To remove tree sap, use lighter fluid (not charcoal lighter but the fluid used in cigarette lighters). Use sparingly, then immediately apply conditioner to that area.
GLOSSARY OF TERMS

AIR CONTROL VALVE: Mounted generally on the lip of the spa, it induces warm air from the equipment enclosure into the jet stream through venturi action.

WATER DIVERTER VALVE: The large diverter is used to divert water to various seats in the spa.

ON/OFF DIVERTER VALVE: The smaller diverter is used to control water flow and to turn on/off the neck jets and/or waterfalls.

FILTER AIR RELIEF VALVE: Located on top of dome filter lid. Used to release air from the filter.

SKIMMER BLEEDER VALVE: Located in the skimmer area, needs to be loosened while filling the spa. This will help eliminate air from being trapped in the spa equipment.

OZONATOR: Available as an option. The ozonator produces natural ozone through the Corona Discharge process. Continuous use of an ozonator can dramatically reduce sanitizer consumption.

CONTROL BOX (Pack): Basically the “heart” of the spa. Power is distributed to any/all functions of the spa: pumps, ozonator, LED lighting, heater element, etc.

CONTROL PANEL: Mounted on the top lip of the spa and controls the functions of the spa.

DRAIN VALVE: Used in draining of the spa. Normally located in the equipment area.

EQUIPMENT ENCLOSURE: An enclosure that houses the control box, pump(s) and other electrical components.

FILTER: The filter cleans the spa by passing water through a filter cartridge where debris and impurities are removed. Top load filter means the filter cartridge is accessible through the top of the spa. Front access skimmer means cartridge is accessed through door of skimmer.

FLOOR DRAIN: The floor drain is covered by a grate-type cover and is utilized when draining the spa. It also acts as the return for the ozonator. You will see bubbles emitted from this drain, which is the result of water mixing with the ozone output.

GATE VALVES: Red with a grey handle is located at the inlet and outlet of the pumping system. Used while servicing the spa equipment, the valves open or close the water flow to the equipment. To remain open for normal use, turn fully counterclockwise.

KNIFE VALVES: A white “T”-handled valve, same functions as Gate valve (see above), except to open them you pull up on handle.

HEATER: The electronically controlled heater raises the temperature of the spa to the desired setting.

LEDs: LEDs and their special lenses can be used to achieve the desired mood lighting in the spa and spa jets.

SKIMMER: This is the rectangular outlet at the water level. The skimmer removes surface debris to the filter. The water level in the spa should be kept ½ to ¾ up on the skimmer for optimum operation.

SUCTION FITTING: During operation of the equipment, the suction works in conjunction with the skimmer to draw water from the bottom of the spa through the filter, keeping the spa sparkling clean.

NECK JET: Direction-controllable jet for soothing neck massage.

ADJUSTABLE CLUSTER JET: Our adjustable, high-intensity hydrotherapy jet.

DIRECTIONAL JET: Provides a straight flow for a therapeutic massage

ROTATIONAL JET: Provides a Uni-directional circular therapeutic massage.

MASSAGE JET: Delivers massage in staccato bursts over a narrow, focused area.

VOLCANO/WHIRLPOOL JET: high-output jet designed for foot and leg massage.

LAMINAR FLOW WATER FEATURE: A thin stream of water that arcs from the spa lip.
### TROUBLESHOOTING GUIDE

#### SPA SYSTEM

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>PROBABLE CAUSE</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spa does not work</td>
<td>• Power is turned off</td>
<td>&gt; Reset GFCI</td>
</tr>
<tr>
<td>No display on the control panel</td>
<td>• Power is turned off</td>
<td>&gt; Reset GFCI</td>
</tr>
<tr>
<td></td>
<td>• Defective topside control</td>
<td>&gt; Contact your Dealer</td>
</tr>
<tr>
<td>Letters on the control panel</td>
<td>• An error has been found</td>
<td>&gt; Refer to the Reference Card for your control panel to verify the error. Contact your Dealer for service</td>
</tr>
</tbody>
</table>

#### PUMP PROBLEMS

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>PROBABLE CAUSE</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noisy/Loud motor</td>
<td>• Air trapped in the pump</td>
<td>&gt; Open bleed valve in the skimmer</td>
</tr>
<tr>
<td></td>
<td>• Low water level</td>
<td>&gt; Add water to the spa</td>
</tr>
<tr>
<td></td>
<td>• Worn pump seal</td>
<td>&gt; Contact your Dealer</td>
</tr>
<tr>
<td></td>
<td>• Defective pump</td>
<td>&gt; Contact your Dealer</td>
</tr>
<tr>
<td>Pumps power down on their own</td>
<td>• Set temperature has been reached</td>
<td>&gt; No problem</td>
</tr>
<tr>
<td></td>
<td>• Filtration cycle has ended</td>
<td>&gt; No problem</td>
</tr>
<tr>
<td></td>
<td>• Automatic time out</td>
<td>&gt; Pumps are set to run for a predetermined time while the spa is in use (15-20 Mins)</td>
</tr>
<tr>
<td></td>
<td>• Overheat safety protection</td>
<td>&gt; The pumps have a thermal overload which will prevent them from running for extended periods of time. Wait until pumps have cooled down (1+ hrs). If problem persists, contact your Dealer.</td>
</tr>
<tr>
<td>Pump running constantly, will not turn off</td>
<td>• Filter cycle set to 24 hours</td>
<td>&gt; Turn off 24 hour filtration</td>
</tr>
<tr>
<td></td>
<td>• Problem with the circuit board</td>
<td>&gt; Turn power off at GFCI and contact your Dealer</td>
</tr>
<tr>
<td>Pump will not turn on</td>
<td>• GFCI tripped</td>
<td>&gt; Reset the GFCI</td>
</tr>
<tr>
<td></td>
<td>• Motor has overheated</td>
<td>&gt; Let cool for 1+ hour</td>
</tr>
<tr>
<td></td>
<td>• Not plugged in</td>
<td>&gt; Plug in to the board</td>
</tr>
<tr>
<td></td>
<td>• Damaged plug</td>
<td>&gt; Contact your Dealer</td>
</tr>
<tr>
<td></td>
<td>• Seized motor</td>
<td>&gt; Contact your Dealer</td>
</tr>
<tr>
<td></td>
<td>• Blown fuse</td>
<td>&gt; Check fuse or contact your Dealer</td>
</tr>
<tr>
<td></td>
<td>• Motor vent is blocked</td>
<td>&gt; Clear debris from the vent</td>
</tr>
</tbody>
</table>
### Heat Problems

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PROBABLE CAUSE</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water will not heat</td>
<td>• Error message on control panel&lt;br&gt;• Spa is in a different Heat Mode&lt;br&gt;• Water level is too low&lt;br&gt;• Poor water flow&lt;br&gt;• Closed valves&lt;br&gt;• Pump 1 is not running</td>
<td>&gt; Refer to the Reference Card for your control panel to verify the error&lt;br&gt; &gt; Set spa to “Standard Mode”&lt;br&gt; &gt; Add water to the spa&lt;br&gt; &gt; Clean filter &amp; check valves&lt;br&gt; &gt; Open all valves&lt;br&gt; &gt; Contact your dealer</td>
</tr>
<tr>
<td>Water is too hot</td>
<td>• Incorrect reading&lt;br&gt;• Filter cycle duration is too long&lt;br&gt;• Pump speeds reversed</td>
<td>&gt; Verify temperature with thermometer&lt;br&gt; &gt; Reduce duration of the filter cycle&lt;br&gt; &gt; Contact your dealer</td>
</tr>
<tr>
<td>Water will not maintain heat</td>
<td>• Cover is off for extended periods of time in cold weather / cold wind.&lt;br&gt;• Hot tub is wired for 110V and jets are on.</td>
<td>&gt; Put cover back onto hot tub and allow for heat to regenerate. Call your dealer if temperature does not increase.&lt;br&gt; &gt; Hot tubs wired for 110V only have enough power to heat or operate pumps. Turn off jets to power heater.</td>
</tr>
</tbody>
</table>

### Lighting Issues

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PROBABLE CAUSE</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard light will not come on</td>
<td>• Bulb has burnt out</td>
<td>&gt; Replace the light bulb</td>
</tr>
<tr>
<td>LED lighting not in sync</td>
<td>• Burnt out bulb/connection</td>
<td>&gt; Contact your dealer</td>
</tr>
<tr>
<td>LED lighting won’t come on</td>
<td>• Incorrect settings</td>
<td>&gt; Contact your dealer</td>
</tr>
</tbody>
</table>

### Pumps Will Not Prime

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PROBABLE CAUSE</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump on but no water flow</td>
<td>• Air trapped in pump&lt;br&gt;• No water in the pump&lt;br&gt;• Closed valves</td>
<td>&gt; Loosen bleed valve in skimmer&lt;br&gt; &gt; Check the fill level in the spa&lt;br&gt; &gt; Open all valves</td>
</tr>
</tbody>
</table>

### Hydrotherapy Jets

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PROBABLE CAUSE</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little to no water flowing from jets</td>
<td>• Jets turned off&lt;br&gt;• Pump not primed&lt;br&gt;• Valves are closed&lt;br&gt;• Diverter set to a different seat&lt;br&gt;• Dirty filter</td>
<td>&gt; Open jet by turning the face counter clockwise&lt;br&gt; &gt; Reset breaker to allow for the spa to prime the pump. Open bleed valve in the skimmer area&lt;br&gt; &gt; Open valves&lt;br&gt; &gt; Switch diverter&lt;br&gt; &gt; Remove and clean filter cartridge</td>
</tr>
</tbody>
</table>

### Plumbing System

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PROBABLE CAUSE</th>
<th>RECOMMENDED ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water around base of spa</td>
<td>• Loose connections&lt;br&gt;• Leak from internal fitting</td>
<td>&gt; Hand tighten all quick disconnects and fittings.&lt;br&gt; &gt; Check gaskets and o-rings&lt;br&gt; &gt; Contact your dealer</td>
</tr>
</tbody>
</table>

---
BASIC INSTALLATION AND CONFIGURATION GUIDELINES

Warning! Qualified Technician Required for Service and Installation
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 Manufacturer’s instructions.

Warning: The equipment and controls shall be located no 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.

• Disconnect the electric power before servicing. Keep access door closed.

CSA COMPLIANCE
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.
TP600 and TP400 Control Panels

Balboa Water Group Revolution Series

User Interface and Programming Reference – Standard Menus

System Model: BP1500 / BP1600 - Other BP-Series Systems as required.
Software Version: 7.0 and later
Panel Model: TP600 Series
Software Version: 2.3 or later
TP400 Series
Software Version: 2.4 or later
Main Menus

Navigation

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

Some panels have separate **WARM** (Up) and **COOL** (Down) buttons, while others have a single **Temperature** button. In the navigation diagrams Temperature buttons are indicated by a single button icon. Panels that have two Temperature buttons (Warm and Cool) can use both of them to simplify navigation and programming where a single Temperature icon is shown.

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

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

The menus can be exited with certain button presses. Simply waiting for several seconds will return the panel operation to normal.

**Power-up Screens**

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

After the startup sequence of numbers, the system will enter Priming Mode (See Page 3).

Waiting Several Seconds in the Main Menu will allow the display to revert to the Main Screen. Most changes are not saved unless Light is pressed. Refer to Key above.

**Key**

- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- A temperature button, used for “Action”
- Light or dedicated “Choose” button, depending on control panel configuration
- Waiting time that keeps the last change to a menu item.
- Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5883459, 6253227, 6282370, 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.
Preparation and Filling

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

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

Priming Mode – M019*

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

Regardless of whether the priming mode ends automatically or you manually exit the priming mode, the system will automatically return to normal heating and filtering at the end of the priming mode. During the priming mode, the heater is disabled to allow the priming process to be completed without the possibility of energizing the heater under low-flow or no-flow conditions. Nothing comes on automatically, but the pump(s) can be energized by pushing the “Jet” buttons. If the spa has a Circ Pump, it can be activated by pressing the “Light” button during Priming Mode.

Priming the Pumps

As soon as the above display appears on the panel, push the “Jet” button once to start Pump 1 in low-speed and then again to switch to high-speed. Also, push the Pump 2 or “Aux” button, if you have a 2nd pump, to turn it on. The pumps will now be running in high-speed to facilitate priming. If the pumps have not primed after 2 minutes, and water is not flowing from the jets in the spa, do not allow the pumps to continue to run. Turn off the pumps and repeat the process.

Note: Turning the power off and back on again will initiate a new pump priming session. Sometimes momentarily turning the pump off and on will help it to prime. Do not do this more than 5 times. If the pump(s) will not prime, shut off the power to the spa and 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 pressing a “Temp” button (Up or Down). Note that if you do not manually exit the priming mode as described above, the priming mode will be automatically terminated after 4-5 minutes. Be sure that the pump(s) have been primed by this time.

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

*M019 is a Message Code. See Page 15.
Spa Behavior

Pumps
Press the “Jets 1” button once to turn pump 1 on or off, and to shift between low- and high-speeds if equipped. If left running, the pump will turn off after a time-out period. The pump 1 low-speed will time out after 30 minutes. The high-speed will time out after 15 minutes.

On non-circ systems, the low-speed of pump 1 runs when 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.

Filtration and Ozone
On non-circ systems, Pump 1 low and the ozone generator will run during filtration. On circ systems, the ozone will run with the circ pump.

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 blower (if there is one) or Pump 2 (if there is one) will run briefly to purge its plumbing to maintain good water quality.

Freeze Protection
If the temperature sensors within the heater detect a low enough temperature, then the pump(s) and the blower automatically activate to provide freeze protection. The pump(s) and blower 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 12)
Temperature and Temp Range

Adjusting the Set Temperature

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

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

Press-and-Hold

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

Dual Temperature Ranges

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

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

For example:

High Range might be set between 80°F and 104°F.
Low Range might 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.
See Ready and Rest on Page 6 for additional heating control information.

Key

- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
○ A temperature button, used for "Action"
○ Light or dedicated "Choose" button, depending on control panel configuration
***** Waiting time that keeps the last change to a menu item.
****** Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

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Mode – Ready and Rest

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

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

If the heater pump is a 2-Speed Pump 1, READY Mode will circulate water every 1/2 hour, using Pump 1 Low, in order to maintain a constant water temperature, heat as needed, and refresh the temperature display. This is known as “polling.” REST Mode will only allow heating during programmed filter cycles. Since polling does not occur, the temperature display may not show a current temperature until the heater pump has been running for a minute or two.

Circulation Mode (See Page 4, 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 Jet 1 is pressed. It is assumed that the spa is being used and will heat to set temperature. While Pump 1 High can be turned on and off, Pump 1 Low will run until set temperature is reached, or 1 hour has passed. After 1 hour, the System will revert to Rest Mode. This mode can also be reset by entering the Mode Menu and changing the Mode.
Show and Set Time-of-Day

Be sure to set the Time-of-Day

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

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

24-hour time display can be set under the PREF menu. (See Page 10)

Note:

If power is interrupted to the system, Time-of-Day is not stored. The system will still operate and all other user settings will be stored. If filter cycles are required to run at a particular time of day, resetting the clock will return the filter times to the actual programmed periods.

When the system starts up, it defaults to 12:00 Noon, so another way to get filter times back to normal is to start up the spa at noon on any given day. SET TIME will still flash in the TIME Menu until the time is actually set, but since the spa started at noon, the filter cycles will run as programmed.

Flip (Invert Display)

Note:

Some panels may have a dedicated FLIP button, which allows the user to flip the display with a single 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 Temperature allows Jets and other features to be used, but the Set Temperature and other programmed settings cannot be adjusted.

Temperature Lock allows access to a reduced selection of menu items. These include Set Temperature, FLIP, LOCK, UTIL, INFO and FALT LOG.

Unlocking

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

NOTE: If the panel has both an UP and a Down button, the ONLY button that will work in the Unlock Sequence is the UP button.
Hold (Standby)

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.

Drain Mode

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

Key

- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- A temperature button, used for “Action”
- Light or dedicated “Choose” button, depending on control panel configuration

***** Waiting time that keeps the last change to a menu item.

********* Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Hold Mode – M037*

M037 is a Message Code. See Page 15.
Adjusting Filtration

Main Filtration

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

Key
- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- A temperature button, used for “Action”
- Light or dedicated “Choose” button, depending on control panel configuration
- Waiting time that keeps the last change to a menu item.
- Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.
- Waiting several seconds reverts to Original Setting

Filter Cycle 2 - Optional Filtration

Filter Cycle 2 is OFF by default.

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

Purge Cycles

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

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

Light Timer Option

If LITE TIMR does not appear in the Main Menu, the Light Timer feature is not enabled by the manufacturer. When available, the Light Timer is OFF by default.

![Diagram of Light Timer Programming](image)

Key
- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- Light or dedicated "Choose" button, depending on control panel configuration
- Waiting time that keeps the last change to a menu item.
- Waiting time (depends on menu item) that reverts to original setting and ignores any change to that menu item.

Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

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.
Preferences

F / C (Temp Display)
Change the temperature between Fahrenheit and Celsius.

12 / 24 (Time Display)
Change the clock between 12 hr and 24 hr display.

RE-MIN-DERS (Reminders)
Turn the reminder messages (like “Clean Filter”) On or Off.

CLN-UP (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.

DOL-PHIN AD-DRES (Dolphin II and Dolphin III) Applies to RF Dolphin only. (This message may not appear depending on the configuration)
When set to 0, no addressing is used. Use this setting for a Dolphin Remote 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.)
Preferences

Main Screen

- **F/C**
  - Press Light for toggle °F and °C.

- **24-12**
  - Press Light for toggle 12-hour clock and 24-hour clock.

- **RE-- MIN--**
  - Press Light for toggle Yes and No.

- **CLN-- UP**
  - Only if Cleanup Cycle is enabled.

- **IOI-- PHIN**
  - RF Dolphin only.

- **PREF**
  - To show first item in Preferences menu (F/C).
  - OR
  - Wait Several Seconds to Return to Main Screen.

To Set

- **SET**
  - To Set Range
  - To Set number of hours (0-4).
  - To Set address numbers for Dolphin II or Dolphin III (0-7).

Wait to Revert

- ****
  - Indicates a Menu Item that Depends on a Manufacturer Configuration and may or may not appear.

Key

- Indicates Flashing or Changing Segment
- Indicates Alternating or Progressive Message - every 1/2 second
- A temperature button, used for “Action”
- Light or dedicated “Choose” button, depending on control panel configuration
- Wait Several Seconds to Return to Main Screen
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Utilities and Information

INFO (System Information sub-menu)
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.

SSID (Software ID)
Displays the software ID number for the System.

MODL (System Model)
Displays the Model Number of the System.

SETP (Current Setup)
Displays the currently selected Configuration Setup Number.

SIG (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).

H _ (Heater Type)
Displays a heater type ID number.

SW _ (Dip Switch Settings)
Displays a number that represents the DIP switch positions of S1 on the main circuit board.

PANL (Panel Version)
Displays a number of the software in the topside control panel.
Additional Utilities

Utilities
In addition to INFO, The Utilities Menu contains the following:

GFCI  (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 17)

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

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

DEMO  (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.
Utilities

Main Screen

While the Temperature is still flashing, press Light repeatedly until UTIL (Utilities) appears in the LCD.

SET RANGE

Main Screen

Ready RANGE FLTR1

DIP Switch Settings

GFCI

Displays GFCI Test Menu

OFF

Displays Fault Log

ON

See Page 17

Only if GFCI is enabled

When set to ON, Panel will display alternate readings from Sensor A and Sensor B on Main Screen

Displays a Menu Item that depends on a Manufacturer Configuration and may or may not appear.

A/B

Displays a Menu Item that depends on a Manufacturer Configuration and may or may not appear.

FALT LOG

See Page 18

Only if DEMO Mode is enabled

Waiting 10 seconds will allow the screen to return to normal operation.
Utilities – GFCI Test Feature

Not Available on CE Rated Systems.

A GFCI is an important safety device and is required equipment on a hot tub installation.

Your spa may be equipped with a GFCI Protection feature. (UL rated systems only.) 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

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.

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

Warning:

If freezing conditions exist, a GFCI should be reset immediately or spa damage could result. The end user should always trained to test and reset the GFCI on a regular basis.
A Little History can tell a lot

The Fault Log stores up to 24 events in memory and they can be reviewed under the Fault Log Menu.

Each event captures a Fault Message Code, how many days have passed since the fault, Time of the fault, Set Temperature during the fault, and Sensor A and B temperatures during the fault.

Utilities – Fault Log

To FIRST item in Main Menu (TEMP Range)

While the Temperature is still flashing, press Light repeatedly until UTIL (Utilities) appears in the LCD.

Press Light repeatedly until FAULT LOG appears in the LCD.

The Fault Log is also available from the Test Menu (in Test Mode).

Waiting several seconds inside the Fault Log Menu will allow the screen to return to normal operation.

See following pages for various Message Codes and definitions.
General Messages

**READY RANGE FLTR1**

**Water Temperature is Unknown**

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

**Too Cold - Freeze Protection**

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

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

This is an operational message, not an error indication.

**Water is too Hot (OHS) – M029**

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

**Safety Trip - Pump Suction Blockage* – M033**

The Safety Trip error message indicates that the vacuum switch has closed. This occurs when there has been a suction problem or a possible entrapment situation avoided. (Note: not all spas have this feature.)

M0XX numbers are Message Codes. See Page 15.

* This message can be reset from the topside panel with any button press.
### Heater-Related Messages

<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTR FLOW LOSS -------</td>
<td><strong>Heater Flow is Reduced (HFL) – M016</strong></td>
<td>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.</td>
</tr>
<tr>
<td>HTR FLOW FAIL -------</td>
<td><em><em>Heater Flow is Reduced (LF)</em> – M017</em>*</td>
<td>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.</td>
</tr>
<tr>
<td>HTR MAY BE IRY ------- WAIT -------</td>
<td><em><em>Heater may be Dry (dr)</em> – M028</em>*</td>
<td>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.</td>
</tr>
<tr>
<td>HTR IRY -------</td>
<td><em><em>Heater is Dry</em> – M027</em>*</td>
<td>There is not enough water in the heater to start it. The spa is shut down. After the problem has been resolved, you must press any button to reset and restart heater start up. See “Flow Related Checks” below.</td>
</tr>
<tr>
<td>HTR TOO HOT -------</td>
<td><em><em>Heater is too Hot (OHH)</em> – M030</em>*</td>
<td>One of the water temp sensors has detected 118°F (47.8°C) in the heater and the spa is shut down. You must press any button to reset when water is below 108°F (42.2°C). See “Flow Related Checks” below.</td>
</tr>
</tbody>
</table>

*A Reset Message may Appear with other Messages.*

Some errors may require power to be removed and restored.

### Flow-Related Checks

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

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

* This message can be reset from the topside panel with any button press.
Sensor-Related Messages

Sensor Balance is Poor – M015
The temperature sensors MAY be out of sync by 2°F or 3°F. Call for Service.

Sensor Balance is Poor* – M026
The temperature sensors ARE out of sync. The Sensor Balance is Poor fault has been established for at least 1 hour. Call for Service.

Sensor Failure – Sensor A: M031, Sensor B: M032
A temperature sensor or sensor circuit has failed. Call for Service.

Miscellaneous Messages

No Communications
The control panel is not receiving communication from the System. Call for Service.

Pre-Production Software
The Control System is operating with test software. Call for Service.

°F or °C is replaced by °T
The Control System is in Test Mode. Call for Service.

* This message can be reset from the topside panel with any button press.
System-Related Messages

**Memory Failure - Checksum Error** – 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.

**Memory Warning - Persistent Memory Reset** – M021

Appears after any system setup change. Contact your dealer or service organization if this message appears on more than one power-up, or if it appears after the system has been running normally for a period of time.

**Memory Failure - Clock Error** – M020 - Not Applicable on the BP1500

Contact your dealer or service organization.

**Configuration Error – Spa will not Start Up**

Contact your dealer or service organization.

**GFCI Failure - System Could Not Test/Trip the GFCI – M036**

NORTH AMERICA ONLY. May indicate an unsafe installation. Contact your dealer or service organization.

**A Pump Appears to be Stuck ON – M034**

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

**A Pump Appears to have been Stuck ON when spa was last powered – M035**

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

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

General maintenance helps.
Reminder Messages can be suppressed by using the PREM Menu. See Page 11.
Reminder Messages can be chosen individually by the Manufacturer. They may be disabled entirely, or there may be a limited number of reminders on a specific model.
The frequency of each reminder (i.e. 7 days) can be specified by the Manufacturer.
Press a Temperature button to reset a displayed reminder message.

Appears on a regular schedule, e.g. every 7 days.
Check pH with a test kit and adjust pH with the appropriate chemicals.

Appears on a regular schedule, e.g. every 7 days.
Check sanitizer level and other water chemistry with a test kit and adjust with the appropriate chemicals.

Appears on a regular schedule, e.g. every 30 days.
Clean the filter media as instructed by the manufacturer. See HOLD on page 6.

Warning:
If freezing conditions exist, a GFCI or RCD should be reset immediately or spa damage could result.
The end user should always trained to test and reset the GFCI or RCD on a regular basis.
Reminder Messages Continued

**CHNG WATR**
Alternates with temperature or normal display.

**Appears on a regular schedule, e.g. every 90 days.**
Change the water in the spa on regular basis to maintain proper chemical balance and sanitary conditions.

**CLN COVR**
Alternates with temperature or normal display.

**Appears on a regular schedule, e.g. every 180 days.**
Vinyl covers should be cleaned and conditioned for maximum life.

**TRT WOOD**
Alternates with temperature or normal display.

**Appears on a regular schedule, e.g. every 180 days.**
Wood skirting and furniture should be cleaned and conditioned per the manufacturers instructions for maximum life.

**CHNG FLTR**
Alternates with temperature or normal display.

**Appears on a regular schedule, e.g. every 365 days.**
Filters should be replaced occasionally to maintain proper spa function and sanitary conditions.

**CHNG CART**
Alternates with temperature or normal display.

**As needed.**
Install new mineral cartridge
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.
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 Manufacturer's 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 or residual current device 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 le bain.
- Lire la notice technique.
- Lorsque l'appareillage est installé dans une fosse, on doit assurer un drainage adequat.
- Employer uniquement a l'interieur d'une cloture CSA Enclosure 3.
- Connecter uniquement a un circuit protege par un disjoncteur differen-tiel de Class A.
- Afin d'assurer une protection permanente contre le danger de shock electrique, lors de l'entretien employer seulement des pieces de rechange identiques.
- Les prises d'aspiration doivent etre equipees de grilles convenant au debit maximal indique.

Avertissement:
- Des temperatures de l'eau superieures a 38°C peuvent presenter un danger pour la sante.
- Deconnecter du circuit d'alimentation electrique avant l'entretien.

Warning/Adverisement:
- Disconnect the electric power before servicing. Keep access door closed.
- Deconnecter du circuit d'alimentation electrique avant l'entretien. Garder la porte fermer.