



2000

OWNER'S MANUAL

RECORD OF OWNERSHIP

NAME _____

ADDRESS _____

CITY _____ *STATE* ____ *ZIP* _____

DATE PURCHASED _____

MODEL _____ *SERIAL #* _____

DEALER NAME _____

PHONE # _____

SERVICE TECH REP _____

NOTES: _____

MANUFACTURED BY:



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INTRODUCTION

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

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

Through reading and totally understanding the important information in your owner's manual you will realize that you now own A SPA FOR ALL SEASONS!

IMPORTANT SAFETY INSTRUCTIONS

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

READ AND FOLLOW ALL INSTRUCTIONS

1. **WARNING.** To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
2. **DANGER – RISK OF CHILD DROWNING.** Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, insure that children cannot use a spa or hot tub unless they are closely supervised at all times.
3. A pressure wire connector is provided on the surface of the control box inside the spa to permit connection of a minimum No. 8 AWG solid copper bonding wire between this point and any metal equipment, metal enclosures of electrical equipment, metal water pipe or conduit within 5 feet (1.5M) of the unit.
4. **DANGER – RISK OF ELECTRIC SHOCK.** Install spa at least five (5) feet (1.5M) from all metal surfaces. A spa may be installed within five (5) feet (1.5M) of metal surfaces if, in accordance with the National Electrical Code, each metal surface is permanently connected by a No. 6 AWG (8.4mm) solid copper conductor attached to the wire connector on the terminal box. A grounding plug is provided for this purpose.
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 fitting 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.

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6. **DANGER** – To reduce the risk of injury to persons, do not remove suction grate. Suction through drains and skimmers are powerful when the jets in the spa are in use. Damaged covers can be hazardous to small children and adults with long hair. Should any part of the body be drawn into these fitting, turn off the spa immediately. As a precaution, long hair should not be allowed to float in the spa.
 7. Install spa so that water can be easily drained out of compartment containing electrical components so as not to damage equipment. Also, when installing spa, allow enough room to access for servicing.
 8. **WARNING – TO REDUCE THE RISK OF INJURY:**
 - a. Always enter and exit a spa slowly.
 - b. Do not use the spa alone.
 - c. Before entering the spa, always measure the water temperature with an accurate thermometer. Tolerance of water temperature regulating devices can vary as much as plus/minus 5° F (3° C).
 - d. Persons suffering from obesity or with a medical history of heart disease, diabetes, high or low blood pressure or circulatory system problems should consult with their physician before using the spa.
 - e. Since excessive water temperature has a high potential for causing fetal damage during early months of pregnancy, pregnant or possible pregnant women should limit spa water temperatures to 100° F (38° C).
 - f. Excessive water temperature can be dangerous. The water in the spa should never exceed 104° F (40° C). Water temperatures between 100° and 104° F are considered safe for a healthy adult. Lower water temperatures are recommended for extended use (exceeding 10 minutes) and for young children. Long exposures at higher temperatures can result in hyperthermia.

HYPERTHERMIA

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

THE SYMPTOMS OF HYPERTHERMIA INCLUDE:

- Dizziness
- Fainting
- Drowsiness
- Lethargy
- Increase in Internal Body Temperature

THE EFFECTS OF HYPERTHERMIA INCLUDE:

- Unawareness of Impending Hazard
- Failure to Perceive Heat
- Failure to Recognize the Need to Exit Spa
- Physical Inability to Exit Spa
- Fetal Damage in Pregnant Women
- Unconsciousness Resulting in a Danger of Drowning

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- g. Children's body temperature can increase more rapidly than adults in the same water with elevated temperatures (above 99° F). Children should spend less time in water above body temperature than adults.
 - h. The use of a spa while under the influence of alcohol, drugs and/or medication may lead to unconsciousness with the possibility of drowning.
 - * Persons on medication should consult with their physician before entering the spa since some medication may induce drowsiness while other medication may affect heart rate, blood pressure and circulation.
10. People with infections, sores or the like should not use the spa. Warm and hot water temperatures may allow the growth of infectious bacteria if not properly disinfected.
11. **DANGER – RISK OF ELECTRIC SHOCK.** Do not permit any electric appliance, such as a light, telephone, radio or television, within five (5) feet of the spa. Never operate any electrical appliances from inside the spa or while wet.
12. **WARNING – RISK OF SUFFOCATION.** If this spa is equipped with a gas heater, it is intended for outdoor use only, unless proper ventilation can be provided for an indoor installation.

SAVE THESE INSTRUCTIONS

SAFETY SIGN

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

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

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

ELECTRICAL INSTALLATION REQUIREMENTS

HAVE YOUR ELECTRICIAN READ THE FOLLOWING INFORMATION BEFORE INSTALLATION BEGINS

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

It is the responsibility of the spa owner to ensure that electrical connections are made by a qualified electrician in accordance to the National Electric Code and any local and state electrical codes in force at the time of installation. These connections must be made in accordance with the wiring diagrams found inside the control box. This equipment has been designed to operate on 60 HZ alternating current only, 240 volts as required. Make sure that power is not applied while performing any electrical installation. A copper bonding lug has been provided on the electrical equipment pack to allow connection to local ground points. The ground wire must be at least 6 AWG copper wire and must be connected securely to a grounded metal structure such as a cold water pipe.

All Freedom Spa equipment packs are wired for 240 VAC only.

The only electrical supply for your spa must include a 50 AMP switch or circuit breaker to open all non-grounded supply conductors to comply with section 422-20 of the National Electrical Code. The disconnect must be readily accessible to the spa occupants, but installed at least five feet from the spa.

A Ground-Fault Circuit Interrupter (GFCI) must be used to comply with section 680-42 if the National Electrical Code. A ground fault is a current leak from any one of the supply conductors to ground. A GFCI is designed to automatically shut off power to a piece of equipment when a fault current is detected.

Install the electrical run to the spa through non-metallic conduit with non-metallic pipe connections that meet all local code requirements.

Power hook-up to the spa must be 240 volt stranded copper #6 AWG-3. Route the cable into the equipment for final hook-up to terminals inside the control panel.

SITE PREPARATION/GENERAL GUIDELINES

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

- 1) Access - The actual dimensions of your new spa will determine the amount of space that is needed in moving the spa from curbside to its final installation area. Be sure to measure side yard dimensions, gates or doors and vertical obstructions such as roof overhangs and overhead cables. Any other space limiting obstacles such as trees or shrubs must be evaluated.

If the spa is being installed indoors, dimension limitations such as stairs, ceilings and walls must be taken into consideration. Please have your Freedom Spa dealer or delivery service review site or installation plans prior to delivery.

- 2) Surface/Pad Requirements - When your new spa is filled with water and bathers, it may weigh as much as several tons. It is imperative that the base beneath the spa can support the actual weight. The spa must be on a uniformly firm and continuous surface. The recommended foundation is a concrete pad with a minimum thickness of four (4) inches with steel reinforcement bars crossed throughout the pad.

IMPORTANT

When installing your spa indoors or on a wood deck or balcony, the same load requirements must be met. Total load may be as much as 75 pounds per square foot. Your Freedom Spa dealer should be consulted or you should speak with a qualified contractor or your local building department. Be sure to locate your spa so that equipment remains above grade and not subject to flooding.

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

GENERAL CONSIDERATIONS FOR OUTDOOR INSTALLATION

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

- How spa will complement landscaping and vice versa
- View from inside spa and view of spa from inside of home
- Exposure to sunlight and shading from trees

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- Privacy
 - Getting to spa from house and return
 - Proximity to dressing rooms and bathrooms
 - Storage for spa chemicals
 - Local building codes (if applicable)
 - Power cable (see electrical requirements)

GENERAL CONSIDERATIONS FOR INDOOR INSTALLATION

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

- Work with your Freedom Spa dealer and contractor to insure all local building, electrical and plumbing codes are met
- Plan for a floor drain to drain off excess water or for draining and cleaning your spa
- A ventilation fan may be necessary due to high humidity created by your spa
- Finished material in your spa room should also be capable of withstanding increased humidity

INITIAL START-UP PROCEDURE

Now that all electrical connections to your new Freedom Spa are complete, start-up procedures may begin. This is the fun part!

CAUTION - DO NOT APPLY POWER TO OR OPERATE THE SPA WHEN THE SPA IS PARTIALLY FILLED OR THERE IS NO WATER IN THE SPA!

- 1) Be sure that the circuit breaker in you breaker panel is off.
- 2) Be sure all jets in the spa are fully open by turning the jet face counter-clockwise.
- 3) **LOCATE AND OPEN ALL VALVES.** *NOTE: There are two valves per pump.* Pump locations vary depending on model of spa.
- 4) Be sure drain fitting is fully closed.
- 5) Fill your new Freedom Spa with water. Fill to waterline, which is approximately three inches above bottom of filter/skimmer opening.
- 6) Bleed air from system by briefly opening the external drain fitting then close. Turn breaker switches on. You may then press any of the spa function switches. After power has been applied for one minute your spa will automatically move into its pre-set filter cycle. (See operation section for further information.)

GLOSSARY OF SPA TERMS

PUMP - The water pump(s) in your system produce flow through your hydro-therapy jets, heater and filtration system. In most systems pumps will consist of two speeds - high or low. Generally, low speed is used for maintaining a constant temperature or for filtering the water, while high speed operates your hydro-therapy jet functions.

HEATER – Freedom Spas are equipped with a 4 KW 220 volt electric heater, thermostatically controlled and equipped with a high limit temperature safety shut-off switch. Should your spa water temperature exceed 112° F, the high limit switch will trip and will need to be re-set. Should your high limit switch repeatedly trip, please contact your authorized service center.

CONTROL PANEL/REMOTE - Your new Freedom Spa is equipped with a solid state spa-side control system. You control all functions from safely inside the spa. The digital display will give you a constant temperature read-out and will notify you in case of certain malfunctions. Several user programmable functions are also available.

JETS - Your new Freedom Spa features a variety of jet styles. All jets, regardless of style, return the water to the spa. Air is mixed with the water creating a gentle to vigorous massage, adjusted by simply turning the outer face of the jet. Your Freedom Spa will have a combination of rotating and directionally adjustable jets.

AIR CONTROL DIALS - You can decrease or increase the velocity of your jets by opening or closing the air control valves. Typically, one dial controls the air to water ratio and mix to a group of jets. When not in use the air controls should be kept in the closed position, as air bubbles tend to cool the water.

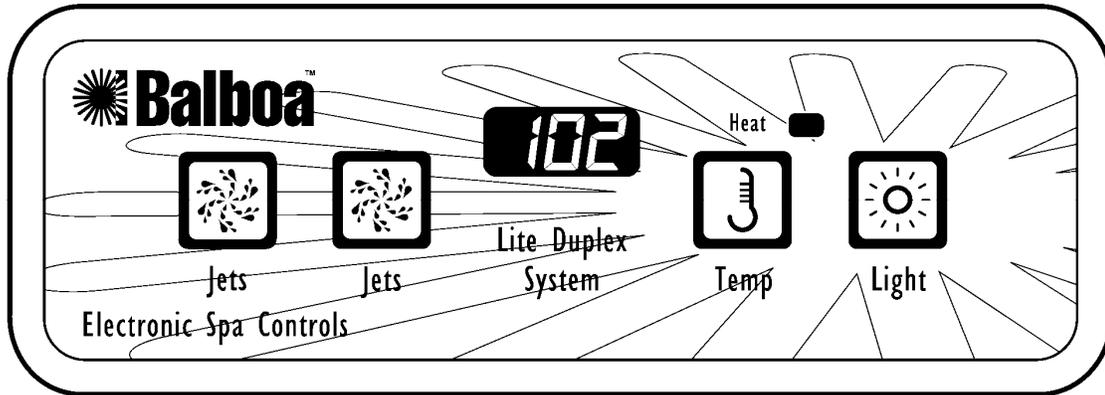
FILTRATION - Your cartridge filter elements are located at the topside of your spa and are designed to remove any debris and oils from your spa water.

SPA LIGHT - Your spa light is designed for safety and is located in the footwell of your spa. The on/off switch is located on the topside of the control panel.

EQUIPMENT COMPARTMENT - Located behind the door below the spa-side control panel. This area houses the major components responsible for spa operation. Those components include the pumps, heater, control panel box and ozonator (if applicable). Before operating spa, all valves should be fully open and hose bib should be closed.

THE FS 800 L

Your spa side control panel consists of two main parts. The control pads operate individual functions and allow for several programming modes. The LED Display shows constant water temperature and will monitor various functions.



TEMPERATURE CONTROL

Your spa will maintain the water temperature for whatever it is programmed. It has been factory set at 100° F. Temperature adjustment is controlled by pushing the “Temp” button. The display shows the actual water temperature unless the pad is pressed. When the pad is pressed, the display will show the set temperature. Pressing the pad a second time will cause the set temperature to increase or decrease depending on what direction was last chosen. Each successive press will change the set temperature in the same direction.

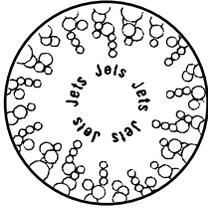
If the opposite direction is desired, release the pad and let the display revert to the actual water temperature again. Press the pad to display the set temperature, and again to make the temperature change in the desired direction.

JET / PUMP OPERATION

The FS 800 L model is equipped with one dual speed pump and one single high-speed pump system. Pressing the left “Jets” button once will turn the pump on low speed. Press again for high speed and once more for off. Pressing the right “Jets” button once will turn the pump on high speed and once more for off.

As a safety feature your system has been designed to shut off automatically after a specified time period. This will occur after the spa has been running for 30 minutes on high speed or after 60 minutes on low speed. To reactivate the pump(s) simply press the pad again.

Also, as a safety feature your spa is equipped with “Freeze protection.” Should the water temperature drop to 40° F, the pump will activate to protect the system from freezing. It is recommended that if you are going to be away from your spa for a long period of time during unusually cold weather that you contact your Freedom Spas dealer for proper winterizing details or see the section “Winterizing Your Spa.”



REMOTE CONTROL THERAPY PAD

Your Freedom Spa is equipped with one remote for the therapy seat. This is a comfort feature that allows you to control pump functions without leaving your seat.

FILTRATION

Your Freedom Spa is designed to automatically filter twice each day on low speed through the pump. The first cycle will begin one minute after the spa is energized. The second daily cycle will begin twelve (12) hours later. The length of each cycle period is preset at four (4) hours. It may be reset for one, two, four or six hour increments via the top panel control.

To program filter cycle:

- Press “Temp”
- Then press “Jets”
- Press “Temp” to adjust hours
- Then press “Jets” to exit

SPA LIGHT

The button labeled “Light” controls the spa light. Press the pad once for “on” and again for “off.” The light will automatically shut off after two hours. To reactivate, simply press the button again.

OZONE SYSTEM (OPTIONAL)

Your ozone system will operate whenever the spa is in its normal filtration cycle.

LED ERROR INDICATOR

Your LED will readout the following if any problems are detected:

OH “Overheat Protection” - If your spa should overheat, the display will read “OH.” In such a condition do not enter the water. Turn off the power and contact your dealer or service center. To re-set the spa, press any of the control pads.

FL “Flow Switch Detection” - If a pressure switch malfunctions, the display will read “FL.” This could be caused by a simple flow restriction. Please refer to the “Trouble Shooting Guide” or contact your service center.

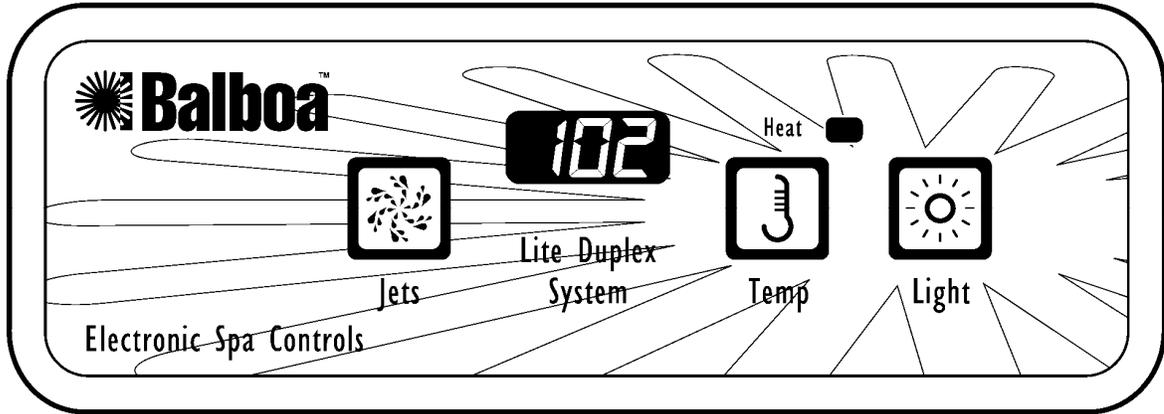
SN “Open Sensor” - If either the high limit or water temperature sensor malfunctions, the display will read “SN.” Contact your dealer or service center.

WARNING - THERE IS A SHOCK HAZARD AND THERE ARE NO USER SERVICEABLE PARTS.

Do not attempt service of this control. 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.

THE FS 670 AND FS 670 L

Your spa side control panel consists of two main parts. The control pads operate individual functions and allow for several programming modes. The LED Display shows constant water temperature and will monitor various functions.



TEMPERATURE CONTROL

Your spa will maintain the water temperature for whatever it is programmed. It has been factory set at 100° F. Temperature adjustment is controlled by pushing the “Temp” button. The display shows the actual water temperature unless the pad is pressed. When the pad is pressed, the display will show the set temperature. Pressing the pad a second time will cause the set temperature to increase or decrease depending on what direction was last chosen. Each successive press will change the set temperature in the same direction.

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

JET / PUMP OPERATION

The FS 670 and FS 670 L models are equipped with one dual speed pump and one single high-speed pump system. Pressing the “Jets” button once will turn the main pump on low speed. Press again to activate both pumps on high speed and once more for off. The second pump is activated only in high speed.

As a safety feature your system has been designed to shut off automatically after a specified time period. This will occur after the spa has been running for 30 minutes on high speed or after 60 minutes on low speed. To reactivate the pump(s) simply press the pad again.

Also, as a safety feature your spa is equipped with “Freeze protection.” Should the water temperature drop to 40° F, the pump will activate to protect the system from freezing. It is recommended that if you are going to be away from your spa for a long period of time during unusually cold weather that you contact your Freedom Spas dealer for proper winterizing details or see the section “Winterizing Your Spa.”

FILTRATION

Your Freedom Spa is designed to automatically filter twice each day on low speed through the pump. The first cycle will begin one minute after the spa is energized. The second daily cycle will begin twelve (12) hours later. The length of each cycle period is preset at three (3) hours. It may be reset for one, two, three, five or seven hour increments via the top panel control.

To program filter cycle:

- Press “Temp”
- Then press “Jets”
- Press “Temp” to adjust hours
- Then press “Jets” to exit

SPA LIGHT

The button labeled “Light” controls the spa light. Press the pad once for “on” and again for “off.” The light will automatically shut off after two hours. To reactivate, simply press the button again.

OZONE SYSTEM (OPTIONAL)

Your ozone system will operate whenever the spa is in its normal filtration cycle.

LED ERROR INDICATOR

Your LED will readout the following if any problems are detected:

OH “Overheat Protection” - If your spa should overheat, the display will read “OH.” In such a condition do not enter the water. Turn off the power and contact your dealer or service center. To re-set the spa, press any of the control pads.

FL “Flow Switch Detection” - If a pressure switch malfunctions, the display will read “FL.” This could be caused by a simple flow restriction. Please refer to the “Trouble Shooting Guide” or contact your service center.

SN “Open Sensor” - If either the high limit or water temperature sensor malfunctions, the display will read “SN.” Contact your dealer or service center.

WARNING - THERE IS A SHOCK HAZARD AND THERE ARE NO USER SERVICEABLE PARTS.

Do not attempt service of this control. 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.

MAINTENANCE RECOMMENDATIONS

Your spa requires periodic draining and cleaning to ensure a safe, healthy environment. It is recommended that you clean your spa every 60-90 days. Heavy bather load will require cleaning a more often.

TO DRAIN YOUR SPA

- Turn off power at breaker box.
- Pull out the drain valve located on the exterior wall of the cabinet.
- Turn the black knob counter-clockwise.
- Attach a garden hose and turn the valve counter-clockwise to open and drain.

TO CLEAN YOUR SPA SURFACE

- With a soft cloth, wipe down the spa surface with a non-abrasive cleaner such as “409,” “Fantastik” or equivalent. Do not use paper towels.
- If your spa has developed an oily or chalky residue at the waterline it may require special treatment. Consult your dealer.

TO REFILL YOUR SPA

- Be sure to close the drain valve located on the exterior cabinet wall.
- Be sure all valves are fully opened located next to the pump(s).
- Fill the spa with water. Be sure water level is above skimmer opening.
- Refer to “*Initial Start-Up Procedure*” section with any questions.

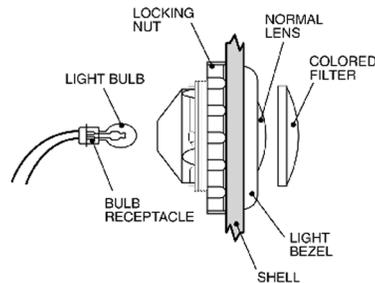
TO CLEAN YOUR FILTER ELEMENTS

The filter in your spa is one of the most important components of your spa. It not only is essential for clean water, but also for extending the life of the spa equipment. Your filter elements must be cleaned regularly (twice a month on average) with normal spa use. With heavy use, they will need to be cleaned more often.

- Turn spa off.
- Remove filter element(s).
- With a garden hose, spray each element under pressure. Periodically, the elements need to be soaked in a filter cleaner compound. Check with your Freedom Spa dealer for details on cleaning and/or filter replacement recommendations.
- Be sure to remove any debris from between filter pleats.
- Replace filter elements.
- Be sure water level is adequate.
- Turn spa on and refer to “*Initial Start-Up Procedure*” with any questions.

LIGHT BULB REPLACEMENT

Replacing a light bulb in your spa is not difficult. Access to the light fixture is through your equipment door and behind the electrical panel box. Simply twist (turn counter clockwise) the holding fixture and remove. The bulb will then pull loose. Replace with new 12 volt bulb (available through your dealer). Reverse process for fixture replacement.



CARE OF YOUR SPA PILLOWS

- Your spa pillows need to be rinsed periodically to remove any chemical residue. This should help to eliminate pillows becoming stiff and discolored.
- If spa is not to be used for a period of time pillows should be removed. Pillow life will be extended.

CARE OF YOUR SPA COVER

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

- Do not allow spa to sit uncovered in direct sunlight. This may cause damage to exposed surfaces of spa.
- Periodically hose off both sides of spa cover for maximum life of cover.

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

CARE OF YOUR SPA CABINET

Your quality spa cabinet is produced from hand-crafted cedar. It has been factory treated with a stain/sealer to maintain its appearance and to preserve its life. Several times a year (especially if located outdoors) it is recommended that your cabinet be re-treated. Your local dealer or service center can recommend the appropriate product based on your cabinet finish. Periodically, remove dust, dirt and grime with clean water.

WINTERIZING YOUR SPA

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

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

NOTE: FAILURE TO WINTERIZE YOUR SPA COULD CAUSE FREEZE DAMAGE TO YOUR PLUMBING WHICH WILL VOID YOUR WARRANTY. FOLLOW THESE STEPS CAREFULLY.

- 1) Drain your spa completely using the drain valve (see "*To Drain Your Spa*") or use an inexpensive submersible pump that you can buy from your dealer or your local hardware store.
- 2) Use a shop vac to get all standing water out of your unit.
- 3) Remove access panels from equipment area.
- 4) Loosen all pump unions
- 5) Remove square winterizing plug from the face of the pump.
- 6) Using your shop vac in a blowing mode, insert the hose into the nozzle of each jet and blow the trapped water from the lines into the interior of the spa.
- 7) After this is completed, use the shop vac to remove any standing water in the spa and in the equipment area.
- 8) Clean the spa with a soft cloth and a non-abrasive cleaner (409, Fantastik, Glass Plus, etc.).
- 9) Replace access panels.
- 10) Cover spa to prevent water from entering the spa.

CHEMICAL MAINTENANCE

GUIDELINES

There are certain variables to proper chemical application in spas. This information, as it states, is to be used as a general guideline. Your spa dealer or service center will assist you with properly detailed recommendations and instructions.

NOTE: IT IS IMPERATIVE THAT pH, TOTAL ALKALINITY AND CALCIUM HARDNESS LEVELS BE PROPERLY MAINTAINED. FAILURE TO MAINTAIN PROPER LEVELS WILL DAMAGE YOUR SPAS EQUIPMENT AND MAY VOID YOUR WARRANTY.

SAFETY CONSIDERATIONS

- ⇒ Always follow the manufacturer's instructions with any chemical application.
- ⇒ If you are to dilute a chemical, always add the chemical to the water, never the water to the chemical.
- ⇒ **DO NOT EVER MIX TWO CHEMICALS TOGETHER.**
- ⇒ Avoid contact with skin.
- ⇒ Always add chemicals with pump in operation. Leave pump running for 30 minutes.

NOTE: USING A GOOD CHEMICAL TEST KIT RECOMMENDED BY YOUR DEALER IS ESSENTIAL FOR PROPER WATER CARE. ALSO, CHANGING YOUR WATER ON A REGULAR BASIS IS A VERY INEXPENSIVE CHEMICAL TREATMENT.

ADDITIONAL INFORMATION / RECOMMENDATIONS

CHEMICAL ADDITIVE BENCHMARKS

♦ Sanitizer	2.0 - 3.0 PPM free available Chlorine
or	4.0 - 6.0 PPM Bromine
♦ pH	7.4 - 7.6
♦ Shock Treatment	Weekly/consult your dealer
♦ Total Alkalinity	120 - 150 PPM
♦ Calcium Hardness	180 - 250 PPM

SANITATION

Sanitation is the process of killing bacteria, algae and other organisms that will multiply in water. Several methods of sanitation are available - Organic Bromine or Chlorine. Consult your dealer. Always be sure to read and understand chemical instructions.

pH CONTROL

- ▶ pH is the measure of the relative acid/base content of the water.
- ▶ If the pH indicator is below 7.4, your water is too acidic and may corrode your spa equipment and/or cause irritation to bathers.
- ▶ If the pH indicator is above 7.6, the water is too basic and may result in cloudiness and a scale formation in the spa. High pH also reduces the effectiveness of chlorine as a sanitizer.
- ▶ Proper pH control is essential.

SHOCK TREATMENT

Consult your dealer.

TOTAL ALKALINITY

“TA” is the amount of carbonate, bicarbonate and hydroxyl ions in the water. Increasing TA increases water pH and acts as a buffer against pH changes. High TA promotes high pH and makes the water resistant to adjustment. Low TA makes the pH unstable and difficult to keep in ideal range.

Consult your dealer for methods to measure and control TA.

CALCIUM HARDNESS, STAIN AND SCALE

Calcium hardness can be very important. Water that is too hard (dissolved calcium over 250 PPM) can promote scale formation, making deposits in the spa and reducing your heaters efficiency. Water that is too low in calcium hardness may also be harmful. Soft water (under 180 PPM) will more rapidly dissolve metals, shortening the life of your spas heater or other metal components.

Staining and scaling are common problems. Hot water causes calcium to deposit more rapidly. Some local water conditions may require the use of a stain and scale remover. Please consult your dealer.

NOTE: IF YOU HAVE READ THROUGH YOUR SPA CARE MAINTENANCE SECTION TO THIS POINT, “GO TO THE HEAD OF THE CLASS!” YOU ARE GOING TO ENJOY MANY HAPPY, PROBLEM-FREE YEARS OF ENJOYMENT IN YOUR FREEDOM SPA.

TROUBLE SHOOTING / PROBLEM SOLVING

<u>SYMPTOM</u>	<u>SOLUTION</u>
SYSTEM NOT OPERATING-	<ul style="list-style-type: none">a) Check circuit breaker in panel box.b) Check GFCI. If GFCI has been tripped, reset. If it trips repeatedly, locate cause of problem or consult your dealer.c) Check for correct wiring.
HEATER NOT WORKING-	<ul style="list-style-type: none">a) Be sure temperature is set to the desired temperature.b) Be sure adequate time has been allowed for heating.c) Refer to heater control instructions.
“OVERHEAT” IS DISPLAYED ON READOUT SUBSEQUENTLY TRIPPING HIGH LIMIT-	<ul style="list-style-type: none">a) Be sure filter is clean.b) Be sure water level is adequate.c) Be sure shut off valves are fully open.d) Contact dealer or service center.
PUMP SURGES OR NO WATER IS COMING FROM JETS-	<ul style="list-style-type: none">a) Water level may be low or possible air lock in plumbing. If so, loosen the union on suction side of pump and allow air to bleed out of the pipe while pump is running. When water flows—tighten union.
LOW FLOW RATE FROM JETS OR “FLOW SENSOR”-	<ul style="list-style-type: none">a) Be sure pump(s) are on high speed.b) Be sure valves in equipment compartment are fully open.c) Remove filter cartridge. If flow then improves, clean or replace cartridge(s).d) Be sure jets are open.e) Check suction for any blockage.