

Owner's Manual

For all 2001 Bullfrog Portable Spas
(Multiple Patents with Other Patents Pending)



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IMPORTANT SAFETY INSTRUCTIONS

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

U.L. SAFETY INSTRUCTIONS:

1. READ AND FOLLOW ALL INSTRUCTIONS.

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

3. A wire connector is provided on this unit to connect a minimum No. 8 AWG (8.4 mm²) solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5 m) of the unit.

4. DANGER - Risk of Accidental Drowning. Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use this spa unless they are supervised at all times.

5. DANGER - Risk of Injury. The suction fittings in this spa are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure that the flow rates are compatible.

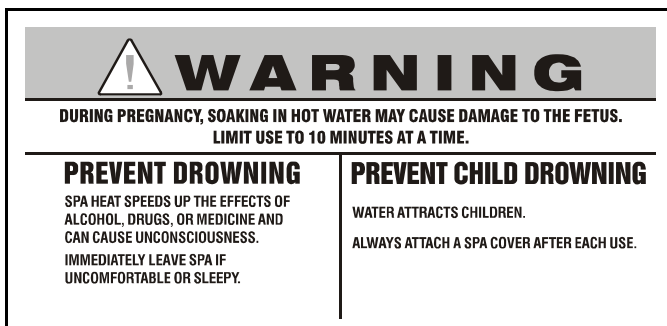
Never operate the spa if the suction fittings are broken or missing. Never replace a suction fitting with one rated less than the flow rate marked on the original suction fitting.

6. DANGER - Risk of Electric Shock. Install at least 5 feet (1.5 m) from all metal surfaces. As an alternative, a spa may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a minimum No. 8 AWG (8.4 mm²) solid copper conductor to the wire connector on the terminal box that is provided for this purpose.

7. DANGER - Risk of Electric Shock. Do not permit any electric appliance, such as a light, telephone, radio, or television, within 5 feet (1.5 m) of a spa. (These units DO NOT have an integral ground fault circuit interrupter. The installation of a integral ground fault circuit interrupter MUST be done by a qualified Electrician and must meet all local and national codes.)

8. WARNING - To reduce the risk of injury:

- a) The water in a spa should never exceed 40°C (104°F). Water temperatures between 38°C (100°F) and 40°C are considered safe for a healthy adult. Lower water temperatures are recommended for young children and when spa use exceeds 10 minutes. (Before entering the spa or hot tub measure the temperature with an accurate thermometer.)
- b) Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit spa water temperatures to 38°C (100°F).
- c) Before entering a spa, the user should measure the water temperature with an accurate thermometer since the tolerance of water temperature-regulating devices varies.
- d) The use of alcohol, drugs, or medication before or during spa use may lead to unconsciousness with the possibility of drowning.
- e) Persons suffering from obesity or with a medical history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a spa.
- f) Persons using medication should consult a physician before using a spa since some medication may induce drowsiness while other medication may affect heart rate, blood pressure and circulation.



(Figure A) Warning Sign

SAVE THESE INSTRUCTIONS.

WARNING SIGN

Included with this spa is a warning sign (Fig. A) to inform occasional users and guests of the risk of using the spa. This warning sign is suitable for indoor or outdoor use. Place this warning sign in a conspicuous place adjacent to the spa. For free extra copies call Bullfrog International, L.C. at (801) 565-8111.

ADDITIONAL SAFETY INSTRUCTIONS:

1. WARNING - Risk of Fatal Hyperthermia.

a) The use of alcohol, drugs, or medication can greatly increase the risk of fatal Hyperthermia in spas and hot tubs.

b) The causes, symptoms, and effects of Hyperthermia may be described as follows:

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 37°C (98.6°F). The symptoms of Hyperthermia include an increase in the internal temperature of the body, dizziness, lethargy, drowsiness, and fainting. The effects of Hyperthermia include:

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

2. WARNING - Risk to Infants, the Elderly, and Women Planning or Experiencing Pregnancy.

Please consult your physician if the above applies to you or anyone using your spa.

3. WARNING - Risk of Children Drowning.

Although your spa cover is not rated as a safety cover, it is wise to always keep the spa cover securely fastened when not in use. This will help discourage children from attempting to enter the spa while not supervised by an adult.

4. WARNING - Risk of Drowning. Use caution when bathing alone. Overexposure to hot water may cause nausea, dizziness, and fainting.

5. WARNING - Risk of Injury. Always use extreme caution while entering or exiting the spa. Surfaces can be very slippery when wet. Do not step or sit on HeadRests. Also, keep all breakable objects out of the spa area.

6. WARNING - Risk of Injury. Never use the spa immediately after strenuous exercise.

7. WARNING - Risk of Injury. Prolonged use of the spa may be injurious to your health.

8. WARNING - Risk of Injury. Individuals with infectious diseases should not use the spa.

9. WARNING - Risk of Injury. Short term inhalation of high concentrations of ozone and long term inhalations of low concentrations of

ozone can cause serious physiological effects. Do not inhale ozone gas produced by your spa's Ozone Sterilizer.

10. WARNING - Risk of Injury. Maintain water chemistry in accordance with chemical manufacturer's instructions.

11. WARNING - Risk of Shock. Spa shall not be operated in severe weather conditions, i.e. electrical storms, tornadoes, etc.

12. CAUTION - Unauthorized Access. Secure the spa area against unauthorized access. Make sure all barriers meet both state and local codes. Keep spa cover on spa when spa is not being used.

13. CAUTION - Risk of Damage to Spa or Equipment. By performing maintenance as described later in this Owner's Manual, the chance of damage to your spa and it's equipment will be greatly reduced. Never block the air vents that lead to the spa equipment compartment. Doing so may cause the spa equipment to overheat.

14. CAUTION - Non-Approved Accessories. Using accessories not approved by Bullfrog International, L.C. could void your warranty or cause other problems. Please consult with your authorized Bullfrog Portable Spa Dealer.

15. CAUTION - Location of Your Spa. Locate your spa on a surface that can withstand the weight bearing requirements of the spa (see "Selecting a Site for your Spa" in this Manual). Also, locate your spa in an environment that can withstand repeated exposure to water and the possibility of a major spill.

UPGRADING YOUR BULLFROG SPA

The following are possible upgrades for your Bullfrog Spa:

New JetPak™ designs: As new jet types and styles become available so will new innovative JetPak modules (Fig. B). Check with your authorized Bullfrog Spa Dealer on a yearly basis to see what's available.

PowerPlus™: When you're ready for more horsepower and more jets, just call your authorized Bullfrog Spa Dealer and ask for PowerPlus.

WellSpring™ Ozone Sterilizer: For cleaner spa water, we use the most simple, reliable, user-friendly, affordable ozone system on the market. If your spa did not come with one, it's well worth the investment.

IMPORTANT: Your spa was designed, tested, and UL Listed with a Bullfrog CDS-16 Ozone Sterilizer. No other Ozone Sterilizer is recommended for your Bullfrog Portable Spa.

Fiber Optic Lighting System: This unique lighting system offers three colors of lighting that change from one color to another automatically.

CoverMate-I Cover Lifter: Take the work out of uncovering and covering your spa — let Bullfrog's cover lifter do the job for you with next to no effort. And, while you are using your spa, the Cover Lifter neatly stores your cover behind the spa.

Automatic pH Sensor: Save time by having Bullfrog's Automatic pH Sensor test your spa water's pH for you (only available with the Limited Control System).

Miscellaneous Upgrades: For upgrades as they become available, keep in touch with your authorized Bullfrog Spa Dealer.



(Figure B) Several JetPak™ Variations

INSTALLATION & SET-UP

Before attempting to install or use your spa, please read the U.L. Safety Instructions, the Additional Safety Instructions, as well as all of the Installation Instructions that follow:

SELECTING A SITE FOR YOUR SPA:

Your Bullfrog Spa was designed for either indoor or outdoor use. Whether indoors or outdoors, please adhere to the following guidelines:

1. Select a site that is stable and capable of supporting the weight of your spa, its water, and the people using it (refer to the "Model Brochure" or contact an authorized Bullfrog Spa Dealer for the Filled Weight of your spa). If installed on a suspended floor/deck, the floor/deck should be capable of supporting your spa. If you have concerns on this matter, please contact a qualified Licensed Contractor.
2. Select a surface that is flat and reasonably level. This surface must provide continuous support for the entire bottom of the spa. Do not shim or block up the spa.

creating voids below the spa.

3. Avoid installing the spa in a pit or low area where water may accumulate and damage the spa or its equipment. Choose a site where water will drain away from the spa and not towards it.

4. Important: With all installations, the spa must be located at least 5 feet from all electrical outlets, switches, and other permanently installed electrical devices.

Indoor Considerations: There are several considerations when installing your spa indoors: First, the environment both around and below the spa should be water resistant. It must be capable of handling water splashed out from the spa as well as the possibility of a leak from the spa (Your Bullfrog portable spa is the most leak-free spa in the industry, but there is still the possibility of a leak from the spa. A catch basin equivalent to the volume of your spa is recommended); Second, it is recommended that the room you install the spa in has proper ventilation. Proper ventilation can usually be achieved by an exhaust fan or an open window.

Note: Typical indoor surfaces include, but are not limited to: concrete, wood, non-slip tile, or linoleum.

Outdoor Considerations: When selecting an outdoor site, several things should be considered: First, Avoid selecting a site where excessive water may contact the spa, such as from sprinklers or a roof edge without rain gutters; Second, and if possible, avoid areas of direct, prolonged sunlight. The ultraviolet rays of sunlight will tend to fade and damage your spa cover and cabinet; Third, Check your local codes on possible restrictions that require fencing or childproof gates around your spa; Last, avoid locating your spa in an area where debris will be tracked into the spa.

Note: Typical outdoor surfaces include, but are not limited to: concrete, brick, non-slip tile, wood-decking, peagravel or sand.

ELECTRICAL REQUIREMENTS & HOOK-UP

All Bullfrog Portable Spas must be wired in accordance with all local & national electric codes. Have a licensed electrician perform the electrical installation.

Important: All metal enclosures, pipe or conduit located within 5 feet (1.5m) of the spa must be bonded to the Control Center Box located inside the equipment compartment of the spa. The wire used to complete this bonding must be a minimum No. 8 (8.4mm²) solid copper wire. It is to be connected to the ground lug connector on the exterior surface of the Control Center Box and all metal items described above.

WIRING DIAGRAMS

Please reference the wiring diagram that is specific to your spa's Control System:

- Standard Control System/BULF65 (Fig. C)
- Deluxe Control System/BULF70 (Fig. D)
- Limited Control System/BULF75(Fig. E)

120V/240V CONVERTIBLE EQUIPMENT

Unless you special ordered 120 Volt equipment, your Bullfrog Portable Spa comes standard as a 240 Volt spa.

If your spa is equipped with a Standard Control System (BULF65), it can be wired as either a dedicated 120V or 240V system.

With the 120 Volt Standard Control System, you can take advantage of the Bullfrog PowerPlus feature by upgrading your 120V system to a more powerful 240V system. The 240V system allows you to increase horsepower as well as heating capacity.

For specific conversion instructions, please refer to the system wiring diagram locating inside of the control system box.

120 VOLT INSTALLATION

Use only a qualified Licensed Electrician to make 120 Volt electrical installations.

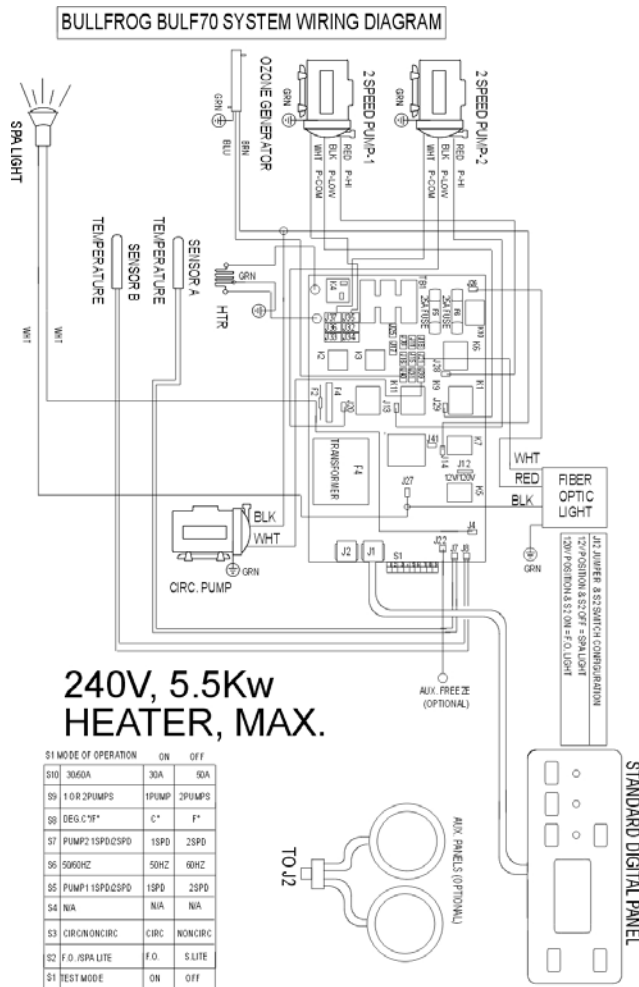
Your 120 Volt spa requires a dedicated GFCI 20 AMP electrical circuit and a minimum supply wire size of 12 gauge. It is important that this circuit is dedicated (not being used by any other electrical appliance) or your spa may not function properly.

Position your Bullfrog Portable Spa at least 5 feet (1.5m) from all electrical outlets or devices.

240 VOLT INSTALLATION

Use only a qualified Licensed Electrician to make 240 Volt electrical installations.

(Figure C) Standard 120V/240V Wiring Diagram



(Figure D) Deluxe 240V Wiring Diagram

Your 240 Volt Bullfrog Portable Spa requires a dedicated 50 AMP electrical circuit and a minimum supply wire size of 6 gauge. It is important that this circuit is dedicated (not being used by any other electrical appliance) or your spa may not function properly.

Position your Bullfrog Portable Spa at least 5 feet (1.5m) from all electrical outlets or devices.

30 AMP Conversion Option: If you do not have 50 AMPS of electrical service available, your authorized Bullfrog Portable Spa Dealer or electrician can easily convert your spa to operate on 30 AMPS with a minimum supply wire size of 10 gauge. Please be aware, that spas converted to 30 AMPS are only capable of heating the water when the circulation pump is in low-speed, not high-speed. This heating limitation is acceptable in most climates as well as in indoor installations.

ELECTRICIAN'S INSTRUCTIONS:

NOTICE: As of January 1, 1994, the National Electric Code (Article 680-42) requires that all spas, hot tubs, and associated electrical components shall be protected by Ground Fault Circuit Interrupters.

Providing 120 Volt Service to the Bullfrog Portable Spa: As per code, supply a GFCI protected, 3-wire (Line 1, Neutral & Ground), 20-AMP, 60HZ, Single-Phase service to the front, left corner (when you are facing the control pad) of the Bullfrog Portable Spa. This service must include a disconnect that is visible from the spa and located not less than five feet from the spa and not more than 50 feet from the spa (a GFCI Sub-Panel may be used to substitute the disconnect if located within the same parameters).

Providing 240 Volt Service to the Bullfrog Portable Spa: As per code, supply a GFCI protected, 4-wire (Line 1, Line 2, Neutral & Ground), 50-AMP, 60HZ, Single-Phase service to the front, left corner (when you are facing the control pad) of the Bullfrog Portable Spa. This service must include a disconnect that is visible from the spa and located not less than five feet from the spa and not more than 50 feet from the spa (a GFCI Sub-Panel may be used to substitute the disconnect if located within the same parameters).

Installation of the GFCI: All conductors except the green ground must be routed through the GFCI, including the neutral. Never bypass the neutral line. If the neutral line is bypassed, then the current will be imbalanced and cause the GFCI to trip.

Note: For a GFCI wiring diagram, please contact Bullfrog International, L.C. or an authorized Bullfrog Portable Spa Dealer.

Connecting the Spa:

1. Remove the equipment compartment door.
2. Remove the face-plate to the Control Center by

removing the four screws located in the front.

3. Connect a 1" non-metallic coupling and conduit to the 1" male CPVC pipe found at the base of the spa cabinet (see "Parts Identification Diagram" in this manual).

4. Run the required wires through the conduit and to the Control Center.

5. Connect the 3 wires (120V systems)/4 wires (240V systems) to the terminal block located in the Control Center (see appropriate "Wiring Diagram").

6. Replace the Control Center face-plate and the equipment compartment door.

7. The electrical hook-up is complete.

Important: Do not fill or start-up the spa until you have completed the following section.

(Figure E) Limited 240V Wiring Diagram



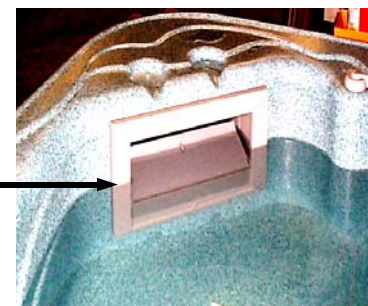
(Figure F) Drain Cap



(Figure G) Spa Fittings



(Figure H) Valve Keeper



(Figure I) Fill Level Indication Mark

CHECKLIST BEFORE FILLING YOUR SPA

Important: The equipment should never be operated without water in the spa. Serious damage to the pump and/or heater may occur.

❑ **1. Installing Your Cover:** Your spa cover comes with tie-down straps and locking hardware to attach the cover to the spa or decking. If your Dealer did not install your cover, then refer to Cover Installation Instructions that come in the cover cardboard packaging.

❑ **2. Check Drain-Cap:** At the end of the drain hose (located in the Equipment Compartment) is the Drain-Cap (Fig. F) Make sure it is securely fastened to the end of the drain hose.

❑ **3. Tighten Equipment Fittings:** In the equipment compartment, hand-tighten all PVC Pipe Unions and Pump Drain Plugs (Fig. G) to prevent the possibility of leakage (sometimes these fittings loosen during shipment).

❑ **4. Check Valve Keepers:** Verify that a Valve Keeper (Fig. H) is installed on each slice valve. Valve keepers prevent the valve from vibrating shut during shipment or operation. A slice valve that closes will result in a noisy pump due to a lack of water flow to the pump.

❑ **5. Fill the Spa:** Fill the spa to approximately the Water Level mark (Fig. I) on the back wall of the filter/skimmer cavity (See Note 1).

Note 1: The higher the water level, the less spa users it will take to cause the water to overflow the top of the spa.

Note 2: Do not fill the spa with soft water unless the mineral content is raised immediately (see your Dealer).

❑ **5. Check for Leaks:** After the spa is full, but before turning the power on, check all the fittings and equipment in the equipment compartment for signs of leakage. If a leak is detected, except from fittings that can be hand-tightened, call your authorized Bullfrog Spa Dealer.

INITIAL START-UP

Important: Bullfrog Spas come with either an *Standard*, *Deluxe*, or *Limited* Control System. Refer only to the Control System that applies to your spa.

STANDARD CONTROL SYSTEM:

When your spa is first activated, it will go into Priming mode, indicated by “*Pr*” on the display. The Priming mode will last for less than 5 minutes and then the spa will begin normal operation in Standard Mode. By default, the spa will begin to heat until it reaches the start-up temperature of 100°F.

DELUXE CONTROL SYSTEM:

When your spa is first activated, it will go into Priming mode, indicated by “*Pr*” on the display. The Priming mode will last for less than 5 minutes and then the spa will begin normal operation in Standard Mode. For the first one minute, “—*F*” will appear on the display while the system is sensing the water temperature. By default, the spa will begin to heat until it reaches the start-up temperature of 100°F.

Note: The Priming Mode can be accelerated by pressing the “Jets 1” button and then the “Warm or Cool” button.

LIMITED CONTROL SYSTEM:

When your spa is first actuated, it will go into Priming mode. Please see the M-7 Installation Instruction Manual for complete instructions on Power-up and Pump Priming. The Priming mode will last for less than 5 minutes and then the spa will begin to heat the spa and maintain the water temperature in the Standard mode

CONTROL SYSTEM OPERATION

Important: Bullfrog Spas come with either an *Standard*, *Deluxe* or *Limited* Control System. Please refer only to the Control System that applies to your spa.

WARNING: This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instruction, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a class B computing device in accordance with the specifications in subpart J of part 15 of the FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient the receiving antenna. Relocate the receiver with respect to the spa. Move the receiver away from the spa. Plug the receiver into a different outlet so that the receiver and spa are on different branch circuits. If necessary, the users should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to identify and resolve radio-TV interference problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.



(Figure J) Standard Control Pad



(Figure K) Standard+ Control Pad

STANDARD CONTROL SYSTEM

MASTER CONTROL PAD (Figures J/K)

Temp Set (80°F - 104°F)

The start-up temperature is set at 100°F. The last measured temperature is constantly displayed on the LED. **Note that the last measured spa temperature displayed is current only when pump 1 ("Jets 1") has been running for at least 2 minutes.**

Press the "Temp Set" button to display and adjust the set temperature. After three seconds, the LED will automatically display the last measured temperature.

Jets 1

Touch the "Jets 1" button once to activate the low speed of pump 1 and again for the high speed. Press the "Jets 1" button again to turn off pump 1. If left running, the pump's low speed will automatically turn off after 2 hours, and the pump's high speed will automatically turn off after 30 minutes. The pump's low speed runs when the spa is heating, when a filter cycle is activated, or when a freezing condition is detected. If the pump's low speed is on under Automatic Spa Control, it can only be deactivated by entering the Standby Mode.

Jets 2

Touch the "Jets 2" button once to activate the low speed of pump 2 and again for the high speed. Press the "Jets 2" button again to turn off pump 2. If left running, the pump's low and high speeds will automatically turn off after 30 minutes.

Note: Either pump can also be activated by an optional auxiliary control button (if installed) (Fig. K1)

Light

Press the “Light” button to turn the light on and off. If left on, the light automatically turns off after 4 hours.

Mode

Press “Temp Set”, then “Jets 2” (or “Aux”) to switch between Standard, Economy, and Sleep Modes.

Standard Mode is programmed to maintain the desired temperature. Note: the last measured spa temperature displayed is current only when pump 1 has been running for at least 2 minutes. “St” will be displayed momentarily when you switch into standard mode.

Economy Mode heats the spa to the set temperature only during filter cycles. “Ec” will display solid when temperature is not current, and will alternate with temperature when temperature is current.

Sleep Mode heats the spa to within 20°F of the set temperature only during filter cycles. “SL” will display solid when temperature is not current, and will alternate with temperature when temperature is current.

Preset Filter Cycles

The first filter cycle begins 6 minutes after the spa is energized. The second filter cycle begins 12 hours later. Filter duration is programmable at the Master Control Pad for 2, 4, or 6 hours. The default filter time is 4 hours. To program, press “Temp Set”, then “Jets1.” Press “Temp Set” to adjust. Press “Jets 1” to exit programming.

Pump 2 purges for 5 minutes at the beginning of each filter cycle. The low speed of pump 1 runs during filtration and the ozone sterilizer (if installed) will be enabled. If any button is pressed during filtering, the ozone sterilizer (if installed) will be disabled for 60 minutes.

Temperature Display Inversion

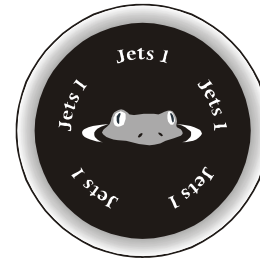
Press the “Temp Set” button, then the “Jets 1” button to invert display. Use the same sequence to revert back to normal display.

Standby Mode

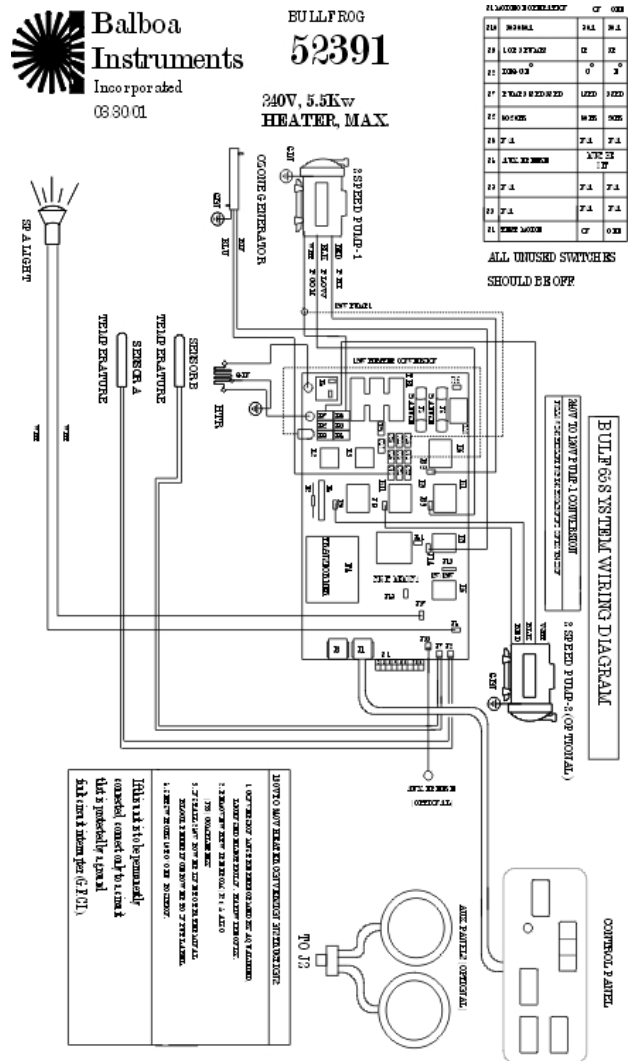
The spa can be disabled when the filter needs to be serviced or when changing/servicing a JetPak™. Press the “Temp Set” button, then the “Light” button, and the display will show “SY.” All spa functions will be disabled except for auxiliary freeze control. Press any panel button to resume spa operation.

Freeze Protection

If the temperature sensors detect a drop to 40°F within the heater, then pump 1 (and the heater if necessary) will automatically activate to provide freeze protection. The equipment stays on until the sensors detect that the spa temperature has risen to within 15°F of the set temperature. Pump 2 will purge for 1 to 2 minutes at the end of the freeze condition.



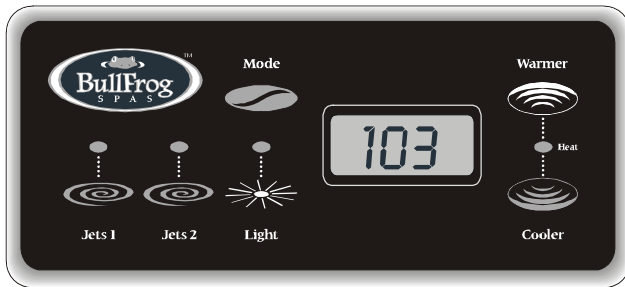
(Figure K1) Auxiliary Control Pad



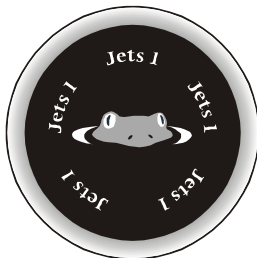
Wiring Diagram: Standard Control System



(Figure L1) Deluxe Control Pad



(Figure L2) Deluxe+ Control Pad



(Figure M) Auxiliary Control Pad

DELUXE CONTROL SYSTEM

MASTER CONTROL PAD (Fig. L)

Temp Set (80°F - 104°F)

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

Note that the last measured spa temperature displayed is current only when pump 1 (“Jets 1”) has been running for at least 2 minutes.

Press the “Warmer” or “Cooler” button to display and adjust the set temperature. After three seconds, the LCD will automatically display the last measured spa temperature.

Jets 1

Touch the “Jets 1” button once to activate the low speed of pump 1 and again for the high speed. Press the “Jets 1” button again to turn off pump 1. If left running, the pump’s low speed will automatically turn off after 2 hours, and the pump’s high speed will automatically turn off after 30 minutes. The pump’s low speed runs when the spa is heating, when a filter cycle is activated, or when a freezing condition is detected. If the pump’s low speed is on under Automatic Spa Control, it can only be deactivated by entering the Standby Mode.

Note: The Auxiliary Control Pad for “Jets 1” (optional) activates the jets in the same manner as the Master Control Pad. (Fig. M)

Jets 2

Touch the “Jets 2” button once to activate the low speed of pump 2 and again for the high speed. Press the “Jets 2” button again to turn off pump 2. If left running, the pump’s low and high speeds will automatically turn off after 30 minutes. **Note:** The Auxiliary Control Pad for “Jets 2” (optional) activates the jets in the same manner as the Master Control Pad. (Fig. M)

Light

Press the “Light” button to turn the light on and off. If left on, the light automatically turns off after 4 hours.

Mode

This button is used to switch between Standard, Economy, and Sleep Modes.

Standard Mode is programmed to maintain the desired temperature. Note: the last measured spa temperature displayed is current only when pump 1 has been running for at least 2 minutes. “*Std*” will be displayed momentarily when you switch into standard mode.

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

Sleep Mode heats the spa to within 20°F of the set temperature only during filter cycles. “*SLP*” will display solid when temperature is not current, and will alternate with temperature when temperature is current.

Preset Filter Cycles

The first filter cycle begins 6 minutes after the spa is energized. The second filter cycle begins 12 hours later. Filter duration is programmable at the Master Control Pad for 2, 4, or 6 hours. The default filter time is 4 hours. To program, press “Warmer” or “Cooler”, then “Mode.” Press “Warmer” or “Cooler” to adjust. Press “Mode” to exit programming.

Pump 2 purges for 5 minutes at the beginning of each filter cycle. The low speed of pump 1 runs during filtration and the ozone sterilizer (if installed) will be enabled. If any button is pressed during filtering, the ozone sterilizer (if installed) will be disabled for 30 minutes.

Temperature Display Inversion

Press the “Warmer” or “Cooler” button, then the “Jets 1” button to invert display. Use the same sequence to revert back to normal display.

Standby Mode

The spa can be disabled when the filter needs to be serviced or when changing/servicing a JetPak™. Press the “Warmer” or “Cooler” button, then the “Light” button, and the display will show “Stby.” All spa functions will be disabled except for auxiliary freeze control. Press any panel button to resume spa operation.

Freeze Protection

If the temperature sensors detect a drop to 40°F within the heater, then pump 1 (and the heater if necessary) will automatically activate to provide freeze protection. The equipment stays on until the sensors detect that the spa temperature has risen to within 15°F of the set temperature. The pump will purge for 30 seconds to 2 minutes at the end of the freeze condition.

DIAGNOSTIC MESSAGES:

No Message on Display: Power has been cut off to the spa.

Action Required: The control panel will be disabled until power returns. Spa settings will be preserved for 30 days with a battery back-up.

“OHH” on Display: “Overheat” - The spa has shut down. One of the sensors has detected 118°F at the heater.

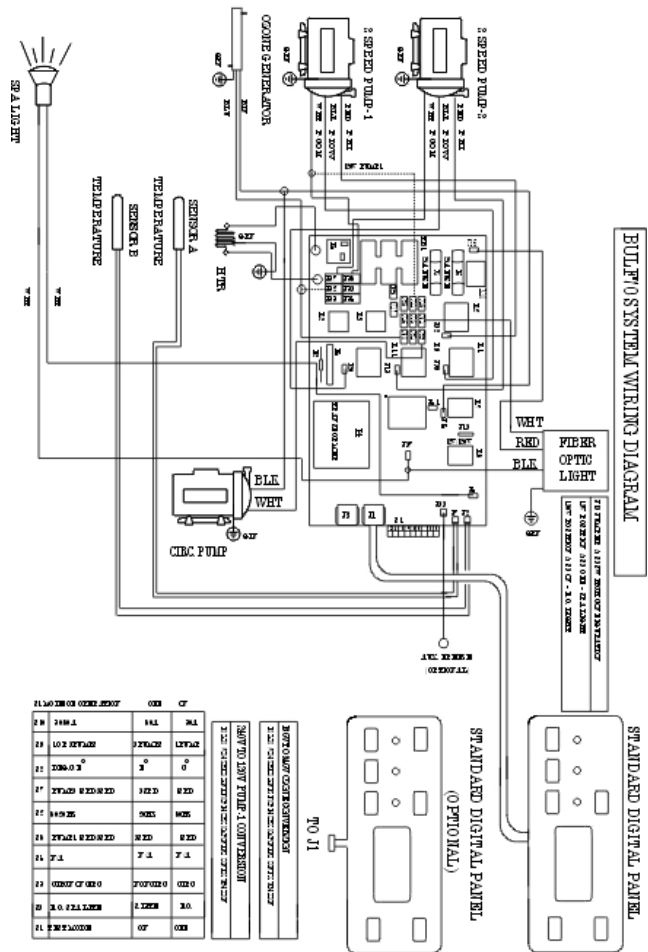
Action Required: DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by pushing any button. If spa does not reset, shut off the power to the spa and call your authorized Bullfrog Portable Spa Dealer.

“OH5” on Display: “Overheat” - The spa has shut down. One of the sensors has detected that the spa water is 110°F.

Action Required: DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F, the spa

 **Balboa Instruments**
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BULLFROG
52387
240V, 5.5Kw
HEATER, MAX.



Wiring Diagram: Deluxe Control System

should automatically reset. If spa does not reset, shut off the power to the spa and call your authorized Bullfrog Portable Spa Dealer.

“ICE” on Display: “Ice” - Auxiliary Freeze Sensor detects potential freeze condition.

Action Required: No action required. The pumps will automatically activate regardless of spa status.

“SnA” on Display: Spa is shut down. The sensor plugged into the Sensor “A” jack is not working.

Action Required: If the problem persists, contact your authorized Bullfrog Portable Spa Dealer. (May appear temporarily in an overheat situation and disappear when the heater cools.)

“SnB” on Display: Spa is shut down. The sensor that is plugged into the Sensor “B” jack is not working.

Action Required: If the problem persists, contact your authorized Bullfrog Portable Spa Dealer. (May appear temporarily in an overheat situation and disappear when the heater cools.)

“Sn5” on Display: Sensors are out of balance. If alternating with temperature, it may just be a temporary condition. If flashing by itself, spa is shut down.

Action Required: If the problem persists, contact your authorized Bullfrog Portable Spa Dealer.

“HFL” on Display: Persistent low flow problems. (Occurs on the third occurrence of the “HFL” message.) Heater is shut down, but other spa functions continue to run normally.

Action Required: Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. If problem persists, contact your authorized Bullfrog Portable Spa Dealer.

“LF” on Display: There may be greater than 5°F difference between temperature sensors. This could indicate a flow problem.

Action Required: Follow action required for “HFL” message. Turn spa off then back on again to restore heating capability.

“drY” on Display: Inadequate water detected in heater.

Action Required: Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. Press any button to reset.

“dr” on Display: Inadequate water detected in heater. (Displays on third occurrence of “dry” message.) Spa is shut down.

Action Required: Follow action required for “dry” message. Spa will not automatically reset; you may press any button to reset.

Warning! Shock Hazard! No User Serviceable Parts. Do not attempt service of this control system. Contact your authorized Bullfrog Portable Spa Dealer 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.

LIMITED CONTROL SYSTEM

MASTER CONTROL PAD (Fig. N)

Temp Set (80°F - 104°F)

The start-up temperature is set at 100°F/37.5°C. The last measured temperature is constantly displayed on the LCD. **Note that the last measured spa temperature displayed is current only when pump 1 has been running for at least 2 minutes.**

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

Time

When time hasn't been programmed, the "TIME" icon flashes. To set the time, press "Time" and follow prompts, using the "Warm" and "Cool" buttons to adjust time.

Jets 1

Press the "Jets 1" button once to turn pump 1 on or off, and to shift between low and high speeds. If left running, the low speed turns off after 4 hours and the high speed turns off after 30 minutes. The low speed of pump 1 runs when pump 2 is on. It may also activate for at least 2 minutes every 30 minutes to detect the spa temperature and then to heat to the set temperature if needed, depending upon mode. When the low speed turns on automatically, it cannot be deactivated from the panel; however, the high speed may be started.

Jets 2

Press the "Jets 2" button once to turn pump 2 on or off, and to shift between low and high speeds. If left running, the pump will turn off after 30 minutes.

Chemistry

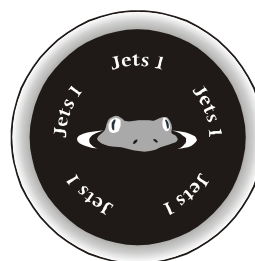
If your spa has the pH and/or Orp option, you may check the levels by pressing the "Chemistry" button. Press once to show the pH level and again to show the Orp.

Invert

Press the "Invert" button to reverse the display if you are looking at it and it appears upside down.



(Figure N) Limited Control Pad



(Figure O) Auxiliary Control Pad

Light

Press the “Light” button to turn the spa on and off, and to shift between dim and bright settings if your light is dimmable. On dim, the light LCD will show center circle plus one quarter of the light beams. Half of the light beams will show on medium brightness, and all of the light beams will show on bright. If the light is left on, it will automatically turn off after 4 hours.

Standby

Pressing “Standby” will turn off all spa functions temporarily. This is helpful when changing out a JetPak™ or a filter cartridge. Pressing any button resets the spa.

Option

The “Option” button is used to operate any equipment added to spa. Follow manufacturer’s instructions.

Aux

The “Aux” button is used to operate any equipment added to spa. Follow manufacturer’s instructions.

Mode/Prog

This button is used to switch between standard, economy, and sleep modes. Press “Mode/Prog” to select desired mode (LCD flashes until confirmed), then press “Cool” to confirm selection.

Standard Mode is programmed to maintain the desired temperature. Note that the last measured spa temperature displayed is current only when the circ pump has been running for at least 2 minutes. The “**STANDARD**” icon will display until the mode is changed.

Economy Mode heats the spa to set temperature only during filter cycles. The “**ECONOMY**” icon will display until mode is changed.

Sleep Mode heats the spa to within 15°F of the set temperature only during filter cycles. The “**SLEEP**” icon will display until mode is changed.

Preset Filter Cycles

There are two filter cycles per day. The start/end times of each cycle are programmable. To program start/end times, continue following prompts after setting time as instructed above, pressing “Mode/Prog” to advance to the next setting (or to exit after the last setting). The default filter cycles are as follows: The **first filter cycle** is automatically activated at 8:00 AM and operates the low speed of pump 1 until 10:00 AM. The LCD above the “Time” button will light when filter 1 is running. The **second filter cycle** is automatically activated at 8:00 PM and operates the low speed of pump 1 until 10:00 PM. The LCD above the “Mode/Prog” button will light when filter 2 is running.

The low speed of pump 1 and the ozone generator (if installed) will run during filtration. At the start of each filter cycle, the high speed of pump 2 will run for 5 minutes.

Wiring Diagram: Limited Control System

Freeze Protection

If the temperature sensors detect a drop to 40°F within the heater, then pump 1 (and the heater if necessary) automatically activates to provide freeze protection. The equipment stays on until the sensors detect that the spa temperature has risen to within 15°F of the set temperature. Pump 2 will purge for 30 seconds to 2 minutes at the end of the freeze condition. 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. See your dealer for details.

Locking the Panel

Press "Time" "Jets 1" then "Warm" within 3 seconds. All buttons are frozen except the time button. The LCD above the "Warm" button will light when the panel is locked.

To unlock the panel, Press "Time", "Jets 1" then "Cool."

Locking the Temperature

Press "Warm" or "Cool" then "Time" and "Up" within 3 seconds to activate the lock. The LCD above the "Cool" button will light when the temperature is locked.

To unlock the panel, press "Warm" or "Cool" then "Time" and "Cool."

DIAGNOSTIC MESSAGES:

No Message on Display: Power has been cut off to the spa.

Action Required: The control panel will be disabled until power returns. Spa settings will be preserved for 30 days with a battery back-up.

"HTR TEMP LMT" on Display: "Overheat" - The spa has shut down. One of the sensors has detected 118°F at the heater.

Action Required: DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by pushing any button. If spa does not reset, shut off the power to the spa and call your authorized Bullfrog Portable Spa Dealer.

"SPA TEMP LMT" on Display: "Overheat" - The spa has shut down. One of the sensors has detected that the spa water is 110°F.

Action Required: DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F, the spa should automatically reset. If spa does not reset, shut off the power to the spa and call your authorized Bullfrog Portable Spa Dealer.

"FREEZE COND" on Display: "Ice" - Auxiliary Freeze Sensor detects potential freeze condition.

Action Required: No action required. The pumps will automatically activate regardless of spa status.

“SENSOR A SERVICE REQ'D” on Display: Spa is shut down. The sensor that is plugged into the Sensor “A” jack is not working.

Action Required: If the problem persists, contact your authorized Bullfrog Portable Spa Dealer. (May appear temporarily in an overheat situation and disappear when the heater cools.)

“SENSOR B SERVICE REQ'D” on Display: Spa is shut down. The sensor that is plugged into the Sensor “B” jack is not working.

Action Required: If the problem persists, contact your authorized Bullfrog Portable Spa Dealer. (May appear temporarily in an overheat situation and disappear when the heater cools.)

“SENSOR SYNC” on Display: Sensors are out of balance. If by itself, it may just be a temporary condition. If it also says “SERVICE REQ'D”, spa is shut down.

Action Required: If the problem persists, contact your authorized Bullfrog Portable Spa Dealer.

“HTR FLOW LOW” on Display: A substantial difference between the temperature sensors was detected. This could indicate a flow problem.

Action Required: Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. If problem persists, contact your authorized Bullfrog Portable Spa Dealer.

“LOW FLOW” on Display: Persistent low flow problems. (Occurs on the third occurrence of the “HTR FLOW LOW” message.) Heater is shut down, but other spa functions continue to run normally.

Action Required: Follow action required for “HTR FLOW LOW” message. Turn spa off then back on again to restore heating capability.

“HEATER MAY BE DRY—WILL RETEST SHORTLY” on Display: Inadequate water detected in heater.

Action Required: Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. Press any button to reset.

“HEATER DRY SERVICE REQ'D” on Display: Inadequate water detected in heater. (Displays on third occurrence of “HEATER MAY BE DRY—WILL RETEST SHORTLY” message.) Spa is shut down.

Action Required: Follow action required for “HEATER MAY BE DRY—WILL RETEST SHORTLY” message. Spa will not automatically reset; you may press any button to reset.

“COLD WATER” on Display: “Cold Water” - Temperature sensors detect a potential freeze condition.

Action Required: No action required. Freeze protection has initiated as described above. (This message will appear for up to two minutes right after very cold water is sensed, if pump 1 was only turned on due to this reason.)

“PRIMING MODE TAKES 4 MIN” on Display:
When your spa is first actuated, it will go into Priming mode.

Action Required: See the M-7 Installation Instruction Manual for complete instructions on Power-up and Pump Priming. The Priming mode will last for less than 5 minutes and then the spa will begin to heat the spa and maintain the water temperature in the Standard mode.

“BACKUP FAIL” on Display: Internal problem detected.

Action Required: Repair required. Contact your authorized Bullfrog Portable Spa Dealer for service.

“STANDBY MODE” on Display: Standby Mode has been activated by pressing a button combination on user panel.

Action Required: Press any button to leave Standby Mode and return operation.

“PH LOW RAISE PH” on Display: pH is low.

Action Required: Add pH increaser according to manufacturer’s instructions.

“PH HIGH RAISE PH” on Display: pH is high.

Action Required: Add pH decreaser according to manufacturer’s instructions.

“SANITIZER LOW” on Display: Sanitizer is low.

Action Required: Add sanitizer according to manufacturer’s instructions.

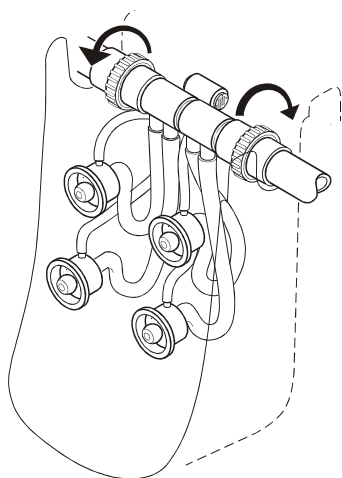
“SANITIZER HIGH” on Display: Sanitizer is high.

Action Required: Remove spa cover and allow sanitizer to dissipate.

Warning! Shock Hazard! No User Serviceable Parts.
Do not attempt service of this control system. Contact your authorized Bullfrog Portable Spa Dealer 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.



(Figure P) Removing a JetPak



(Figure Q) JetPak Unions

JetPaks™

Depending on the model, your Bullfrog Spa is equipped with either one, two, or all three of the following JetPak types:

- Bucket JetPaks
- Recliner JetPaks
- Lounger JetPaks

The difference in these three types of JetPaks is the contour of the backrest. Because the Jet-Pak contours are different, they can only be interchanged with JetPaks of their same type (Example: You can interchange a Bucket Seat JetPak with any other Bucket Seat JetPak, but you cannot interchange it with either a Recliner or a Lounger JetPak.

To identify a type of JetPak, locate the JetPak Identification Number found on the back side of the JetPak (example: B7-22-3). This number provides the following information:

- The Type of JetPak (B=Bucket, R=Recliner, & L=Lounger)
- The Style of JetPak (7=Style Number 7)
- The Water Flow-Rate of the JetPak (22=22 Gallons Per Minute)
- The Number of Jets (3=3 Jets)

INTERCHANGING JETPAKS:

1. Put the spa in "Standby Mode". This will prevent the pump(s) from activating while interchanging JetPaks. (See "Standby Mode" under "OPERATION" in this Manual.)
2. Remove the headrest.
3. Using your hands, remove the SnapCap (top mounting plate) by lifting it upward.
4. Push the JetPak forward until you have enough room to reach the two PVC water unions (Fig. P).
5. Using your hands, loosen the 2 PVC unions (Fig. Q).
6. After disconnecting the air line union, pull the manifold out from between the two water unions and then remove the JetPak from the JetPod (Fig. R).
7. Exchange the JetPak with another JetPak of the same type.
8. Reattach the JetPaks in the same manner as above.

IMPORTANT WARNING: Spa models with 2 pumps have 2 different jet zones. These JetZones are divided by a JetZone Divider (see "JetZones in this manual). Never operate the spa without the JetZone Divider in place. Doing so, will cause serious damage to your pump(s). Also, interchanging JetPaks from one JetZone (see "JetZones" in this manual) to another may result in improper water flows to one or more JetPaks. If you have questions or problems, please consult your authorized Bullfrog Portable Spa Dealer.

JETTING:

JET TYPES (Fig. R)

Depending on the model, your Bullfrog Portable Spa comes with a unique combination of the following jets:

Name	Flow
• Ozone Jet	(for ozone system only)
• Cluster Jets	(small)
• Duo-Blaster Jets	(small)
• Micro Jets	(small-medium)
• Flex Jets	(small)
• VSR Jets	(medium-large)
• Storm Jets	(medium-large)
• Butterfly Jets	(extra large)
• Verta' ssage Jets	(medium large)
• Jumbo Storm Jets	(large)
• Handheld Jets	(medium large)

INTERCHANGEABLE JETS

The Micro and Storm Jets allow for after-market interchangeable jet nozzles (*Always contact your authorized Bullfrog Portable Spa Dealer before attempting to add jets or pump horsepower to your spa*).

ADJUSTABLE JETS (Fig. S)

To adjust the water pressure on any jet, simply turn the outer ring of the jet itself.

To Increase Jet Water Pressure: Turn the outer ring of the jet clockwise.

To Decrease Jet Water Pressure: Turn the outer ring of the jet counter-clockwise.

Note 1: *The Ozone and Duo-Blaster Jets are non-adjustable.*

Note 2: *Never shut all the jets off at the same time.*

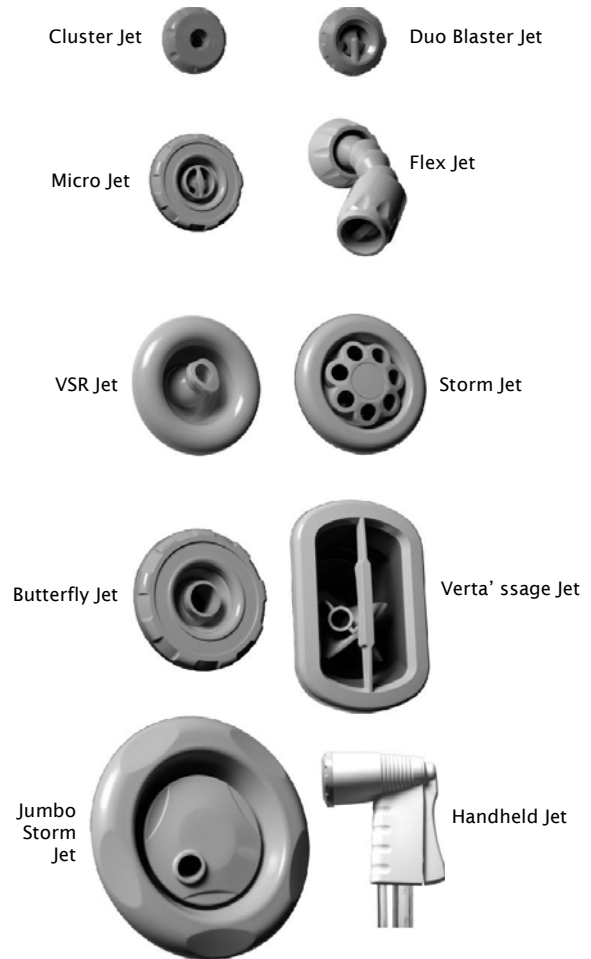


Figure R

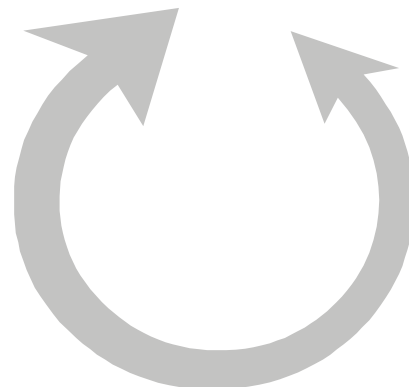


Figure S

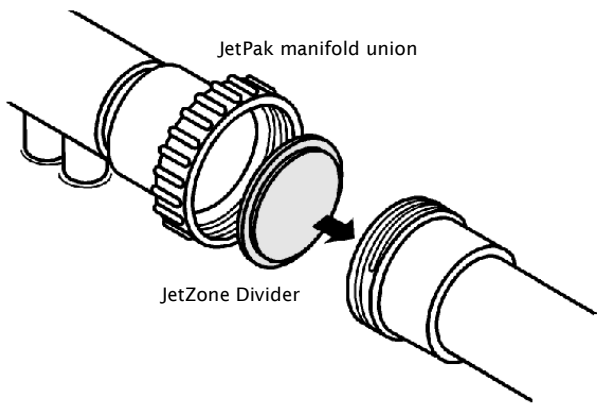


Figure T



Figure T

JETZONES:

Bullfrog Portable Spas powered by two pumps provide a unique feature called JetZones. A JetZone is a region of jets that are all powered by the same pump. With JetZones, you decide which JetPaks are powered by each pump.

With a two-pump spa you get two JetZones. Each of these JetZones can be customized with the use of a JetZone Divider (Fig. T).

By simply moving the JetZone Divider, you can either increase or decrease the number of JetPaks that are powered by a particular pump, thus creating a new JetZone. By adding JetPaks to a particular JetZone you will decrease the power to that zone. By removing JetPaks from a particular zone you will increase the power to that zone.

TO CREATE A NEW JETZONE:

1. Put the spa in "Standby Mode". This will prevent the pump(s) from activating while disconnecting JetPaks. (See "Standby Mode" under "OPERATION" in this Manual.)
2. Locate the JetPak that contains the JetZone Divider.
3. Remove the headrest.
4. Using your hands, remove the SnapCap™ by lifting it upward.
5. Push the JetPak forward until you have enough room to reach the two PVC unions.
6. Using your hands, loosen the two PVC water unions as well as the air line union.
7. Pull the manifold out from between the two unions and then remove the JetPak from the JetPod.
8. Remove the JetZone Divider (Fig. T) and reattach the JetPak in the same manner as you removed it.
9. Install the JetZone Divider in a location of your choice.

Note: If you would like to interchange JetPaks, please refer to "JetPaks" in this Manual.

IMPORTANT WARNING: Never operate the spa without the JetZone Divider in place. Doing so, will cause serious damage to your pump(s).

MAINTENANCE

WATER CHEMISTRY

Tap water that is safe to drink is not always right for your spa. Normal tap water is usually filled with minerals and micro-contaminants that are not visible to the naked eye.

Properly testing and treating your spa water is essential for the health of your spa as well as the people that use it.

Proper chemical maintenance can control and help prevent the following: 1. Bacteria, algae and fungi, which can spread disease and infection to humans; and, 2. Staining and scale build-up on your spa shell, equipment, and piping; and, 3. Clogged filters.

Note 1: *When using chemicals, always follow the instructions provided on the manufacturer's labels.*

Note 2: *Use an accurate test kit to perform all chemistry tests.*

Note 3: *Never mix chemicals.*

Note 4: *With the exception of Chlorine or Bromine Tablets, always add chemicals directly to the spa, evenly spreading the chemicals over the surface of the water. Run the Filter Pump at high-speed for 15 or more minutes after applying any chemical.*

OVERVIEW OF WATER CHEMISTRY:

1. Sanitation: Sanitizers kill bacteria and keep the water clean. Effective and safe sanitizers include any of the following: GRANULAR CHLORINE (Dichlor), GRANULAR BROMINE, CHLORINE TABLETS (TriChlor) OR BROMINE TABLETS.

Note: *Non-trichlor chlorine tablets and/or non-dichlor granular chlorines must not be used in your spa, they may damage the spa, voiding your warranty.*

2. Super-Sanitation: As your spa is used, non-filterable wastes, including perspiration, oils, hair sprays, etc, will build up in the spa water. These substances make the water unattractive in appearance and odor, and can also interfere with sanitizer effectiveness. Normal sanitation does not eliminate these waste substances, but Super-Sanitation does. Super-Sanitation is achieved by "shocking" the spa water with a NON-CHLORINE SHOCK (Potassium Peroxymonosulfate), GRANULAR CHLORINE (Dichlor) or GRANULAR BROMINE.

Note: *Non-Chlorine Shock is the preferred shocking chemical because it will shock the water without raising the sanitizer level.*

3. pH Control: Proper pH balance is extremely important in controlling bacteria, providing water that's comfortable for the user, and in preventing damage to the spa and its equipment. Using the scale of 0-14, pH is the measure of acidity and basicity in the water. pH levels under 7.0 are acidic while pH levels over 7.0 are basic. The proper pH range for a spa is 7.4 to 7.6.

High pH levels (over 7.6) can cause the following:

Scale build-up on the spa and its equipment, cloudy water, a prematurely dirty filter, and less effective chlorine sanitation. To correct high pH levels, add a pH DECREASER.

Low pH levels (under 7.4) can cause the following:

Discomfort to the spa user and corrosion to the spa and its equipment. To correct low pH levels, add a pH INCREASER.

Note: Never use muriatic or hydrochloric acid to adjust pH as it can damage your spa shell and surroundings.

4. Total Alkalinity (TA): Total Alkalinity (TA) is the measure of carbonates and bicarbonates in the water. Low TA can cause pH to be unstable, bouncing from one level to another, causing the water to be corrosive or scale forming to the spa and its equipment. To correct low TA, add a TOTAL ALKALINITY INCREASER. High TA can cause scale build-up, cloudy water, as well as other pH problems. To correct high TA, contact your authorized Bullfrog Portable Spa Dealer.

5. Calcium Hardness (CH): Calcium Hardness (CH) is the measure of dissolved calcium in the water. Low CH (soft water) can result in staining to the spa's surface as well as corrosion to the spa and its equipment. To correct low CH, add a CALCIUM HARDNESS INCREASER. High CH (hard water) can cause cloudy water as well as rough scale build-up on the spa's surface and equipment. To correct or manage high CH, contact your authorized Bullfrog Portable Spa Dealer.

6. Stain & Scale Control: Stain and scale problems are common in hot water environments. To help prevent and control staining and scaling, add a STAIN & SCALE INHIBITOR.

7. Foam Control: Spa water that's polluted with body oils and lotions, combined with high water temperatures, can cause excessive surface foaming. To prevent and control foam on the surface of the spa water, add a FOAM REMOVER.

8. Clearing Cloudy Water: There are two basic reasons that spa water becomes cloudy. First, non-filterable liquid wastes (perspiration, etc.) have contaminated the water. To remove these waste substances, Super-Sanitize the water (as described above). Second, non-filterable micro-particulate wastes (dust, etc.) have contaminated the water. To remove these waste substances, use a WATER CLARIFIER.

Note: Names of spa chemicals will vary from one manufacturer to another. Please consult your authorized Bullfrog Portable Spa Dealer if you have questions.

STARTING YOUR SPA WITH NEW WATER:

1. As your spa fills with tap water, add the prescribed dose of a STAIN & SCALE INHIBITOR. This will provide the initial protection against staining and scaling.

Note: Do not use soft water unless the mineral content is raised immediately.

2. When your spa is completely filled with water, add the prescribed dose of a WATER CLARIFIER. This will clear the water of any micro-particulates that came with the new water.

3. If possible, have your authorized Bullfrog Spa Dealer test the Calcium Hardness (CH) of your spa water and adjust as per your dealer's recommendation (the correct level of CH depends on your overall water conditions).

4. Test and adjust the Total Alkalinity (TA) to the range of 125-150 PPM (parts per million).

5. Test and adjust the pH to the range of 7.4-7.6.

6. After the spa water has circulated for approximately one hour, add 1/2 teaspoon of GRANULAR CHLORINE or 1 teaspoon of GRANULAR BROMINE per each 200 gallons of spa water. After several hours, check sanitizer level and, if necessary, adjust to the following:

	Without Ozone	With Ozone
Chlorine Level:	2.0 PPM	1.0 PPM
Bromine Level:	3.0 PPM	2.0 PPM

Important: Unless you have ozone, do not use the spa if the sanitizer level is below 1.0.

Start-up water chemistry is now complete. However, it may take several days for the filter to completely clear the water.

MAINTAINING SPA WATER

Sanitizer and pH Levels:

It is important to test and adjust the sanitizer and pH levels of your spa on a frequent basis. If your spa is used 0-3 times weekly, then we recommend that you test your spa water a minimum of 2-3 times that week. For each additional use you should test your spa water one additional time.

Always test the pH level before you test the sanitizer level. If the pH level is not in the range of 7.4-7.6, then make the necessary adjustment. Use the dosage prescribed on the label.

With each sanitizer test, use either GRANULAR BROMINE or GRANULAR CHLORINE to maintain the following levels:

	Without Ozone	With Ozone
Chlorine Level:	2.0 PPM	1.0 PPM
Bromine Level:	3.0 PPM	2.0 PPM

To maintain the above sanitizer level with CHLORINE or BROMINE TABLETS, please refer to your authorized Bullfrog Portable Spa Dealer for assistance.

Super-Sanitation:

Once per week, and when the spa is not in use, Super-Sanitize the spa water by adding one of the following:

- Two teaspoons of GRANULAR CHLORINE per 200

gallons of spa water.

- Four teaspoons of GRANULAR BROMINE per 200 gallons of spa water.
- Five teaspoons of a NON-CHLORINE SHOCK per 200 gallons of spa water.

Note 1: *With above-average use, Super-Sanitation may be required more than once per week.*

Note 2: *With ozone, it may not be necessary to shock on a weekly basis (see your dealer).*

Stain & Scale Control: Use a STAIN & SCALE INHIBITOR as per the instructions on the manufacturer's label. Do not add this chemical until 3-4 days after Super-Sanitation.

Foam Control: As needed, use a FOAM REMOVER as per the instructions on the manufacturer's label.

Cloudy Water Prevention & Control: Use a WATER CLARIFIER as per the instructions on the manufacturer's label. Do not add this chemical until 3-4 days after Super-Sanitation.

WATER CHEMISTRY TROUBLESHOOTING

Prior to each spa use, check the spa water. If the water appears cloudy or off-color, has significant surface foam or smells of chlorine/bromine, then there is a problem with the water and it needs to be treated or drained. Using the spa in these conditions could result in a skin rash or other irritation.

For assistance in handling spa water chemistry problems, consult your authorized Bullfrog Portable Spa Dealer or another service center capable of performing a Computerized Water Analysis.

pH SENSOR CARE

For spas with a pH Sensor (Limited Control System Option) you must verify its accuracy by checking its reading with a manual pH test kit on a bi-weekly basis. If pH varies from manual test, consistently reads high, is slow to respond or reads erratically then call your dealer for service. **IMPORTANT:** If you leave your spa empty of water for more than 24 hours, you must properly winterize your pH sensor or damage to the sensor will occur. For winterization instructions contact your authorized Bullfrog Spa Dealer.

CHANGING YOUR SPA WATER

Depending on usage, your spa water will need to be changed approximately every 2-4 months or whenever your spa water becomes difficult to manage.

Steps to Drain Your Spa:

1. Disconnect electrical power supply.
2. Remove door to Equipment Compartment.
3. Drain water from spa by completing the following:
 - a. Locate Drain Hose in Equipment Compartment.
 - b. Lift Drain Hose higher than water level in spa.
 - c. Remove cap on Drain Hose (Fig. U).
 - d. Connect garden hose to Drain Hose.
 - e. Lower Drain Hose to ground level.

Note 1: Drain water to an area that can handle the gallonage of your spa.

Note 2: If draining water onto vegetation, make sure that the sanitizer level (bromine or chlorine level) of your spa water is less than .5 PPM.

4. Clean the spa shell (refer to "Spa Shell Care" in this Owner's Manual).

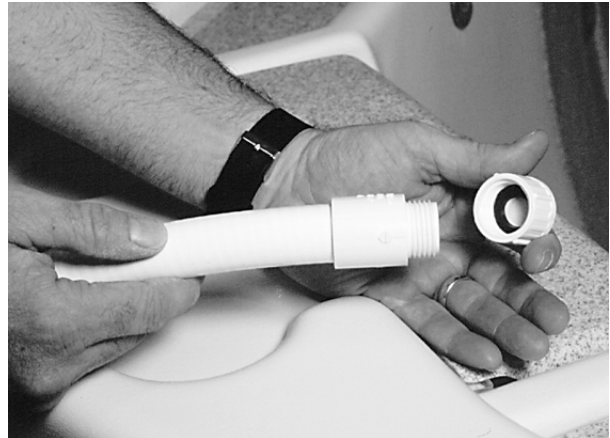
Steps To Refill Your Spa:

1. Remove garden hose from Drain Hose and replace Drain Hose Cap.
2. Reattach door to Equipment Compartment.
3. Refill spa with tap water. Fill the spa to any point between the two Water Level Indentation marks located on the back wall of the filter/skimmer cavity. The depth range of these marks is 6-7½" down from top of spa.

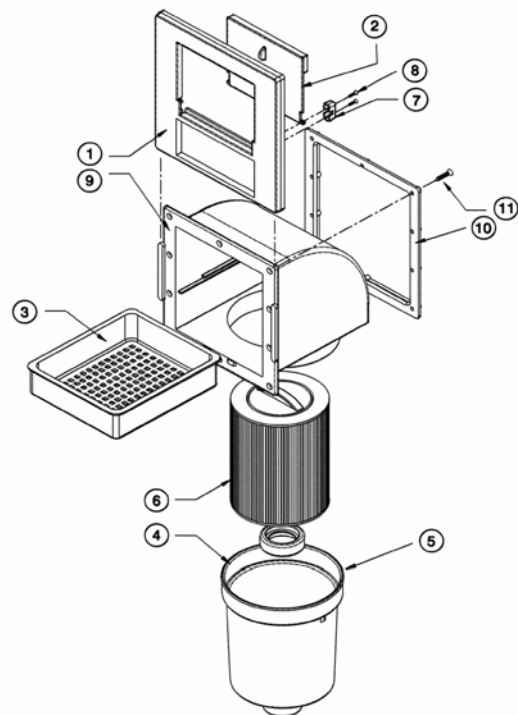
Note 1: The higher the water level, the fewer spa users it will take to cause the water to overflow the top of the spa.

Note 2: Do not fill your spa with soft water unless the mineral content is raised immediately.

4. Restore electrical power supply.
5. See "Starting Your Spa with New Water" under "Water Chemistry" in this Owner's Manual.



(Figure U) Drain Cap



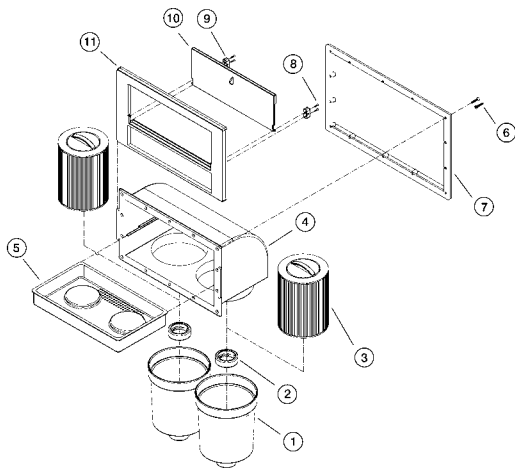
50 SQ. FT. SKIM FILTER

ITEM	PART NO.	DESCRIPTION
1	519-9010	Front Plate
2	550-9000	Wier Door Assembly
3	519-9050	Basket
4	515-6510	Skim Filter Bottom
5	519-6540	Retainer Ring
6	817-0050	50 Sq. Ft. Filter Cartridge
7	519-6240	Hinge Mount
8	819-1250	Screw, #6-20 x 5/8 POH
9	515-9000	Skim Filter Body
10	519-9040	Mounting Plate
11	819-0005	Screw, #12 x 1¼" PFH

(Figure W) Skimmer, Basket & Filter Assembly



(Figure V) Skimmer, Basket & Filter Location



100 SQ. FT. SKIM FILTER		
ITEM	PART NO.	DESCRIPTION
1	515-6610	100 Sq. Ft. Front Access Filter Bottom
2	519-6640	100 Sq. Ft. Front Access Filter Ret. Ring
3	817-0050	50 Sq. Ft. Filter Cartridge, 6" x 8 1/4"
4	515-6600	100 Sq. Ft. Front Access Filter Body White
	515-6601	100 Sq. Ft. Front Access Filter Body Black
	515-6607	100 Sq. Ft. Front Access Filter Body Gray
5	519-6610	100 Sq. Ft. Front Access Basket White
	519-6611	100 Sq. Ft. Front Access Basket Black
	519-6617	100 Sq. Ft. Front Access Basket Gray
6	819-0006	Screw, #12 x 1 1/4" PFH
7	519-6680	100 Sq. Ft. Front Access Mounting Plate White
	519-6681	100 Sq. Ft. Front Access Mounting Plate Black
	519-6687	100 Sq. Ft. Front Access Mounting Plate Gray
8	819-1250	Screw, #6-20 x 5/8 POH
9	519-6240	Hinge Mount White
	519-6241	Hinge Mount Black
	519-6247	Hinge Mount Gray
10	550-6600	100 Sq. Ft. Front Access Weir Door White
	550-6601	100 Sq. Ft. Front Access Weir Door Black
	550-6607	100 Sq. Ft. Front Access Weir Door Grey
11	519-6650	100 Sq. Ft. Front Access Front Plate White
	519-6651	100 Sq. Ft. Front Access Front Plate Black
	519-6657	100 Sq. Ft. Front Access Front Plate Grey

(Figure W) Skimmer, Basket & Filter Assembly

CLEANING YOUR FILTER

Cleaning the Filter Basket:

1. Put the spa in "Standby Mode". This will prevent the pump from activating while cleaning the basket. (See "Standby Mode" under "OPERATION" in this Owner's Manual.)
2. Remove skimmer face-plate and basket (Fig. V & W).
3. Clean the basket. Avoid hitting basket against objects to knock debris loose as this can break basket.
4. Reinstall skimmer face-plate and basket.
5. Press any button on the control pad to reset the control system.

Cleaning the Filter Cartridge:

It is recommended that your Filter Cartridge(s) be cleaned every 3 to 6 weeks or as needed. Replace the Filter Cartridge(s) approximately every two years or when necessary. To maintain warranty protection, use only Bullfrog Filter Cartridge replacements.

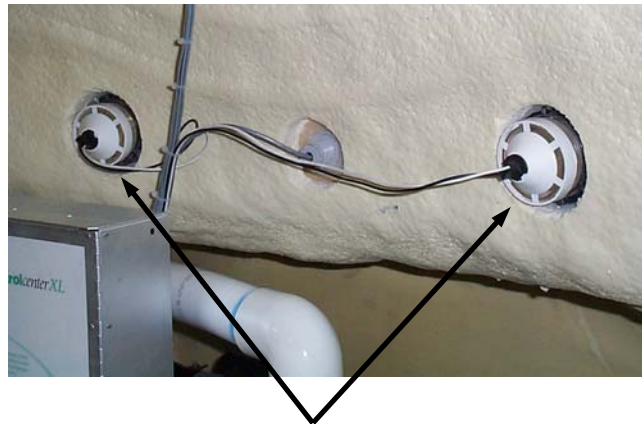
1. Put the spa in "Standby Mode". This will prevent the pump from activating while cleaning the cartridge. (See "Standby Mode" under "OPERATION" in this Owner's Manual.)
2. Remove skimmer face-plate and basket.
3. Grasp cartridge(s) and lift out. With a garden hose and nozzle or other high pressure device, hose cartridge(s) clean with jet stream of water. Work top to bottom on each pleat. To remove collected suntan lotions and body oils that hosing will not remove; soak cartridge(s) in warm water with a FILTER CLEANER or detergent added. To remove calcium deposits (a white chalky material) soak cartridge(s) in a one part muriatic acid to ten parts water solution. USE A PLASTIC CONTAINER ONLY. Calcium deposits indicate a high spa pH, which should be corrected.
5. CAUTION: Using a brush to clean a cartridge could damage it. Commercially available cartridge cleaners may be used and can be obtained from your authorized Bullfrog Portable Spa Dealer.
6. Reinstall cartridge(s), basket and skimmer face-plate.
7. Press any button on the control pad to reset the control system.

LIGHT BULB REPLACEMENT

To replace a burned out or defective light bulb, complete the following steps:

1. Disconnect electrical power supply.
2. Remove the door to the Equipment Compartment.
3. Locate the back of the Spa Light Fixture (Fig. X).
4. Grasp the light bulb holder located on the back of the Spa Light Fixture. Twist counter-clockwise to release it from Spa Light Fixture. Pull light bulb holder out of Spa Light Fixture.
5. Replace light bulb and reinstall light bulb holder into Spa Light Fixture.
6. Replace door to Equipment Compartment and restore the electrical power supply.

Note: For alternate lighting systems contact your authorized Bullfrog Spa Dealer for service.



(Figure X) Light Bulb Location

OZONE STERILIZER REPLACEMENT

On the front of your Bullfrog Ozone Sterilizer (optional) is an ozone indicator light (the Ozone Sterilizer is located in the equipment compartment). This indicator light will glow whenever ozone is being produced.

To verify that your Ozone Sterilizer is working properly, check the indicator light when the filter pump is running and only during a preprogrammed filter cycle, making sure that the indicator light glows (do not check the indicator light if you have activated the jets within the previous 30 minutes - as a safety device, your Ozone Sterilizer shuts down for 30 minutes after the "Jets" button has been pressed).

If the indicator light does not glow when the filter pump is running then your Sterilizer is not working properly. When this occurs, take the following steps:

1. Disconnect electrical power supply.
2. Locate the Ozone Sterilizer (Fig. Y).
3. Unplug the Ozone Sterilizer's power supply cord from your spa's Control Center.
4. Disconnect the output tubing from the Ozone Sterilizer.
5. Remove the mounting screws that hold the Ozone Sterilizer in place.
6. Take the entire Ozone Sterilizer to your authorized Bullfrog Portable Spa Dealer. Your Ozone Sterilizer will be checked to verify that it is defective. If defective, then replace the entire Ozone Sterilizer with a new one.

Note: If your Ozone Sterilizer is found to be working properly, then you may have a problem with your spa's Control Center or Control Pad. Consult your dealer and request a service call.

7. Reinstall the Ozone Sterilizer by reversing the above procedure.



(Figure Y) Ozone Sterilizer Location

SPA SHELL CARE

Your Bullfrog spa surface is durable and easy to clean:

Quarite Plus® Spa Surface:

For normal cleaning, use Ivory® Liquid dishwashing detergent or its equivalent. For stubborn stains, use Spic & Span® in powder form or its equivalent. To apply these cleaners, use a soft, damp cloth or sponge. Rinse well and dry with a clean cloth.

Centrex® Spa Surface:

For normal cleaning, use a mild soap solution (5% Ivory® Flakes in water), a mild detergent solution (3% Tide® in water), Household Ammonia, or Mineral Spirits. For surface marks, use Baking Soda. To apply these cleaners, use a soft, damp cloth or sponge. Rinse well and dry with a clean cloth.

General Cleaning:

With normal use of your spa, oils, lotions and hairsprays will build up on the surface of the water, sometimes leaving a scum line around the perimeter of your spa shell. This scum line can easily be removed with a spa SURFACE CLEANER or its equivalent.

To remove grease, oil, paint and ink stains, use 25% isopropyl (rubbing) alcohol in water.

For hard water stains consult your authorized Bullfrog Portable Spa Dealer for acceptable cleaning agents.

To remove light scratches and/or to protect your spa's shell, see your Bullfrog Dealer for an acceptable spa wax.

Note 1: *Never allow your spa surface to come in contact with acetone (nail polish remover), nail polish, dry cleaning solution, lacquer thinners, gasoline, pine oil, abrasive cleaners, or any other harsh chemical. These chemicals can damage your spa shell and void your warranty.*

Note 2: *Avoid using cleaning agents that will leave suds in your spa water.*

Note 3: *Be sure to clean the JetPaks and the JetPods (the area behind the JetPaks) approximately twice each year.*

SPA CABINET CARE

EternaWood & EternaStone Cabinets: Your EternaWood and EternaStone cabinet components are made to provide many years of maintenance free service. For normal cleaning (EternaWood Cabinets only), use Ivory® Liquid dishwashing detergent or its equivalent. For stubborn stains, contact your authorized Bullfrog Portable Spa Dealer.

Cedar Wood Cabinet: Depending on exposure to sunlight, water, and spa chemicals, your spa cabinet will require staining every 3-9 months. Use an oil-based stain that absorbs into the wood. See your authorized Bullfrog Portable Spa Dealer for the right stain.

Note 1: *Avoid sealers that cover only the outside of the*

wood, causing the inside to dry out and crack or even warp.

Note 2: To prevent stain from getting on other surfaces, use drop cloths at the base of the spa and use painter's tap around the top lip of the spa.

SPA COVER CARE

Your spa cover is warranted by its manufacturer, Sunstar Enterprises, 127 N. Las Posas, San Marcos, CA 92069 (Phone 619-744-2172). Although basic instructions are provided below, it is important that you refer to the Sunstar information that came with your cover. Sunstar provides detailed information on caring for your spa cover and what to do to protect its warranty.

Cleaning & Conditioning Your Spa Cover:

On a monthly basis, complete the following:

1. Remove the spa cover and lay it down on a flat, clean surface near a garden hose.
2. Rinse the cover to remove any loose debris.
3. Using a soft bristle brush, clean the top (vinyl portion) of the cover with a mild solution of dishwashing liquid soap-about one teaspoon of soap to two gallons of water. Scrub the cover, using a gentle circular motion, being careful not to let any areas of the cover dry before rinsing with water.
4. Rinse the cover thoroughly and then dry with a clean cloth.
5. Use saddle soap (never use Armorall) to condition the cover. Follow directions on the container.
6. Wipe and/or rinse any dirt from the bottom side of the cover.
7. Replace the cover and secure with cover locks.

Note: To remove tree sap, use lighter fluid (not charcoal lighter, but the type used in cigarette lighters). Use sparingly. Immediately apply saddle soap to that area.

MISCELLANEOUS CARE

Cleaning & Protecting the Headrests: Clean on a regular basis with soap, water and a clean cloth. Use Armorall® Protectant or its equivalent once per month. This will maintain water resistance and luster of the product.

Vacuuming the Spa: Debris from wind, trees, and spa users will occasionally accumulate on the bottom of your spa. Your spa's filtration system will remove the smaller debris. Debris that is too large or too heavy for the filtration system will have to be removed by the use of a spa vacuum. If you do not have a spa vacuum, please contact your authorized Bullfrog Portable Spa Dealer.

Cleaning the Scum Line: With normal use of your spa, oils, lotions and hairsprays will build up on the surface of the water, sometimes leaving a scum line around the perimeter of your spa shell. This scum line can easily be removed with a spa SURFACE CLEANER or its equivalent. See your authorized Bullfrog Portable Spa Dealer for this product.

Note: Avoid using cleaning agents that will leave suds in your spa water.

LOW-USE OR NO-USE PERIODS

At certain times of the year you may not use your spa as often as expected. For these low-use or no-use periods, we recommend the following:

Low-Use: If your spa is being used less than once per month, then you may wish to lower the temperature setting by approximately 5-10°F or put the spa in the "Economy Mode". Lowering the temperature on your spa will cut your cost of operation if you are not using the spa for extended periods, however, you will need to adjust the temperature setting approximately 15 minutes before each use to heat the spa to the desired level.

No Use for 1-2 Weeks: If you plan to not use your spa for one-two weeks, then we suggest that you not make any changes in operating your spa. Substantially reducing the water temperature (in well insulated spas) for short periods of time has proven to increase heating costs.

No Use for 2-6 Weeks: If you plan to not use your spa for two-six weeks, then you may wish to lower the temperature setting to approximately 80°F during the No-Use period.

No Use for Over 6 Weeks: If you plan to not use your spa for over six weeks, then it is suggested that you winterize your spa by taking the following steps:

SPA WINTERIZATION:

1. Drain the water from the spa (see "Steps to Drain Your Spa" under "Changing Your Spa Water" in this Owner's Manual).
2. Drain the spa equipment. This is done by removing the drain plug from the pump(s) and loosening all PVC pipe unions and pump air bleed valves in the equipment compartment.
3. Clean the spa shell (see "Spa Shell Care" in this Owner's Manual).
4. Remove filter cartridge(s), clean filter (see "Cleaning Your Filter" in this Owner's Manual), allow to dry, and then store inside your garage or home.
5. Remove and properly winterize your pH Sensor (Option on Limited Control Systems). For winterization instructions contact your authorized Bullfrog Spa Dealer.
6. Reattach and secure cover to the spa.

SPA DE-WINTERIZATION:

De-Winterization is completed by reversing the above procedure and then refilling the spa (see "Steps to Refill Your Spa" under "Changing Your Spa Water" in this Owner's Manual).

Note: During periods of No-Use, you should test and chemically treat the water approximately once per week. Not doing so may lead to corrosion, staining and/or scaling to your spa and its equipment. If there is no one available to take care of the spa on a weekly basis, then it is recommended that you winterize your spa as described above.

SERVICE

Before requesting service from your dealer, refer to the Trouble Shooting Guide in this Owner's Manual to determine the necessary course of action. If you are not able to solve the problem using the Trouble Shooting Guide, please contact your authorized Bullfrog Portable Spa Dealer.

WARRANTY SERVICE

If your Bullfrog Portable Spa fails within the warranty period and within the scope of its warranty, contact your authorized dealer and schedule a service call. You will be required to show proof of purchase by provided your dealer with a copy of your original sales receipt.

Note : Damage caused by repairs made by someone other than an authorized Bullfrog Portable Spa technician will not be covered by your warranty.

NON-WARRANTY SERVICE

We recommend having an authorized Bullfrog Portable Spa technician perform all repairs on spas that fail outside of warranty coverage or beyond the warranty period. If you are not able to use an authorized Bullfrog Spa technician, we encourage you to request and use genuine Bullfrog replacement parts.

If you are not able to obtain service in your area, call Bullfrog International, L.C. at:

Phone: 801-565-8111

E-Mail: info@bullfrogspas.com

Purchase Information

YOUR SPA'S SERIAL NUMBER

DATE YOU PURCHASED YOUR SPA

Dealer Information

Dealer Name

Street Address

City, State, & Zip Code

Phone Number

TROUBLESHOOTING GUIDE

The following guide was prepared to assist you in solving simple problems with your spa. If the problem with your spa cannot be solved after following these procedures, please contact your authorized Bullfrog Portable Spa Dealer.

PROBLEM: Control Panel displays an error message such as one of the following: "OHH", "OH5", "ICE", "SnA", "Snb", "Sn5", "HFL", "LF", "drY" or "dr".

Cause: For causes and solutions, see "Diagnostic Messages" under "OPERATION" in this Owner's Manual for the Control System installed on your spa.

PROBLEM: Control Pad and spa equipment do not operate.

Cause: 1. No electrical power to spa.

Solution:

- A. Reset or turn on the GFCI circuit breaker.
- B. Have a qualified electrician check your electrical service.

Cause: 2. The 30-Amp (20-Amp on Standard Control System/BULF20) fuse in the Control System has blown.

Solution: Contact your authorized Bullfrog Portable Spa Dealer.

PROBLEM: GFCI Breaker Repeatedly Trips.

Cause: 1. Improper wiring to spa or GFCI breaker is defective.

Solution: Consult with electrician.

Cause: 2. Defective component on spa.

Solution: Contact your authorized Bullfrog Portable Spa Dealer.

PROBLEM: Spa pump turns off during operation.

Cause: 1. Automatic timer has completed its 30 or 120 minute cycle.

Solution: Turn on the pump at the Control Pad.

Cause: 2. Pump has overheated due to vents in equipment door being blocked.

Solution: Clear items away from vents in equipment door.

Cause: 3. The pump motor is defective.

Solution: Contact your authorized Bullfrog Portable Spa Dealer.

PROBLEM: Spa will not heat.

Cause: 1. Slice Valve is partially or fully closed.

Solution: Open Slice Valve and secure with Valve

Keeper.

Cause: 2. Thermostat on Control Pad has been turned down.

Solution: Adjust thermostat to desired temperature setting.

Cause: 3. High Limit sensor has tripped.

Solution: Touch any button on the Control Pad to reset High Limit.

Cause: 4. Heating System is defective.

Solution: Contact your authorized Bullfrog Portable Spa Dealer.

PROBLEM: Spa Light does not work.

Cause: 1. Light bulb has burned out.

Solution: See "Light Bulb Replacement" in this Owner's Manual.

Cause: 2. Lighting System is defective.

Solution: Contact your authorized Bullfrog Portable Spa Dealer.

PROBLEM: Spa pump will not turn on, creates burning smell when running, or makes excessive noise when running.

Cause: Pump motor is defective.

Solution: Contact your authorized Bullfrog Portable Spa Dealer.

PROBLEM: Jets surge on and off.

Cause: Water level in spa is too low.

Solution: Adjust water level to any point between the two water level indentation marks on the back wall of the filter/skimmer cavity.

PROBLEM: Jets are weaker than normal or do not work at all, but in both cases the pump is running.

Cause: 1. Jet handle(s) is partially or fully closed.

Solution: Open jet handle(s).

Cause: 2. Spa filter cartridge is dirty.

Solution: See "Cleaning Your Filter" in this Owner's Manual.

Cause: 3. There is air trapped in the spa equipment or its face piping.

Solution: Open the air-bleed valve on each pump housing and allow air to bleed out of system. Be sure to tighten each air-bleed valve as soon as water starts to flow out.

Cause: 4. The Suction Fitting(s) are blocked.

Solution: Remove any item or debris that is blocking

each Suction Fitting.

Cause: 5. The JetZone Divider is not installed (This only applies to spas that have two pumps).

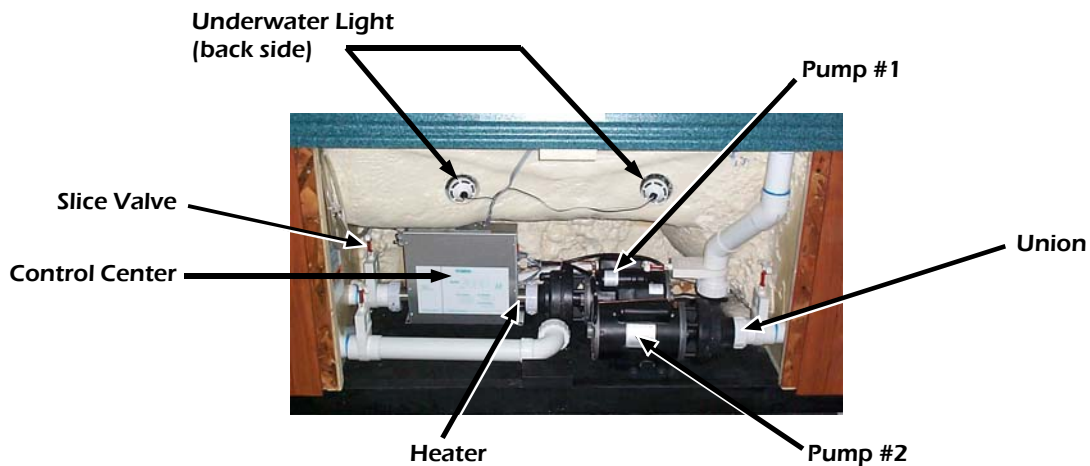
Solution: Re-install in the appropriate JetPak position. (Warning: Running your spa without a JetZone Divider can cause serious damage to your pump.)

Cause: 6. Slice Valve is closed.

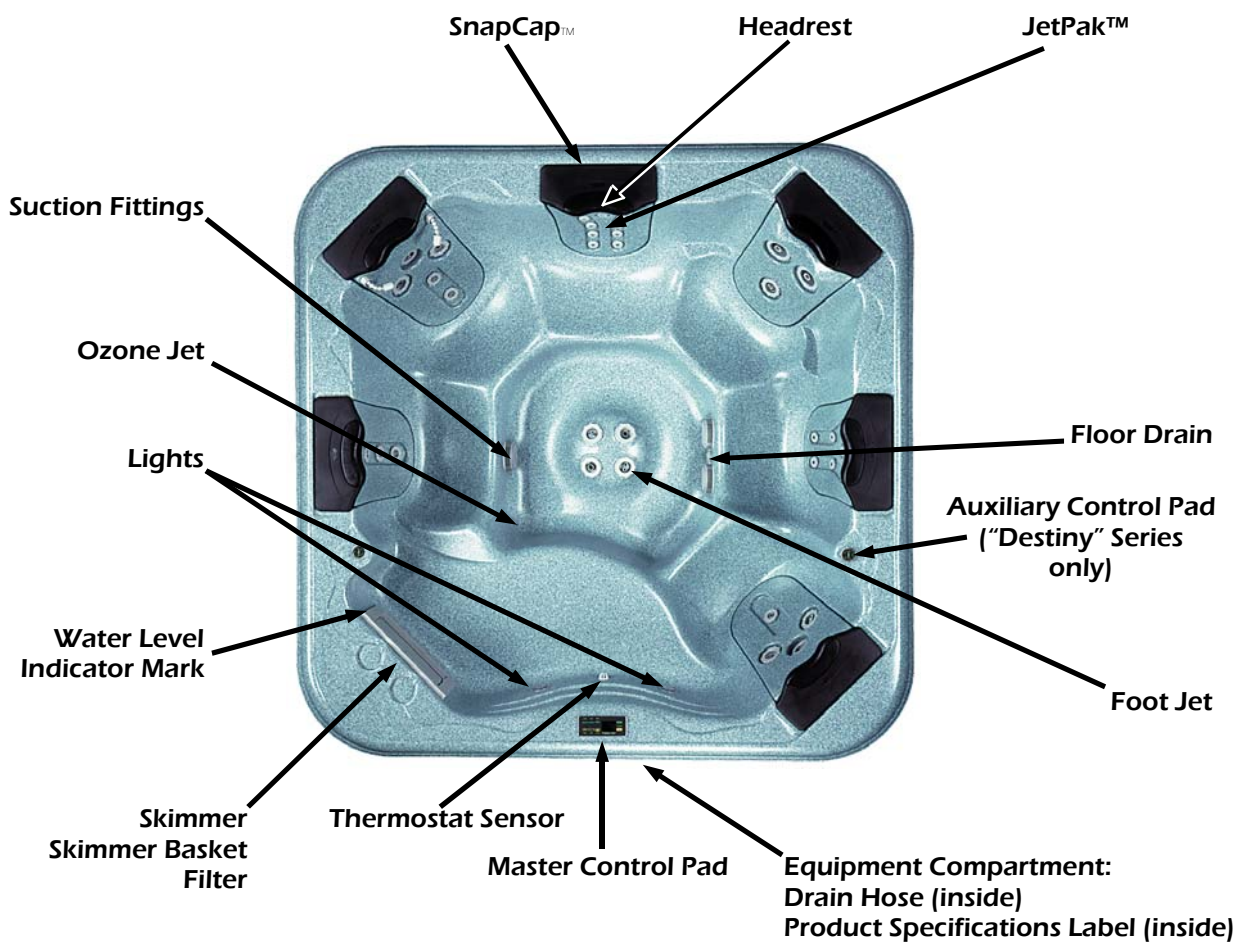
Solution: Open Valve and secure with Valve Keeper.

PARTS IDENTIFICATION

Inside Equipment Compartment



Top View of Spa (Destiny Model 672 Shown)



NOTES:



The Adaptable Spa™

Bullfrog International, L.C.

9479 South 500 West · Sandy, Utah 84070

801 565-8111 · Fax 801 565-8333

www.bullfrogspas.com

E-mail: info@bullfrogspas.com