Outdoor Spa

Installation Use and Care Manual

IMPORTANT SAFETY INSTRUCTIONS

It is the spa owner’s responsibility to read and follow all the instructions and precautions described in this manual. Failure to do so may result in personal injury. Liability rests with the spa owner.

Before operating your spa, read and follow all instructions.

Make these instructions available for reference by other spa users.

SAVE THESE INSTRUCTIONS

TABLE OF CONTENTS

HEALTH SAFETY PRECAUTIONS

1. Before using your spa you should check water temperature with a thermometer that is known to be accurate. Never use a spa with water temperature higher than 40°C/ 104° F. This is considered the maximum safe temperature for healthy adults for short periods of 15 to 20 minutes at a time. You may remain immersed in water for longer periods of time provided the water temperature is lower than 38°C/ 100° F, which is approximately the normal body temperature.

2. Alcohol consumption before or during spa usage should be totally avoided: it can cause spa users to lose consciousness and may lead to drowning.

3. Individuals using prescription medication(s) should check with their physician before using the spa. Certain medications may result in complications when used in conjunction with a spa.

4. Individuals suffering from cardiac medical conditions such as heart disease, high blood pressure and circulatory system problems or diabetes should check with a physician before using the spa.

5. Pregnant women can use the spa at temperatures below 38°C/ 100° F. Higher water temperature may cause injury to the unborn child.

6. Hyperthermia (heat stroke) is a dangerous condition brought about by excessive heat. It especially affects the very young, the elderly, individuals under the influence of alcohol or drugs, and those that are on certain medications. The symptoms of hyperthermia are: sweating, dizziness, nausea, faintness, convulsions, increased pulse rate and shallow breathing and in extreme cases unconsciousness. If you suspect hyperthermia, immediately get medical help, lay the victim on the back with the head slightly elevated for easier breathing, cover the body with a blanket and apply ice packs to the head.

7. Emergency telephone numbers, such as a hospital, a physician, an ambulance, the paramedics and the police should be readily available and posted next to a close-by telephone.

PERSONAL SAFETY INSTRUCTIONS

1. Please use the spa when others are present.

2. Children should have access and use the spa only with adult permission and supervision.

3. To reduce the risk of children drowning in the spa, keep the filter clean and unclogged. Do not remove the cover(s) of the main drain(s). Also, please do not modify the suction or the filtration systems.

4. Spa surfaces are made of smooth materials and in connection with water they may become very slippery. Exercise caution especially when entering or leaving the spa. When moving or changing positions, be sure of your footing before applying your full weight as water refraction can be misleading.

5. Do not stay in the spa for extended periods of time. Set a reasonable time limit after which you leave the spa, cool down, take a shower and relax. After this it is secure to return for another stay in the spa.

6. Test the GFCI before using your spa. The GFCI is located either on the spa control box or in the electrical panel. To test the GFCI, push the TEST button and all power is disconnected from the spa, and the spa should stop operating. Push the RESET button and power will be reapplied. If the interrupter does not perform in this manner, then it is either defective or a ground current is still flowing, indicating the possibility of electric shock. Disconnect the power and do not use the spa until the fault has been identified and corrected.

7. Do not use any electric appliance, such as a light, telephone, radio or television within 1.5 m/ 5 feet from your spa.

Warning: This spa is an electrically driven appliance. It may be dangerous to your health if handled or maintained incorrectly.

SAFETY MEASURES

Spa installations that do not conform to the following procedures and requirements may expose spa users to the hazard of an electric shock. Non-conforming spas will not be covered by warranty.

DANGER – RISK OF AN ELECTRIC SHOCK

1. The spa must be installed on a concrete pad 10cm / 4in thick. In order to prevent flooding of the electrical equipment, the pad must be constructed in way that water will drain away from the spa.

2. The spa must be installed at least 1.5m/ 5 feet away from any metal surfaces. Alternatively all metal surfaces within this area from the spa must be permanently ground connected to the spa equipment control box housing. Use an 8 AWG solid wire and attach it to a grounding lug provided on the equipment control box housing.

3. Only a licensed electrician may install power for the spa.

4. Spa power supply installation must include a properly rated circuit breaker, as labeled on the spa's control box enclosure. When tripped, the breaker must disrupt all current carrying lines. It must be labeled and easily accessible to spa users.

5. Power supply lines must be hard wired into the spa's control box enclosure. The use of extension or plug type cords of any kind is dangerous and voids the warranty.

6. Supply lines must be properly sized as per National Electrical Code. A ground line must be provided that can discharge at least the largest current carrying conductor, but no less than solid 8 AWG.

Warning: The legal and technical conditions may vary depending on the country or place of use. Please let the installation be carried out by a qualified specialist. Improper use to the electrical network and faulty grounding pose a substantial health risk.

SPA INSTALLATION CONSIDERATIONS

The spa should be installed on a concrete pad that is at least 10cm/ in in thickness. The concrete should be sloping enough to permit water drainage away from the spa and its electrical components.

If you chose to put your spa on another kind of pad, it must be strong enough to support the combined weight of the spa, the water and the individuals in the spa. A spa with 5 seats and a capacity of 2000l/ 500 gal can weigh up to 2500kg/ 5000lb, including the water and people.

When locating and installing your spa, make sure that the equipment compartment is easily accessible for maintenance.

Outdoor Location

If you install your spa outdoors, please consider the following points:

1. Walking areas around the spa and the path to it should be free of dirt, sand and other debris you don’t want in the spa.

2. The spa should not be installed close to, or under trees. Tree leaves and birds are detrimental to spa cleanliness.

3. A spa sheltered from weather factors is less expensive to maintain and operate.

4. Thoughtful location of your spa can enhance your privacy safety and security and add to your enjoyment of your spa.

Indoor Location

If you install your spa indoors, 2 things need to be considered: water drainage and ventilation. When using the spa, steam escaping from the water surface should be vented out to avoid damage to the room interiors.

ELECTRICAL CONNECTION INSTRUCTION

NOTICE: All electrical spa wiring must be performed by a qualified licensed electrician and must meet all state and local codes and requirements.

DANGER – RISK OF ELECTRIC SHOCK

Wiring

1. The lines carrying power to the spa must be dedicated to the spa and should not be shared with any other appliance(s).

2. All electrical wiring lines must originate from the electrical panel and terminate, hard wired, into the electrical wiring compartment. The use of extension cords or plug type termination is expressly prohibited.

3. **Use only copper wiring**.

4. For a 240 volt system the line wire (black) is connected to the terminal block lug labeled LINE1. The neutral wire (white) is connected to the center lug labeled NEUT, and the ground wire (green) is connected to the ground lug labeled G or GROUND.

Branch Circuit Breaker Requirements

A new breaker must be used for a new spa installation. Do not use an existing or used breaker.

240 Volt 3 Wire System	Line 1 , Zero Conductor & Ground 16 Amp (better 20)

GFCI

All spa installations must be protected by a GFCI. If your spa control box does not include an integrated GFCI then you must use a GFCI breaker per National Electrical Code requirements.

SPA STARTUP DIRECTIONS

The following procedure should be followed on initial startup and whenever the spa is drained for maintenance. Read each step in its entirety before proceeding with that step.

Fill The Spa With Water

a. Clear all debris from your spa.

b. Using a garden hose, start filling the spa with water. **DO NOT** use water from a home water heater or softener.

d. As water level rises, check inside equipment compartment for water leaks. It may be necessary to tighten loose unions and / or fittings.

e. Make sure **SLIDE VALVES** at pump(s) and heater are open. (Fully extended position)

f. Continue filling spa until water level is midway in the skimmer opening. All jets will be under water except neck & upper shoulder jets which will be above water level but are pointing downwards.

Apply Power

a. Rotate thermostat knob (if so equipped) counterclockwise to the lowest temperature setting.

b. Apply power by turning on the spa dedicated circuit breaker.

c. Test the GFCI before using your spa. The GFCI is located either on the spa control box or in the electrical panel. To test the GFCI, push the TEST button and all power is disconnected from the spa, and the spa should stop operating. Push the RESET button and power will be reapplied. If the interrupter does not perform in this manner, then it is either defective or a ground current is still flowing, indicating the possibility of electric shock. Disconnect the power and do not use the spa until the fault has been identified and corrected.

Bleed The System

A certain amount of air is trapped in the lower plumbing. Trapped air causes poor performance and may cause heater failure. To bleed it, do as follows:

a. Run the jets pump in low speed.

b. Locate and loosen the heater output union a quarter turn.

c. After all the air has escaped and the water starts dripping, re-tighten the union.

In normal cases, your spa should now be properly de-aerated.

Add Startup Chemicals

You should have an adequate supply of spa chemicals at hand. Please familiarize yourself with the necessary types and amounts of chemicals necessary to maintain your spa clean and healthful. Your spa dealer stocks the necessary chemicals and is usually a good source of information on chemicals and procedures.

The importance of chemical balance in the spa cannot be over emphasized. At this time you should apply the proper chemicals. Please refer to the instructions included with your chemical kit for the proper procedures, amounts and the correct sequence of chemicals to be added.

Set Filtration Time Clock

If your spa is equipped with a digital electronic system please skip to the section titled “Digital Systems”.

a. Locate time clock on the front of the control box in the equipment compartment. Rotate clock dial CLOCKWISE only to set the correct time of day.

b. Observe small tabs on the outer perimeter of the dial. Each set tab will filter for 15 minutes. Select the time of day when you need the spa to filter, observe the AM / PM markings, and set as many tabs as you wish. (Minimum recommended filtration is 2 hrs. / day).

c. Locate the mode switch next to timer dial. Position the switch in the AUTO

mode.

Set Spa To Heat

a. On the control panel, make sure the ECONOMY light is switched off.

b. Turn off the JETS. The jets indicator light is now switched off.

c. Rotate thermostat knob clockwise so that pointer is in the vertical position. Do not at this time go all the way to maximum temperature.

d. Rotate all air control valves to the OFF position.

e. At this time the panel heater indicator light should be on, the red neon on the equipment box should also be on.

Digital Systems

If your spa is equipped with a digital electronic system, all necessary default settings are already set. There is no further programming necessary.

Temperature Control: To set the desired temperature, press the Temperature (+) button for 2 seconds. The temperature display starts to blink and you can now set the temperature with the (+) and (-) or the Up- and Down buttons, respectively. If the desired temperature is reached, press SET to save.

Time Setting: Press the TIME Button for 2 seconds. The time display starts to blink and the timer value can be chosen by using the (+) and (-) or the the Up- and Down buttons, respectively. If the desired value is shown, press SET to save the changes.

Digital electronic systems possess a multitude of functions and settings, like the control of the filtering systems. All necessary information can be found in the separately included instruction manual.

CHEMICALS & ADDITIVES

Water chemistry balance is extremely important in maintaining good water quality and the preservation of spa equipment. It is a simple task to maintain your spa chemistry in balance. It must be done on a regular basis. The 2 parameters that have to be maintained are the pH and chlorine content.

pH BALANCE: pH is a measure of water acidity. On a scale of 0 to 14, the neutral point of balance is set between 7.2 and 7.6. A measure below 7.2 indicates that spa water is more acid. Such a condition results in corrosion to spa equipment metal components. Above 7.6 means that spa water is more alkaline. This causes salt deposits, and scaling in the equipment and in the spa. Both conditions are detrimental and can cause damage.

CHLORINE / BROMINE: One of these sanitizers must be used to remove bacteria and other organic matter from the spa. Not high enough amounts of sanitizer causes water to turn green and unhealthful. A high level makes water smell pungent, irritate the eyes and the skin and can cause damage to the metal components of the spa equipment.

Do not use types of chlorine which are not designated for spa use. Specifically do not use chlorine intended for pool use.

The booklet that came with your spa's chemical kit contains detailed procedures for maintaining spa chemistry. Your dealer stocks a variety of chemicals to maintain spa chemistry and can help you in the selection of the right chemicals and their methods of application.

A number of other additives are available to enhance spa usage. These include additives to remove dissolved metals, reduce foaming, remove body oils, some make the water feel and smell better. Your dealer can help you select the right additives.

Chlorine vs Bromine: Both these sanitizers if properly applied will maintain a sanitary spa. There are pros and cons on both sides, but the choice is up to the user. Please note these sanitizers are caustic, excessive dissolved amounts of which will cause damage to the spa equipment. It is therefore necessary to maintain the proper balance by periodic measurement of sanitizer content.

OZONE & OZONE GENERATORS

If your spa is equipped with an ozonator, you will have to set the spa to filter for at least 6 hours per day, preferably in 2 or 3 time periods. Please note that ozonators and chemical treatment are complimentary. Ozonators cannot totally eliminate the need of chemicals such as chlorine or bromine.

Ozone is a bactericide. The active component in an ozonator is the ultraviolet light bulb. When power is applied to the bulb, ozone is generated. A tube links the ozone compartment with one or multiple jets. When the these jets are activated, water movement within the jet creates a venturi action that draws the ozone out of the ozone compartment and mixes it with the moving water, purifying it in the process.

The light bulb has a limited service life. Its production of ozone is degraded with use. Consult the manual of the ozonators manufacturer to determine when the bulb should be replaced.

Ozone is harmful. Do not inhale ozone for an extended period of time. Ultraviolet rays are harmful to human eyesight. Do not look directly at a burning ozone bulb.

SPA MAINTENANCE

Your spa is designed to give you many years of enjoyment. Care and regular maintenance of your spa are nevertheless important to keep it beautiful and operating properly. Your spa dealer can supply you with chemicals, detergents and the necessary tools and products to maintain you spa.

Spa Surface Care

Do not use abrasive solvents or cleaners to clean your spa as they dull the surface sheen. Do not use soaps or sudsy type detergents to clean your spa. Consult your dealer for the proper cleaners and detergents.

Filter Maintenance

Your spa may have 1 or 2 filter elements. To remove the filter(s), open the weir gate to the outside, slide the basket out with the horizontal flats in the vertical

plane. When filters are removed from the spa make sure that no object fall into the filter cavity. They can cause obstruction to water movement.

Every 2 months, more often with heavy use, filter must be cleaned to get rid of objects and particles that are lodged in the filter pleats. Using a garden hose with a pressurized nozzle, push water from the inside to the outside of the filter pleats, forcing all trapped particles out. If the filter is far too dirty to be cleaned as described above, obtain filter cleaner material from your dealer. Soak the filter overnight and then hose it down. Filters will last many years if properly maintained. Do not use a broken filter, since this could lead to damages on the jets and/or heater.

Caution: Do not use high-pressure cleaners or other pressured cleaning tools to clean the filters (filters can be damaged)

Notice: If the filters are taken out, make sure that no objects can fall into the opening, since this could lead to damages on the jets and/or heater.

Care for wood paneling

The wood paneling hast the natural tendency to fade after some time. Every 6 months the paneling should be painted. Grind the surface a little bit to remove any dirt and paint the surface new afterwards. Do not use any varnish or similar products. Ideally the same color is used as the original paintwork.

Setting of the Hydrotherapy Jets

There are 3 types of hydrotherapy jets: Moving jets, Adjustable jets and Micro jets. Moving jets rotate in a circular or random pattern and pressure or direction are not adjustable.

Adjustable jets are directional and may be adjusted for optimum water pressures. Move the jet’s nozzle to change direction. Rotate the face of the jet to increase or decrease water pressure. It is possible to completely shut off a jet. Please note that if you shut off enough jets in the spa, pressure may build up in the plumbing to unsafe levels.

Micro jets are fixed; they are neither directional nor adjustable. They are usually installed to deliver therapy to specific areas of the body.

Moving and Adjustable jets are interchangeable. Your spa specialist will be happy to show you how to exchange these jets.

Draining your Spa

Every 3 or 4 months or depending upon water condition, you need to renew spa water. To drain your spa, power must be disconnected at the circuit breaker. Within the equipment access compartment locate the drain faucet. Attach a garden hose to the faucet and then open it. Water will start draining. You may use it to water your garden.

The drain faucet will not remove all the water in the spa. You may have to remove a small amount of water by hand, using a towel or a plastic container so as not to scratch spa surfaces.

Once the spa is drained and dry, you may want to carry out other maintenance chores, such as surface cleaning and waxing.

To refill your spa with water please refer to and follow the instructions describe in the SPA STARTUP DIRECTIONS section.

Winterizing & Long Term Storage

If you intend to winterize or to not use your spa for an extended period of time, drain it as described above. You will also have to drain the pump(s) and the air channel additionally.

To drain the pumps you need to disconnect the 2 hoses attached to each pump. These hoses are attached using unions that are hand tight. After opening the connections, the water can drain. Be sure to reattach the hoses after you are done.

COMMONLY ASKED INSTALLATION QUESTIONS

Can I do the electrical installation myself?

Yes if the work meets NEC and local code. It is nevertheless best to have a licensed electrician do the installation. A spa electrical installation must be protected by a GFCI breaker at the panel. (GFCI breakers are available at the Depot.)

Do I need to pour a concrete slab for the spa?

A concrete slab is the best spa foundation. Alternatively you can also put your spa on another surface with the appropriate minimum load bearing capacity. A spa can weigh up to 2.5 tons with people and water. More details can be found in the section “Spa Installation Considerations”.

How often do I need to drain the spa?

Once every 3 to 4 months on the average, earlier if spa is used more often. More information can be found in the section “draining your spa”.

How often do I need to clean the filters?

On the average once a month the filters should be hosed off (from the inside out). Whenever the spa is drained, it is a good time to rinse the filters overnight in a solution of TSP (Tri Sodium Phosphate also available at the Depot.). The filters should be hosed off before re-use. A set of filters will last many years. It is a good idea to have a spare set for use alternately between clean-ups.

What chemicals do I need to use and how often?

Water test kits as well as the necessary chemicals are available at the Depot. You need test strips or a color kit, a controller to adjust the pH-value of the water if necessary as well as Chlorine (dichlor) or Bromine tablets to disinfect the water weekly or as needed. Further special additives reduce foaming if necessary or remove minerals from the water. For detailed information please contact a specialist.

How often do I have to paint the wood paneling?

The paneling should be painted every 6 months. More information can be found

in the section “Care for wood paneling”.

CHEMICAL SAFETY TIPS

Spa additives are chemicals. When using, please follow these general safety tips.

1. Read all labels and instructions carefully prior to use.

2. Never mix or combine chemicals.

3. When combining chemicals always add them both into water. Do not mix them directly together.

4. Always store chemicals in a cool, dry place.

5. Store chemicals out of the reach of children.

6. When not in use keep chemical containers tightly closed.

7. Never inhale chemical fumes or allow chemicals to come in contact with your eyes, nose, mouth or skin.

8. Wash your hands thoroughly after handling chemicals.

9. Use chemicals especially formulated for spas.

10. Do not use chemicals formulated for pools - they may damage your spa.

11. Never drain chemically treated water on plants, lawns or in streams or lakes.

12. Test your spa water weekly.

13. Maintain the pH level between 7.2 and 7.5. Maintain a sanitizer level between 3.0 and 5.0.

14. Follow the instructions on the packaging of cleaning additives and make sure to hold their level in a correct area.

HOT WATER SAFETY TIPS

1. Never use the spa at temperatures above 40°C/ 104°F.

2. Do not drink alcoholic beverages while using the spa.

3. If you are on medication, consult your physician before using the spa.

4. Use the spa for 10 to 20 minutes at a time. Leave the spa to cool off for an equal amount of time, before re-entering the spa.

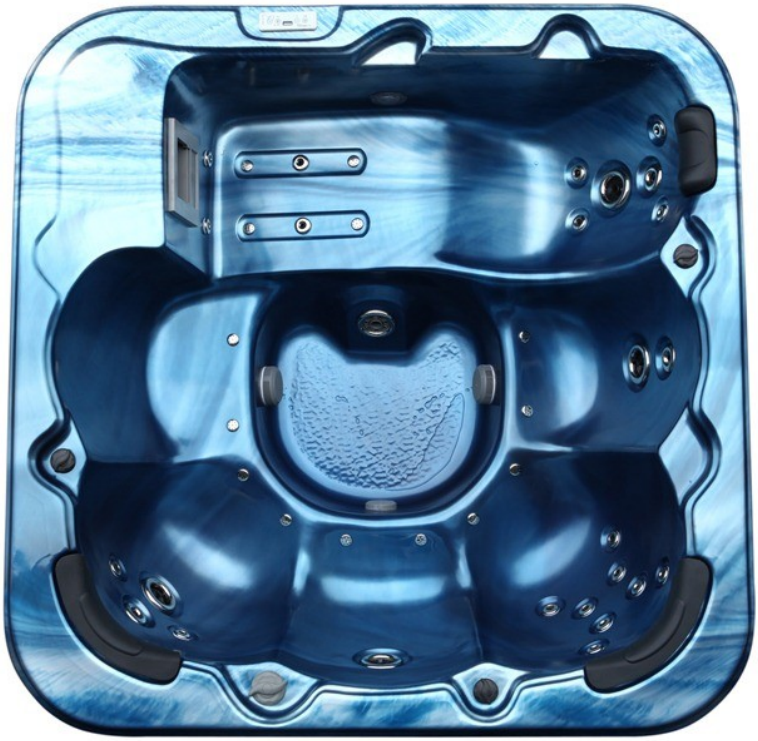
5. Do not submerse your head below water. The water in the spa may have high concentration level of chemicals.

6. Pregnant women should consult their doctor before using the spa.

7. Shower before and after using the spa.

8. Children should never use the spa without adult supervision.

9. When not in use keep the spa covered and locked.



CHEMICAL PROBLEMS & SOLUTIONS

SYMPTOM	POSSIBLE CAUSE	WHAT TO DO
CLOUDY WATER	High organic contaminants	Test & Adjust pH
	Particles too small to filter	Clean Filter
	pH Out of balance	Test & Adjust pH
	High calcium levels	Test & Adjust Calcium Level
	Dirty filter	Clean Filter
EYE OR SKIN IRRITATION	pH Out of balance	Test & Adjust pH
	High organic contaminants	Test & Adjust pH
CLEAR GREEN WATER	Excessive copper or iron	Apply mineral control

CLEAR BROWN WATER	Excessive iron or manganese	Apply mineral control
CLOUDY GREEN WATER	Algae growth	Test & adjust pH
BLACK SPOTS	Algae growth	Test & adjust pH
OROD	High organic contaminants	Test & adjust pH
EXCESS FOAMING	Residue from body oils and lotions	Apply anti foam
SCUM LINES & DEPOSITS	Residue from body oils and Lotions	Apply anti foam

Maintaining proper spa water chemistry is necessary for a healthy spa. It will also extend the life of the equipment and prevent premature failure. A test kit is necessary to measure and adjust the pH level as well as the amount of available chlorine or sanitizer.