

LIFESPAS[®]

Owners Manual



LIFESPAS[®]

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For sales, parts, accessories and service, go to www.LifeSpas.com for a dealer near you.

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Manufactured and Warranted by EverStream Manufacturing

4506 Panorama Point Road • Anderson, CA 96007

Congratulations on your new spa!

Thank you for choosing LifeSpas
We offer high quality and innovative products in the spa industry.

In order to get the most of your spa, we strongly suggest that you take the time to read through this manual before you hook up and operate your spa. This will acquaint you with the operating features, hook up procedures, maintenance, safety procedures, ensuring an enjoyable experience right from the start. LifeSpas has tried to anticipate all of your needs and desires; however, if you need addition information, feel free to contact your local LifeSpas Dealer.

⚠ WARNING! This manual was written to ensure the proper use and installation of your spa. Any modifications to the procedures outlined in this manual may result in your warranty being voided. Please take the time to read this manual to avoid any unnecessary problems with your spa and equipment.

THIS MANUAL AND ITS CONTENTS ARE SUBJECT TO CHANGE WITHOUT NOTICE.
ALTHOUGH WE HAVE PREPARED THIS MANUAL AS ACCURATE AND PRECISE AS POSSIBLE, WE WILL NOT BE LIABLE FOR LOSS, INJURY OR DAMAGES CAUSED BY IMPROPER INSTALLATION OR USE OF SPA (IMPROPER OR OTHERWISE)

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HLoH Hi Limit Over Heat. LifeForce™ has a backup water temperature sensor called the Hi Limit. If the sensor is disconnected or shorted or if the spa temperature should reach above 112° F the Hi Limit protection circuitry will force all spa functions off and will flash the HLoH message on the display. It is not possible to use the spa when this error is in effect. Even after temperature goes down to an acceptable level or the sensor is repaired / replaced. When the error has been corrected, you must press the SET key to acknowledge that you, the spa user, are aware of the error condition and should have the proper repairs done.

SEoP Sensor Open or disconnected and LifeForce™ cannot determine the spa temperature. The heater is disabled but the spa is operational. The sensor must be replaced or reconnected for this message to go away.

SESH Sensor Short. The sensor is shorted and is non functional. Temperature cannot be determined, the heater is disabled, but the spa is still operational. Sensor must be replaced to get rid of this message.

PSoC, PSoL, PSoH Pressure Switch Open with Circulating, Low or High pump(s). The pressure switch is a device sensitive to pressure inside the heater manifold. Pressure in the heater manifold is generated by a pump pushing water through the manifold. If the main pump is running and the pressure switch does not sense any pressure then there is an indication of no water flow. To prevent the heater from being turned on when there is no water running through, the heater is turned off and one of these messages will be displayed indicating which pump is supposed to be running.

A pressure switch error may also be indicated if the switch is out of adjustment or there is an air lock in the heater manifold. Adjusting the pressure switch is best left to a trained technician. An air lock may happen whenever the spa is drained and refilled with water, or if the water level in the spa is so low as to permit air to be sucked in by the pump. To bleed an air lock loosen one of the heater fittings a quarter of a turn while a pump is running. You will hear the sound of escaping air, then water will start dripping. Re-tighten the fitting.

ToE Time Out Error. It is not likely that you will ever see this error. It indicates that the system's heartbeat is out of control, all devices will be shut down and the spa is unusable. This message will rarely ever occur, if it does, please contact your LifeSpas dealer.

A tripped GFCI could be the cause or an indication of other problems. If the GFCI continues to trip, or you cannot push in the reset button, disconnect the power and do not use your spa. Call your dealer or an Authorized Service Center.

A blown fuse could be the cause or an indication of other problems. If the fuse soon blows again disconnect the power and do not use your spa, call your dealer or an Authorized Service Center.

Other Error Codes - See Spa Controller User Manual.

Maintenance Log

Troubleshooting *continued*

Component Problems	USUAL CAUSE	POSSIBLE SOLUTION
Spa not heating	A. Dirty filter. B. Thermostat set lower than water temperature. C. GFCI tripped.	A. Clean or replace filter cartridge(s). B. Set thermostat to desired water temperature. C. Push GFCI reset button*.
Pump doesn't work	A. Main panel circuit breaker. B. Sub-panel circuit breaker tripped or in off position. C. Sub-panel fuse blown. D. GFCI tripped. E. Power cord (120 volts only) not connected to outlet. F. 30 amp main fuse inside. G. Pump motor overloaded. protection engaged. H. Pump not plugged into side of equipment pack.	A. Reset circuit breaker. B. Reset circuit breaker. C. Replace fuse**. D. Push GFCI reset button*. E. Connect power cord to outlet. F. Replace fuse** equipment pack blown. G. Let it cool for a couple of hours and try again. Contact dealer if problem persists. H. Plug pump receptacle into equipment pack.
Pump is noisy	A. Low water level. B. Intake/Return slide valve closed. C. Clogged or blocked suction. D. Damaged or worn motor. E. Debris inside of pump.	A. Add water to normal water level. B. Open both valves. C. Clean suction inlet(s). D. Notify dealer. E. Notify dealer.
Light will not operate (optional)	A. Bulb burned out	A. Replace bulb.
Ozone, Bromine Generator, etc. (optional) not operating	A. (optional) not plugged into side of equipment pack.	A. Plug (option) into side of equipment pack. B. Only operated on filter mode.

Error Messages

There are 9 error messages that a LifeForce may generate. Here is a list of these messages and what they indicate:

CoLd Temperature in the spa heater housing is below 40° F. Because spa temperature should never get this low, the status of the heater element is unknown. Therefore the low speed pump or circulation pump will run continuously until temperature rises above 45°. A spa should not be filled with water below 40°. Please note that a running pump can heat the spa at approximately 1/2 degree F per hour. During this error condition, the spa is functional except for the heater.

OH Overheat. The spa is at a temperature that is above 108° F. LifeForce will not accept temperature setting above 104° F. If for some reason spa temperature rises over the maximum level, LifeForce will display a flashing 105° F to 108° F. If temperature goes past 108° then the OH message will be displayed instead of temperature. The spa is still operational but hotter than any person should be subjected to. Please do not use your spa when the temperature is flashing or the OH message is displayed. In the summer and especially in warm regions, ambient temperature may be high enough to overheat the spa naturally. Spas are usually well insulated and can store a lot of heat in the equipment compartment.

continues on next page

Section One – Safety Instructions

IMPORTANT SAFETY INSTRUCTIONS

When installing your spa, and using this equipment, basic safety precautions should always be followed, to include the following:

READ AND FOLLOW ALL INSTRUCTIONS! The following instructions are required by UL 1563 standard to be printed as a condition of their listing this product. They contain important safety information, we strongly urge you to read and apply.

DANGER – TO REDUCE THE RISK OF INJURY: Do not permit children to use spa unless they are closely supervised at all times.

WARNING SIGN MUST BE POSTED

The WARNING Sign (see figure 1.1 to the right) is packed with your new spa. This sign must be posted in a prominent place in close proximity to the spa installation site immediately upon completion of spa installation.

RISK OF ACCIDENTAL DROWNING: Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use this product unless they are supervised at all times.

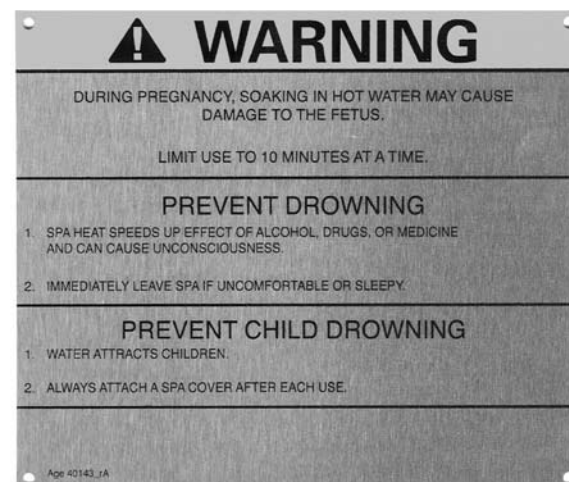


figure 1.1

RISK OF ACCIDENTAL DROWNING: The use of alcoholic beverages, drugs, or medication before or during spa or hot tub usage may lead to unconsciousness and the possibility of drowning.

RISK OF ACCIDENTAL DROWNING DUE TO HYPERTHERMIA: Consult the instructions provided with this unit for a description of the causes, symptoms, and effects of hyperthermia.

RISK OF ELECTRIC SHOCK: Do not connect to a circuit operating at more than 150 volts to ground for a 220-240 volt, 2 wire, single-phase spa.

RISK OF ELECTRIC SHOCK: Do not permit any electrical appliance (such as a light, telephone, radio or television) within five (5) feet (1.5m) of this spa.

RISK OF ELECTRIC SHOCK: Connect only to a properly grounded or grounding type receptacle for a cord and plug connected unit.

INTRODUCTION

We recommend that you take a few minutes to read the instructions in the manual, before the spa can be fully and safely enjoyed. Be aware of several conditions which should be considered hazardous, and therefore require caution. Please familiarize yourself with the rules for safe installation and operation printed in this manual, it will also help you to avoid service expenses resulting from causes, which are beyond our control.

HEALTH WARNINGS

“Warning” Immersion in heated, turbulent water can cause strong physiological effects on some people depending on length of exposure, and the individual's physical condition. We suggest that you limit your exposure in the spa for the first few times to assure maximum enjoyment and healthful benefits. Gradually increase the time spent in the water as you become accustomed to it. Persons with heart trouble or the other major health problems should consult with their physician prior to using any type of spa system.

HYPERTHERMIA

“Danger” Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6 degrees F. The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy and an increase in the internal temperature of the body. The effects of hyperthermia include (1) unawareness of impending hazard; (2) failure to perceive heat; (3) failure to recognize the need to exit spa; (4) physical inability to exit spa; (5) fetal damage in pregnant women; and (6) unconsciousness resulting in a danger of drowning.

⚠ WARNING

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

PRECAUTION

“Please Read” Before entering a spa or hot tub, the user should measure the water with an accurate thermometer since the tolerance of water temperature-regulating devices may vary as much as plus or minus 5° degrees F.

Section Fifteen – Transportation

Your spa weighs approximately 600-1400 lbs., when empty, depending upon options and size. If moving your spa becomes necessary, we recommend you to contact your dealer for qualified spa delivery personnel to help you with this project.

Section Sixteen – Troubleshooting

The spa equipment package will normally function for long periods of time without interruption caused by a malfunction. Occasionally however, incidents occur which may cause the system and certain functions to shut down. The following information is presented to simplify checking and solving certain operating problems that may occur. If a problem cannot be resolved using the following suggestions, contact your spa dealer.

GENERAL PROBLEMS	USUAL CAUSE	POSSIBLE SOLUTION
Nothing Functions	A. Main power panel circuit breaker tripped or in off position. B. Reset circuit breaker. C. Sub-panel fuse blown. D. GFCI (optional) installed on the equipment pack tripped*. E. Power cord (120 volts only) Not connected to outlet. F. 30 amp main fuse inside equipment pack blown.	A. Reset circuit breaker. B. Reset circuit breaker. C. Replace fuse. ** D. Push GFCI reset button.* E. Connect power cord F. Replace fuse **
TOPSIDE CONTROL PROBLEMS Blank Display	A. No incoming power. B. Electrical disturbance. C. 30 amp main fuse inside. D. Topside not plugged into Equipment pack.	A. See above. B. Trip and reset GFCI.* On equipment pack or turn off , and then turn on power to spa. C. Replace fuse. ** D. Plug in Topside to Equipment Pack.
WATER PROBLEMS	USUAL CAUSE	POSSIBLE SOLUTION
No water flow	A. Air lock in water line. B. Pump not operating.	A. Open drain valve and bleed out any captive air. B. See component problems.
Lower water flow from jets	A. Dirty filter B. Clogged/blocked suction inlets(s) C. Slide valves closed D. Jet face(s) partially closed E. No air to jets F. Pump running sub-normal speed G. Worn or damaged pump seal	A. Clean or replace filter cartridge(s). B. Clean suction inlet(s). C. Open gate valves. D. Open jet face(s). E. Open air controls. F. Check voltage into spa. If correct, then contact dealer. G. Notify dealer.
Water not clean	A. Dirty filter. B. Clogged or blocked suction inlets. C. Poor water chemistry. D. Insufficient filtering time. E. Improper maintenance. F. High content of solids in water.	A. Clean or replace filter cartridge(s). B. Clean suction inlet(s). C. See Section Eleven. D. Run filtration mode longer. E. See Section Eleven. F. Use clarifier.

Section Thirteen – Wood Cabinet Care

Syntexx Cabinet

Syntexx is an alternative material to wood. It is a extruded synthetic material, which requires no stain or sealant. A soft cloth and water can be used to wipe down siding.

UltraLife Cabinet

The UltraLife cabinet is a coated press board with wood corners. A wet cloth and water can be used to wipe down siding or you can spray it down with water. The surface should be painted as often as needed.

T1-11 Cabinet

T1-11 is a wood product. A good maintenance recommendation would be to seal it once a year. Depending on exposure you may want to seal it more often.

All Cabinet Care

Care of your cabinet is essential to the life and appearance of your spa. Please consider external factors such as moisture, misguided sprinklers, and ultraviolet rays from the sun. Even with the highest quality construction and material, there is no guarantee against cracking, separating, or any natural occurrence common to wood products.

Section Fourteen – Spa Cover Care

Proper spa cover care is important. Each month clean and condition your spa cover. It is important to use a high-quality cleaning and conditioner recommended by your dealer. Your warranty will be void if other products are used because they may cause damage to the vinyl and/or stitching after prolonged use. Clean and condition your cover using the following steps:

1. Remove cover from spa and lay on a flat surface.
2. Rinse the cover with lots of water from hose or bucket.
3. Using recommended cleaners and conditioners, following the directions.
4. Re-install cover on the spa.
5. Open the cover on a regular basis to allow accumulated chemical vapors to dissipate. Also, turn the cover upside down on the spa for a period of 3-4 hours at least two times per year.

NOTE: Proper spa water chemistry is an important factor in exceeding the performance life of your spa cover!

Important Safety Instructions

When installing and using this electrical equipment, basic safety precautions should always be followed.

Read and follow all instructions carefully. Failure to follow these rules and instructions could cause serious bodily injury, fire and/or property damage.

DANGER

1. Do not allow unsupervised children to enter a spa or spa area. Water turbulence and depth of water make it unsafe for children to be left unattended. This will reduce the risk of injury.

WARNING: RISK OF CHILD DROWNING

2. The physiological effects of heated, turbulent water can be hazardous to children, particularly to those who are very young. Please maintain close adult supervision at all times when children are present.
3. We recommend that you obtain the advice of your physician regarding the use of spas. People with certain health problems, particularly heart disease, should not be permitted to use a spa unless they have received the specific permission of a physician. Pregnant women should refrain from using the spa unless advised otherwise by their physician. Excessive water temperature can cause fetal damage. Spa temperature should be limited to 100° degrees F (38° degrees C) for pregnant women, higher temperatures could cause fetal damage during early months of pregnancy.
4. Observe a reasonable time limit in the spa. Maximum recommended water temperature is 104° degrees F (40° degrees C). Immersion time should be shortened as the water temperature approaches the recommended maximum. Keep an accurate thermometer in the water and check it before entering and frequently during use of your spa, regulating devices may vary as much as plus or minus 5° degrees F (3° degrees C). Lower water temperatures are recommended for children.
 - a. The water in a spa should never exceed 40° C (104° F). Water temperatures between 38° C (100 F) and 40° C (104° F) are considered safe for a healthy adult. Lower temperatures are recommended for young children and when spa use exceeds 10 minutes.
5. Do not enter the spa while under the influence of alcohol or drugs. The physiological effects of immersion in a spa can produce rapid and dangerous changes in body condition when the user is under the influence of medication, drugs or alcohol. This may lead to unconsciousness with the possibility of drowning.
6. If symptoms of dizziness, nausea, or headache occur while in the spa, get out immediately. Cool the body by use of a cool shower, ice pack or cold towels. Seek medical attention particularly if symptoms persist.
7. 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 or hot tub.
8. Persons using medication should consult a physician before using a spa or hot tub since some medications may induce drowsiness while other medications may affect heart rate, blood pressure and/or circulation.

Important Safety Instructions CONTINUED

- Using your spa for physical therapy, or to promote relief from injury discomfort should be done only at the direction of your physician. Obtain recommendations concerning immersion time and water temperature for maximum benefit.

DANGER

- To reduce the risk of injury to person, do not remove suction fittings. 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 pump, be sure that the flow rates are compatible.

NOTE

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

- Do not allow anyone to block off the water flow from the inlet main drain within the spa. This may cause damage to the support equipment, cause water damage to the surrounding area or create an electrical shock hazard.

DANGER

- Risk of electrical shock. Do not permit any electrical appliance such as a light, telephone, radio or television within five (5) feet of a spa or hot tub.

WARNING

- This equipment may be provided with a factory-installed ground fault circuit interrupter (GFCI) on the spa equipment chassis. Before each use, push the test button. The unit should stop operating and the reset button should pop out. Push the reset button. The unit should now operate normally. If the GFCI fails to operate in this manner. There is a good current flowing indicating the possibility of electrical shock. Disconnect the power until the fault has been identified and corrected.
- A pressure wire connector (bonding lug) is provided on the surface of the control box. This permits bonding (grounding) between the bonding lug and any metal equipment, enclosures of metal, equipment with water pipes, or conduit within five (5) feet of the spa, as needed. Comply with local requirements and codes. A qualified licensed electrician must install and inspect wiring for safety and compliance to code. The bonding wire must be at least No. 8 awg (8.4 mm 2) solid copper wire. **NOTE:** no connection is to be made between the ladder, drain and the bonding control box unless a local common bonding grid is provided with the installation.
- Install the spa with non-metallic pipe connections. The distance from the metal enclosure of assembly to the inside wall of the spa should be at least five- (5) feet (1.52 m). **NOTE:** A spa may be installed within five (5) feet (1.52 m) of a metal surface is permanently connected. "A minimum No. 8 (8.4 mm 2) solid copper conductor attached to the wire connector on the terminal box that is provided for this purpose"

DANGER – RISK OF ELECTRIC SHOCK

- The entire unit, including the piping system, must be protected against freezing temperature (32° degrees F or below). Failure to do so could cause severe damage, and will void the warranty.
- Always check your local electrical wiring codes before installation. If your local codes are not followed, you may cause damage to your spa and void your warranty. If in doubt, contact your city, electrical power company or a license electrician.

Section Twelve – Care of Your Spa Finish

We use three different types of spa shells: 1) Acrylic, 2) Quarite Acrylic, and 3) Duraflexx Spa Shell.

ACRYLIC:

The acrylic portable spa has a lustrous finish and requires minimal maintenance. At least twice a year the spa should be drained completely. To begin, thoroughly clean the inside and top of the spa with any cleaner suitable for plastic. Ensure it is a non-abrasive cleaner. If stains have occurred, rub with a small amount of rubbing compound. After spa is clean and dry, apply an acrylic wax – one that is recommended by your dealer. Protect your spa from sharp or heavy objects and do not use cleaners such as Ajax or Comet because they may scratch the surface.

QUARITE ACRYLIC:

The quarite acrylic portable spa has a matte "granite" finish and also require minimal maintenance. At least twice a year, the spa a should be drained completely. To begin, thoroughly clean the inside and top of spa with any cleaner suitable for plastic. Ensure it is a non-abrasive cleanser. If stains have occurred, clean with a mild solution of baking soda and water. After spa is clean and dry, apply an acrylic wax-one that is recommended by your dealer.

DURAFLEXX SPA SHELL:

The good thing about the Duraflexx Spa Shell is that it maintains its durability and clean look for many long years. Duraflexx Spa Shell outer layer is a thermoplastic for high impact strength. To keep the finish looking good, follow these simple instructions:

After spa is drained completely, use a mild solution of baking soda and water to wash the spa. If there are any dirty areas, a little extra scrubbing with the same solution should remove the spots. Rinse thoroughly and refill. Do not wax the surface or top of the spa for any reason. Any other form cleansers should not be used.

The cleaning of either surface should be accomplished without the use of any soap product because of the residual effect left to contaminate fresh water. Any soap residual left in spa will cause excessive foam, which is difficult to remove.

PLEASE READ

Prolong exposure of any spa with an acrylic surface to direct sunlight has a cumulative effect on the surface of your spa and will, in time, cause cracking and damage to the exposed surface. Therefore, do not leave spa empty or unprotected from the sunlight. The spa manufacturer as stated in your warranty, is not responsible for damage brought about by neglect and mistreatment of the spa. It is your responsibility to be aware of this possibility and to take proper preventative measures to keep your spa covered when not in use and out of direct sunlight.

Section Eleven – Chemical Use

Spa chemical treatment is very important to keep your spa crystal clear and in good condition. This not only protects the user and ensures full enjoyment, but also adds life to the equipment system.

Please do not treat your spa as a swimming pool. The chemicals used for a spa are in no way the same as those used for a swimming pool. The water in your spa ranges from 98° to 104° F degrees in temperature and is obviously much warmer than swimming pool water. In fact, the ratio of people in relation to the amount of water in the spa is greater by far. **Example:** Two people in your spa is the equivalent of about 150 people in a average size swimming pool which means that because of the higher temperature of 98° to 104° F degrees, your body and any clothing you wear will leave residues of soap, body oils, perspiration, cosmetics and hair spray- not to mention what may come from ones' pores.

It is for these reasons and many more that your spa should be chemically treated in a special way. Caring for your spa means testing the water every other day, at least three (3) days a week.

Please review the enclosed schedule as suggested by the chemical manufactures and bear in mind each day of the three (3) should only take approximately ten (10) minutes depending on necessary chemical additives. Remember chlorine or bromine should be 3.0 to 5.0 alkalinity between 120 to 150 PPM and pH at 7.4 to 7.6.

Depending on optional Bromine Generator, Ozonator, etc. below programs may vary

Monday – Program 1

1. Test water by submerging test kit vial or three- (3) way test strip at least eighteen (18) inches into the water.
2. Adjust total alkalinity (120 to 150 PPM)
3. Adjust pH (7.4 to 7.6).
4. Make sure chlorine or bromine equals 3.0 to 5.0.
5. Add water clarifier.
6. Check water level of spa.

Wednesday – Program 2

1. Test water.
2. Adjust alkalinity and pH, if necessary.
3. Adjust chlorine or bromine, if necessary.
4. Add scale and calcium preventative liquid.
5. Check water level of spa.

Friday – Program 3

1. Repeat Program 1.
2. Add prescribed amount of non-chlorine shock treatment (at least 2 ounces)
3. Check water level of spa.
4. Enjoy your spa.
5. Rest on Saturday and Sunday.

For a proper chemical supply Keep this handy guide

1. Adequate test kit solutions or test strips.
2. Spa alkalinity or pH adjusts up.
3. Spa alkalinity or pH adjusts down.
4. Bromine salt granulated.
5. Bromine tablets.
6. Water clarifier.
7. Calcium and scale preventative liquid.
8. Calcium booster, if necessary.
9. Foam down.
10. Spa surface wax.
11. Spa sequestering liquid for use when spa is drained and refilled.
12. Filter soaks and clean solution.

Important Safety Instructions CONTINUED

18. Never operate the spa with the equipment access door removed from the skirt. This will present shock hazards and void the warranty.
19. Be sure your installation meets all plumbing and electrical codes.
20. Keep the equipment pack closed at all times. **NOTE:** With the exception of checking GFCI and fuse replacement, use only authorized factory service representatives to service the equipment pack.
21. Always install spa to provide drainage of equipment compartment for electrical components.
22. The electrical supply for this product must include a suitably rated switch or circuit breaker to open all ungrounded supply conductors to comply with Section 422-20 of the National Electrical Code (NEC) ANSI/FPA 70-1987. The disconnecting means must be readily accessible to the tub occupant but installed at least five (5) feet (1.5mm) from the tub water.

SAVE THESE INSTRUCTIONS!

23. This warning label has been placed on the inside of your equipment compartment (figure 1.2, below). It is for your safety. Please review these important safety features with the entire family. It is for your protection and the safety of others.


 WARNING					
PREVENT DROWNING <ol style="list-style-type: none"> 1. SUPERVISE CHILDREN AT ALL TIMES. 2. ATTACH SPA COVER AFTER EACH USE. 3. SPA HEAT CAN CAUSE HYPERTHERMIA AND UNCONSCIOUSNESS. 4. SPA HEAT IN CONJUNCTION WITH ALCOHOL, DRUGS, OR MEDICATION CAN CAUSE UNCONSCIOUSNESS. 			PREVENT ELECTROCUTION <ol style="list-style-type: none"> 1. NEVER PLACE ANY ELECTRIC APPLIANCE WITHIN 5 FEET OF SPA. 		
SELF CONTAINED SPA SUITABLE FOR INDOOR OR OUTDOOR USE TESTED TO U.L. STANDARD 1563					
MODEL # <input type="text"/>			SERIAL # <input type="text"/>		
VOLTS	MAX AMPS	BREAKER SIZE	MIN WIRE AMPACITY	WIRES	
120	<input type="text"/>	<input type="text"/>	<input type="text"/>	2+GRD	
240	<input type="text"/>	<input type="text"/>	<input type="text"/>	3+GRD	
240	<input type="text"/>	<input type="text"/>	<input type="text"/>	3+GRD	
60 HERTZ • SINGLE PHASE					

figure 1.2

Section Two – Circuit Requirements

IMPORTANT! YOUR EQUIPMENT MUST BE CONNECTED BY A BONDED LICENSED ELECTRICIAN OR THE WARRANTY WILL BE VOID.

Hooking up a portable spa requires a three (3) wire (110v) or a four (4) wire (220v) connection. They are as follows:

Lines/Wires	50 amp/5.5 kW	60 amp/2 pump 5.5 kW	Any Electrical
Line One	Black #8 Copper	Black #6 Copper	Service Run
Line Two	Red #8 Copper	Red #6 Copper	over 75' should
Neutral	White #8 Copper	White #6 Copper	increase wire
Ground	Bare #8 Copper	Bare #6 Copper	by one size.

A wire connector is provided on this unit to connect a minimum 8 AWG (8.4 mm 2) solid copper conductor between this unit and any metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5 m) of the unit.

For cord-connected/convertible units

DANGER – Risk of Injury

- A.) Replace damaged cord immediately.
- B.) Do not bury cord
- C.) Connect to a grounded, grounding type receptacle only

NOTE: Recommended wire sizes listed above will vary according to lengths, but will not decrease from the size listed above. Please consult your dealer if there is any variation in local code requirements. Use proper size service required for your spa, please review the amperage sticker located on the face of your control unit in the system compartment.

We must stress that incorrect wire size will cause damage to the system and all of the components. One possibility is that thermostats will not control proper temperature. Conductors and relays will overheat and fail. Excessive heat will cause degradation to all internal wiring.

State and Local codes probably require a GFCI breaker and a quick disconnect no closer than five (5) feet from spa. Please check with a licensed electrician or the local building department. (GFCI may have been purchased with your spa)

Section Nine – Spa Cover Usage

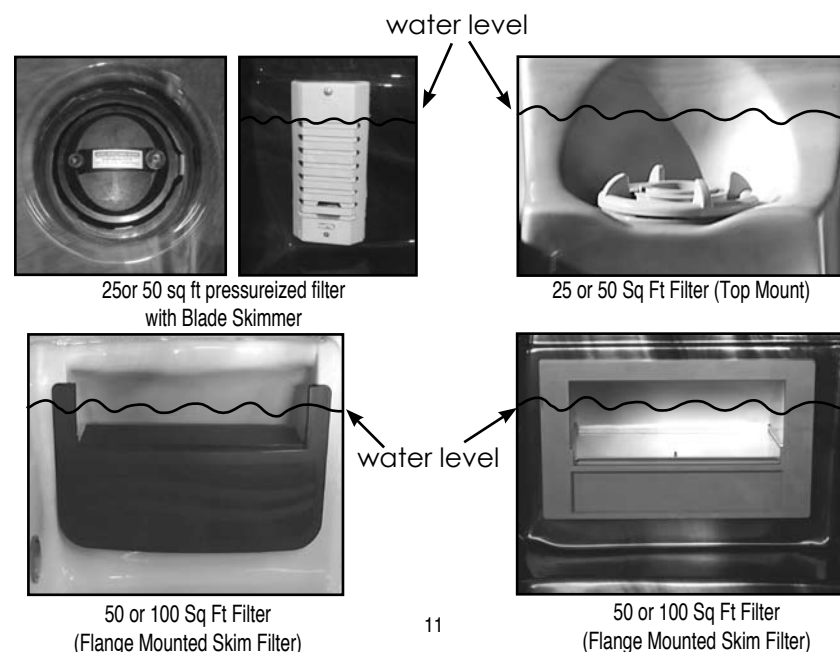
The thermal cover provided with your spa has many important uses. If installed correctly, each side has a locking strap. Please check Local City and Country Ordinances on locking devices to help prevent unauthorized access to your spa. This thermal cover also greatly reduces heat and chemical loss. It is necessary to keep cover in place at all times when not in use to help fight against deterioration of your spa due to harmful effects of the sun. Always install and use a locking cover when ever the spa in not in use.

⚠WARNING!

DO NOT LEAVE ACRYLIC SPA UNCOVERED WHEN EMPTY. SURFACE TEMPERATURES CAN EXCEED 250 DEGREES FROM THE SUN. SEVER DAMAGE CAN OCCUR. DO NOT COVER YOUR SPA WITH PLASTIC, USE ONLY A VINYL SPA COVER.

Section Ten – Water Level

Water level should be maintained at least halfway between the top and the bottom of the filter opening (flange-mounted skim filter) or at least two (2) inches over the filter opening (top-mounted skim filter). This will allow the floating weir to properly skim the top of the water and remove debris such as hair, leaves, etc. If water is too low, then the pump may pull in air, which will cause cavitation and possible damage to the pump and heater. Do not run your spa without the filter cartridge in the spa. If you are in doubt as to the proper level for your water, please call your dealer.



Section Eight – Cleaning the Filter(s)

The filter is one of the most important pieces of equipment in your spa. It requires regular maintenance to ensure the health and safety of everyone in the spa. Its maintenance is also mandatory to the total efficiency of your system. Frequent filter cleaning, at least once every three (3) weeks, in accordance with use, as well as chemical balance and upkeep, are necessary maintenance requirements.

As a general rule, your filter must be cleaned every three (3) weeks to ensure proper performance and improve and maintain the water clarity.

Filter Cleaning Instructions:

1. Turn off power.
 2. **⚠ Warning!** Pressurized filters **only**, contents are under pressure, (see page 11 for picture), you must open air relief valve on top of the filter lid to remove all pressure before removing filter top.
 3. Remove filter cover (only on some models)
 4. Remove basket or floating weir (only on some models).
 5. Reach in and remove the cartridge(s), (you may have to unscrew some models).
 6. Your filter cartridge(s) must be thoroughly cleaned by one of the following methods.
 - a. Use a standard garden hose to pressure wash the filter and remove any residue or debris. While cleaning, ensure that water is forced into each pleat of the filter.
- NOTE:** Other high-pressure devices such as those found at local self-cleaning car washes or dishwashers will cause damage to the filter cartridge and decrease the life expectancy.
- b. Every second to third cleaning should also include a soaking bath for a minimum of twelve (12) hours. See your spa dealer for cartridge filter cleaner.
 7. After cartridge(s) has been thoroughly cleaned, place cartridge(s) into canister, (you may have to screw in); replace basket or floating weir (only some models) and turn power on.

Section Three – Audio/Visual System

If your spa comes equip with an Audio/Visual System, the system will enhanced your spa enjoyment for years to come.

AM/FM/CD PLAYER:

- A. **CAUTION** – Risk of Electric Shock. Do not leave compartment door open.
- B. **CAUTION** – Risk of Electric Shock. Replace components only with identical components
- C. Do not operate the audio/video controls while inside the spa.
- D. **⚠ WARNING** – Prevent Electrocution. Do not connect any auxiliary components (for example; cable, additional speakers, headphones, additional audio/visual components, etc.) to the system.
- E. These units are not provided with an outdoor antennae; when provided, it should be installed in accordance with Article 810 of the National Electrical Code, ANSI/NFPA 70.
- F. Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other risk of injury. Refer all servicing to qualified service personnel. For details, see the AM/FM/CD Player Operational Manual for users.
- G. Never touch a disc with wet hands or put a wet disk in the unit.

DVD PLAYER:

- A. **CAUTION** – Risk of Electric Shock. Do not leave compartment door open.
- B. **CAUTION** – Risk of Electric Shock. Replace components only with identical components
- C. Do not operate the audio/video controls while inside the spa.
- D. **⚠ WARNING** – Prevent Electrocution. Do not connect any auxiliary components (for example; cable, additional speakers, headphones, additional audio/visual components, etc.) to the system.
- F. These units are not provided with an outdoor antennae; when provided, it should be installed in accordance with Article 810 of the National Electrical Code, ANSI/NFPA 70.
- F. Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other risk of injury. Refer all servicing to qualified service personnel. For details, see the DVD Player Operational Manual for users.
- G. Never touch a disc with wet hands or put a wet disk in the unit.

LCD TV MONITOR:

- A. **CAUTION** – Risk of Electric Shock. Do not leave compartment door open.
- B. **CAUTION** - Risk of Electric Shock. Replace components only with identical components
- C. Do not operate the audio/video controls while inside the spa.
- D. **⚠ WARNING** – Prevent Electrocution. Do not connect any auxiliary components (for example; cable, additional speakers, headphones, additional audio/visual components, etc.) to the system.
- G. These units are not provided with an outdoor antennae; when provided, it should be installed in accordance with Article 810 of the National Electrical Code, ANSI/NFPA 70.
- F. Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other risk of injury. Refer all servicing to qualified service personnel. For details, see the LCD TV Monitor Operational Manual for users.

Section Four – Using Your Spa Controls

Topside Control:

1. Your therapy jets, water temperature, mood light and air blower (optional) can all be controlled from your topside control.
2. Please refer to the topside instructions included in the owner's pack for all information related to the programming and operating of your particular topside control.

Air Controls:

1. Your spa has at least one air control, which is used to control the amount of air drawn into the therapy jets. Turned counter-clockwise too fully open will give you the maximum amount of air/water mixture available at each set of therapy jets for a soft feeling therapy. The jets can be operated with the air controls completely closed, or adjusted to desired strength.
2. Ensure that the air controls are closed when the spa is not in use.

GFCI (Ground Fault Circuit Interrupter):

1. A GFCI is a safety device (must be installed if not purchased with your spa) it is designed to protect you against electrical shock. It is necessary to test this device before each use of the spa, and at least once a month when the spa is not being used regularly.
2. To test, make sure the power to the unit is on. Press the test button on the GFCI, which is located on the outside left of the equipment pack. This should disable the spa and cause the reset button to pop out. When the reset button is pushed in, this should re-engage the spa. If the GFCI fails to reset, do not use the spa, disconnect the power and have a qualified and licensed electrician or factory approved service person correct the problem.

Fused Protection:

1. The fuse(s) are located inside the equipment pack, and are for the protection of the current overload to the pump(s). Always shut off power before opening the spa equipment pack. If the fuse is blown, replace only with the same type of fuse.

Section Five – Starting Your System

Please read these instructions, as well as the topside control instructions, before starting your system. Failure to do so could result in damage to your spa system.

1. The water in the spa should be filled to within four (4) inches of the top. Depending on which filtering system you have, the water should completely cover the opening of the top-mounted skim filter, and reach the halfway point of the opening on the flange-mounted skim filter (see page 11).
2. Turn the main power breaker on. Check and see if GFCI is reset and/or power switch is on. At this time your pump (Primary pump on a two-pump system) will energize and begin to operate at low speed. The jets in your spa will sputter for a short period of time and then provide a steady stream of water out of each nozzle.
3. If after thirty (30) seconds, no water is coming out of the jets, there may be air trapped in front of the pump. Turn off the pump and open up the drain valve, allowing the air to escape until water comes out. Shut the drain valve and restart pump. Allow approximately five (5) minutes for the system to purge out all of the air in the plumbing lines.

NOTE: A small percentage of spas may leak in the equipment area, pump unions, valve and fitting connections may vibrate loose due to shipping and delivery conditions. Please do not be alarmed. Visually inspect the area for leaks and hand tighten all connections.

4. Following the directions provided in your topside control instructions set the heater to the desired temperature. The spa will now begin to heat the water, and will shut off when the desired temperature is reached.

Section Six – Jet Operation

1. All of the jets (except the "micro" jets) are adjustable. By turning the face of each jet, you can increase or decrease the flow thereby adjusting each jet to fit your therapy needs.

⚠ WARNING!

DO NOT CLOSE ALL OF THE JETS NOZZLES AT ONE TIME, LEAVE AT LEAST 8 JETS PER PUMP ON OR THIS WILL CAUSE THE PUMP(S) TO OVERHEAT AND POSSIBLY BURN UP, THEREBY VOIDING YOUR WARRANTY.

Section Seven – Draining and Filling Your Spa

It will be necessary to drain your spa periodically. It is our recommendation that this be done every three – six (3-6) months depending on water clarity and cleanliness

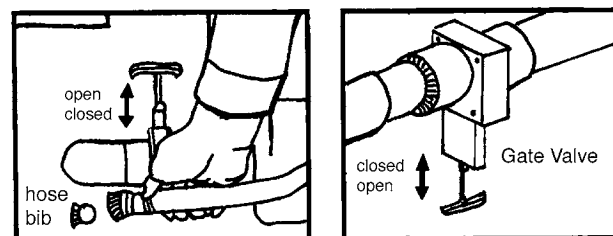
Draining Your Spa:

1. First adjust your thermostat to the lowest settings, then disconnect your power source.
2. Attach a garden hose to the drain valve provided in the equipment compartment. (on DS 660 drain/hose bib and gate valves are optional if not purchased you have to siphon the water out of the spa) **NOTE:** Chemicals in your water may be harmful to grass, vegetation or animals.
3. Open drain valve and allow spa to drain all the way down in the footwell or until the water stops. To prevent damage to your equipment, please do not use your main pump to drain the spa. Although this method takes approximately four (4) hours, it will prolong the life of the system. You may wish to start the process the night before. Please do not remove the thermal cover during the draining operation. Refer to "Care Of Your Spa Finish" SECTION TWELVE and "Cleaning The Filter(s)" SECTION EIGHT, after cleaning operation is completed refill your spa.

Filling Your Spa:

1. Disconnect garden hose from drain valve in the equipment compartment.
2. Close drain valve.
3. Connect garden hose to house hose bib, run for a minute to purge out bad water from hose and place hose in the spa filter compartment.
4. Fill your spa to within four (4) inches of the top or to the halfway mark on your skim filter opening (if flange-mounted, see page 11)
5. Turn power on and run pump on high and low speed allowing it to run 3 minutes before setting your thermostat, then set your thermostat to desired temperature (spa will automatically engage heater).
6. Place thermal cover back on spa.

NOTE: ⚠ Warning! Pressurized filters **only**, contents are under pressure, see page 11 for picture, you must open air relief valve on top of the filter lid to remove all pressure before removing filter top.



The gate valves must be in the open position before operating the spa.