OWNER'S MANUAL

QUICK REFERENCE

To assist you with the installation and maintenance service of your new spa, please fill out the following information and keep it on hand for future reference.

My spa model is: _____

Serial number is: _____

Dealer purchased from: _____

Dealer phone #: _____

Date of purchase: _____

Dealer address: _____

Date delivered/installed: _____

Other notes: _____

_____

_____

TABLE OF CONTENTS

INTRODUCTION

Congratulations on your purchase of a new Hatana Hot Tub! Your hot tub is designed with comfort, low maintenance and durability in mind.

With proper care and maintenance, you can expect your Hatana Hot Tub to last for years. It is recommended that you read the entire Owners Manual before operating your spa. It contains information on start-up, ownership do's and dont's and safety precautions necessary to insure the life of your investment and your family and friends. Failure to follow these procedures may cause damage to your unit and void the warranty.

SAFETY FIRST! IMPORTANT SAFETY INSTRUCTIONS! READ AND FOLLOW ALL INSTRUCTIONS.

When installing and using electrical equipment it is recommended that a licensed and bonded electrician perform the work. Basic safety precautions should always be followed, including the following:

- A “pressure wire connector” is provided and is located on the outside of the control box. This connector will allow the connection of a no. 8 AWG solid copper bonding wire (no. 6 AWG Canada) between the spa and any metal equipment, metal electrical enclosures, metal water pipe or conduit within 5 feet of the spa as needed to comply with local requirements.

- A green colored terminal wire (or a wire connector marked “G”, “GR”, “Ground”, or “Grounding”) is also provided. To reduce the risk of electric shock, connect this terminal to the grounding terminal of your electric service or supply panel with a continuous green insulated copper wire equivalent to the circuit conductor supplying this equipment.

- The electrical supply must include a suitably rated Ground Fault Circuit Interrupter to open all underground supply conductors to comply with section 422-20 of the National Electrical Code. ANSI/NFPA 70-1987. The power supply cut off must be readily accessible to the spa occupant, but installed at least 5 feet from spa water.

- Test the performance of the GFCI according to manufacturers recommendations. If the GFCI does not perform correctly, there may be a ground current present which can increase the risk of electric shock. Disconnect the power until the fault has been identified and corrected.

- **DANGER – RISK OF ELECTRIC SHOCK.** Install at least 5 feet from all metal surfaces.

- **DANGER – RISK OF ELECTRIC SHOCK.** Do not permit any electric appliance such as lights, telephones, radios or televisions within 5 feet of your hot tub.

⚠ WARNING	
PREVENT DROWNING 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 1. NEVER PLACE ANY ELECTRIC APPLIANCE WITHIN 5 FEET OF SPA.

- **DANGER – RISK OF CHILD DROWNING.** Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use a hot tub unless they are supervised at all times.

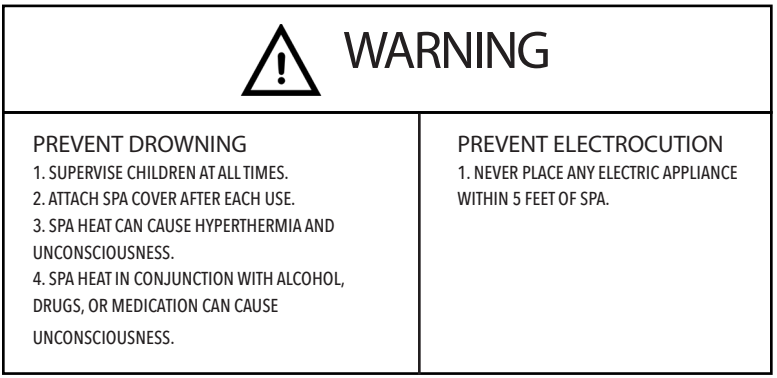
- **DANGER –** Risk of injury, do not remove suction fittings. The suction fittings in this hot tub are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure that the flow rates are compatible. Never operate hot tub if the suction fittings are broken or missing. Never replace a suction fitting with one rated less than the flow rate, marked on the original suction fitting.

- Installation should include proper drainage of the electrical equipment area to prevent electrical shortage. Store all chemicals in a cool dry area and keep out of children's reach.

- **WARNING -** To reduce the risk of injury:

  A. Hot tub heat can cause hyperthermia and unconsciousness! Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6°F (37C). The symptoms of hyperthermia include an increase in the internal temperature of the body, dizziness, lethargy, drowsiness, and fainting. The effects of hyperthermia include failure to perceive heat; failure to recognize the need to exit your hot tub; unawareness of impending hazard; fetal damage in pregnant women; physical inability to exit the hot tub; and unconsciousness resulting in the danger of drowning.

  B. **WARNING -** The use of alcohol, drugs, or medication can greatly increase the risk of fatal hyperthermia. The water in a hot tub should never exceed 104° F (40° C). Water temperatures between 100° F (38° C) and 104° F (40° C) are



  considered safe for a healthy adult. Lower water temperatures are recommended for extended use (exceeding 10-15 minutes) and for young children.

  C. Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy. Pregnant or possibly pregnant women should limit water temperatures to 100° F (38° C).

AUDIO SYSTEM:

CAUTION - Risk of Electric Shock. Do not leave compartment door open.

CAUTION - Risk of Electric Shock. Replace components only with identical components.

CAUTION - Do not operate the audio/video controls while inside in the spa.

WARNING - Prevent Electrocution. Do not connect any auxiliary components (for example cable, additional speakers, headphones, additional audio/video components, etc.) to the system.

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.

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.

When the power supply connections or power supply cord(s) are damaged; if water is entering the audio/video compartment or any electrical equipment compartment area; if the protective shields or barriers are showing signs of deterioration; or if there are signs of other potential damage to the unit, turn off the unit and refer servicing to a qualified service personnel.

This unit should be subjected to periodic routine maintenance (for example, once every 3 months) to make sure that the unit is operating properly.

SAVE THESE INSTRUCTIONS!

⚠ STEPS FOR A SUCCESSFUL INSTALLATION:

1. Preparing for your hot tub

Prior to receiving your new hot tub, you will want to prepare an area for installation. You will need to arrange to have your spa placed in the desired location and prepare the location for the connection of the electrical circuits. In most cities, permits are required for the installation of electrical circuits.

Make certain to review the path that your hot tub will take through your property along with the size of it to ensure that there is enough space for travel to your installation location.

Here are some key things to consider while installing your hot tub that will help eliminate some of the unforeseeable situations that could hinder your spa installation.

- Avoid installing too close to any structures.
- Leave enough room around all sides to allow access to the service panels.
- Install on a level, load-bearing surface.
- Install at least 5 feet from ground conductors.
- Use non-conductive conduit for all wiring.
- If installing below the surface of a deck, leave enough room to access and remove service panels.

We recommend a level 4" thick concrete pad if you are installing on land (rather than on a deck or platform). The dimensions of the pad should at least match the outside dimensions of your spa. You should also accommodate for any steps or obstructions around the hot tub. Please allow a few days for curing the cement when scheduling your delivery date.

Balconies and decks are not recommended for hot tub installations; but if you choose one as your location, keep in mind that a large filled hot tub with six adults can weigh as much as three tons. Balconies and decks must be constructed to current state and local building

codes and must support at least 100 pounds per square foot. If you are building a deck around your hot tub, be sure that it does not cover up any of the service panels. If you are building stairs for the spa, it is recommended that they be installed in such a way that they can be moved out of the way if access to the service panels is required.

The most important thing to remember is to plan your installation so that it will be easy to move the hot tub from the delivery truck to the installation site. Spas are typically transported on a mover's dolly lying on their side. Check for adequate gate clearance and remove any fence panels if necessary to allow access to the installation site.

2. Site selection and preparation

The location of your hot tub is entirely up to you. Read these instructions for ideas of the various locations that your new spa may be installed.

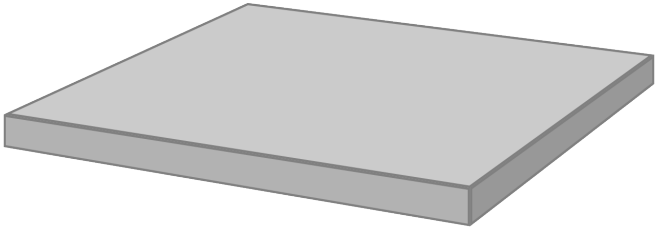
By the time you have purchased your spa, you have likely already picked your location. Prior to the hot tub delivery, please verify the following:

- Always place the hot tub on a compacted, level surface. The best surface is a level concrete pad. A spa, full of water, can weigh a great deal. Please ensure that the spot can support the weight.
- Make sure that your hot tub is level before it is filled.
- Locate the equipment panel. The system pack, drain valve, and ozone generator are usually located in the same area. Be sure that the connections are tightened during filling. Water inside the system pack will cause the pack to fail, and the breaker to trip.
- The panels, located on all four sides, are removable. Be sure that you have access to all four panels.
- Be sure to have easy access to the circuit breaker in the sub panel (240 volt models).
- Never let water into the sub panel, or into the electrical outlet that your spa is plugged in to. The hot tub's sub panel is rain tight when installed correctly with the door closed.

3. Installation - Placing your hot tub

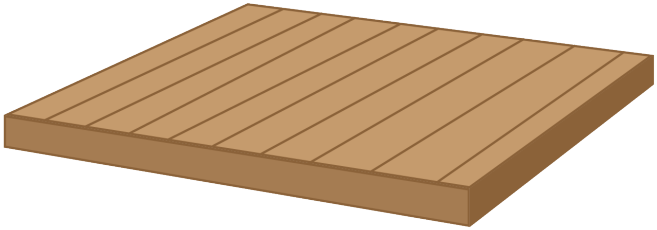
OUTDOOR AND PATIO INSTALLATION

Positioning your hot tub correctly in your chosen location is essential. Adhering to the spa's warranty means installing the tub on a surface that is 100% supportive. A 4" concrete pad is the best method for a stable and level surface. Your unit may also be installed on a deck but must consider the load rating including 6 people and filled with water.



DECK INSTALLATION

When placing the hot tub on a deck, please ensure the maximum load capacity of the deck. Consult a qualified deck builder or structural engineer before you place the hot tub on an elevated deck or indoors. To determine the weight of your spa, please refer to the specifications on the website. This weight must not exceed the structural load capacity of the deck.



INDOOR INSTALLATION

When installing a hot tub indoors, there are extra things to consider. Moisture will accumulate on the floor surrounding the spa, so the flooring material needs to provide grip when wet for safety.

The location will also require proper drainage to prevent water build-up. When building a room for your hot tub, it is essential to have a floor drain and proper ventilation to avoid humidity which can cause dry rot, mold and mildew problems.

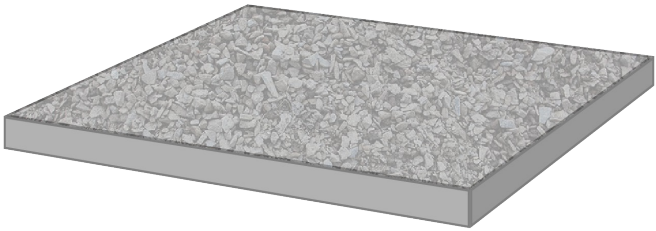
GROUND PREPARATION

Your hot tub has been designed to be installed on a variety of surfaces. The insulated spa floor base gives you the ability to find the perfect location. Though a concrete slab is the best for long term, there are other options available as long as the surface is level prior to delivery. The alternatives include 5/8 Minus Crushed Packed Rock, or a deck that is rated for the load.

When placing a hot tub on crushed rock, the easiest way to maintain its form is to build a frame and fill it with the crushed rock. Remember if the spa is placed on the grass or dirt, debris will get inside as users enter and exit.

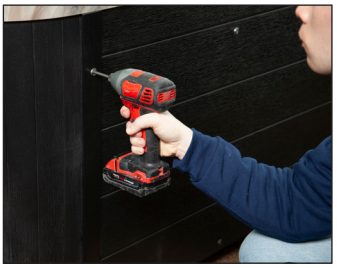
It is essential for proper operation and draining of the hot tub that it be level when installed. Failure to do so can effect the spas operation and void the warranty.

Remember; the warranty on your hot tub is voided if the site is not 100% supportive.



4. Electrical hook-up requirements

REMOVING SPA PANELS



Unscrew and remove the two vertical trim pieces on the front of your spa below spa control panel.

Unscrew and remove the front cabinet panel.

Remove the spa panel for access to spa components. Reverse these steps to reattach the spa access panel.

Electrical Systems wired by Licensed Professionals

To ensure you will have an opportunity to use your hot tub soon after delivery, it is very important that the required electrical service has been installed properly by a professional, licensed electrician before arrival of your spa.

IMPORTANT: Electrical connections must be made by a qualified, licensed professional. Please contact a licensed residential electrician for these services.

NOTE: A separate sub-panel must be used to supply power and protect the hot tub. All models require a 50 amp single phase 240 volt circuit breaker in the main electrical service panel. Hot tubs must be wired in accordance with applicable electrical codes.
Electrical work should always be performed by a licensed electrician. A licensed electrician needs to install a four-wire electrical service (two line voltages, one neutral, one ground) from the main electrical panel to the sub-panel, and from the sub-panel to the spa per the wiring diagram on the next page (figure 1-1). The electrician should mount the sub-panel in the vicinity of the spa but not closer than 5 feet from the water's edge (NEC 680-38 to 41-A-3).

WARNING: Removing or bypassing the GFCI breakers in the sub panel at any time will result in an unsafe hot tub and will void the warranty.

WIRE SPECIFICATION NOTE: Long electrical runs may require a larger gauge feed wire than stated. We recommend that a maximum voltage drop of 3% be used when calculating the larger wire size.

Refer to the Wiring Diagrams (figure 1-1) for the electrical requirements of the 240 volt models.

Do not turn on power to the hot tub when the tub is not filled.

Always shut off power at the source when working with any electrical power!! Failure to do this could result in serious injury or even death!

Electrical Requirements

IMPORTANT: Electrical connections must be made by a qualified, licensed professional. Please contact a licensed residential electrician for these services.

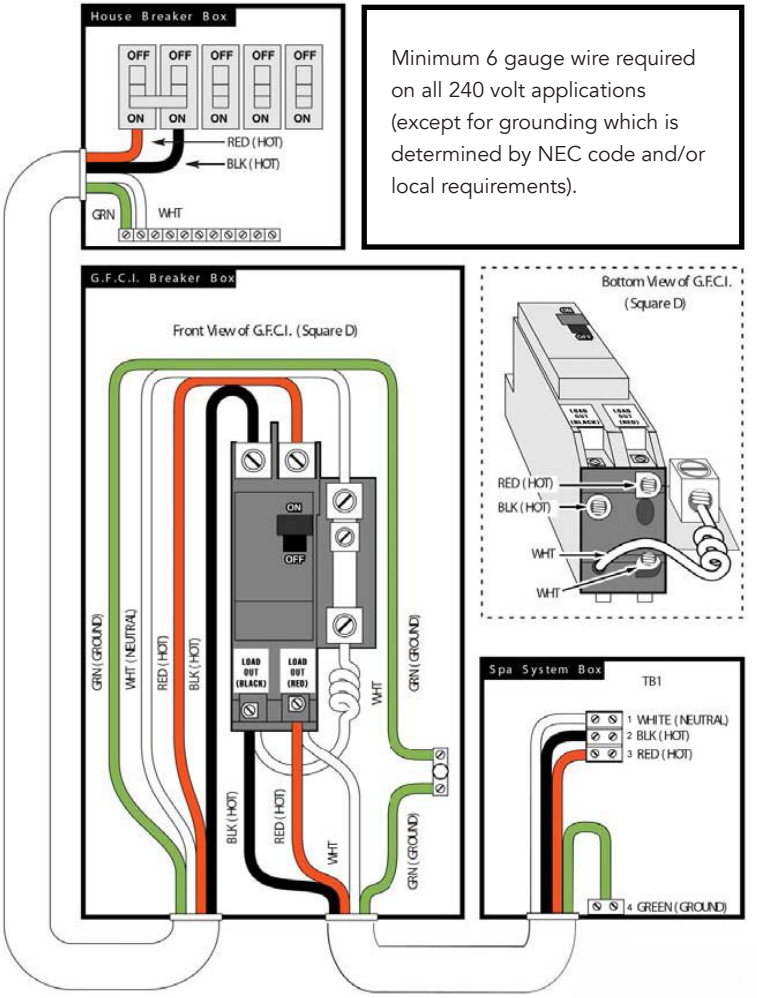


Figure 1-1
240 volt wiring configuration from the house to the hot tub

Note: Spa System Box wiring may vary between models,please see electrical configuration for specific wire placement.

FILLING YOUR HOT TUB THROUGH THE FILTER CHAMBER

Before you fill your hot tub, it is advisable to have your water tested for hardness (calcium and mineral content). Water from wells usually contain harder water than urban water supplies. Mineral and metal imbalances in your water can shorten the life of your spa. Please contact your local dealer for a proper water analysis or to purchase a testing kit.

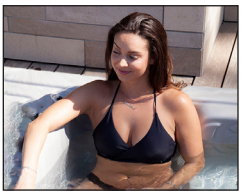
We strongly recommend a high quality "Water Test Kit" for checking pH and sanitizer levels. Test the water daily until your "user load" is determined.

Make sure there is no dirt or sediment at the bottom of the tub and that there is nothing inside the filter compartment before filling with water. **Filling the hot tub through the filter housing will help to prevent air locks (trapped air) in pumps on start up.**

Fill the hot tub to the correct water level. Be sure to open all valves and jets in the plumbing system before filling to allow as much air as possible to escape from the plumbing and the control system during filling. After turning the power on at the main power panel, the top-side panel will display a "splash", or "startup" screen.

1. Place your garden hose into the filter housing. This will ensure that air bubbles are removed from the lines while you fill the hot tub.

2. Fill your hot tub so that most of the water enters through the filter chamber.



3. Fill the water to the proper level – half way up the filter housing.

IMPORTANT! Improperly balanced water may damage your hot tub and void your warranty! Do not fill our tub with water from your hot water heater!

TOPSIDE CONTROLS: TURNING ON YOUR SPA

TP600 control panel

Start Up

When the GFCI for the spa is switched on to supply power, a startup sequence of numbers will appear on the display. The hot tub will then enter **Priming Mode**. The display will read 'RUN PUMPS PURG AIR'. Press the **Pump Button(s)** to turn the pumps on and off to verify that all the air is purged from the plumbing, particularly the plumbing associated with the heater. Priming Mode will end automatically after 4 minutes. Pressing a Temperature Button (Cool or Warm) will exit Priming Mode manually. However, the temperature will not show for a few minutes. Once the water temperature is recognized by the system, and if it is below the **Set Temperature**, the heater will start heating water until the **Set Temperature** is reached.

Basic Operation

The **Up** (Warm) and **Down** (Cool) buttons are often referred to as **Temperature Button(s)**. Some panels only have a single **Temperature Button**. Press the button once and the current Set Temperature will flash on the LCD. The Set Temperature and the actual water temperature are often different. While the numbers are flashing, press a Temperature Button again to change the Set Temperature. Press and hold for faster adjustment. After the new Set Temperature stops flashing, the actual temperature is displayed again and the new Set Temperature is programmed. The water will now heat to the new Set Temperature as needed. The **Light Button** turns the hot tub light on and off and is also used in conjunctions with the **Temperature Button(s)** to navigate the system menus.

Navigating the hot tub operation menu is done using only 2 or 3 buttons on the control panel. Pressing the **Light Button** while the Set Temperature is flashing will enter the menus. Pressing the **Light Button** after that will proceed through the menu choices. Pressing a **Temperature Button** while any menu item is showing will either edit it directly, or begin an editing sequence. Depending on the screen displayed, waiting between 10 and 30 seconds will allow the panel to return to normal operation and a display of hot tub status.

Filtration

Your hot tub features up to 2 programmable filter cycles. See the TP600 User Guide for instructions.

Dual Temperature Ranges

This system incorporates two temperature range settings with independent temperatures. The High **Range** ▲ is indicated in the display and might be set between 80°F and 104°F. The Low **Range** ▼ is indicated in the display and might be set between 50°F and 99°F. Using the Low Range may be more economical during periods of non-use.

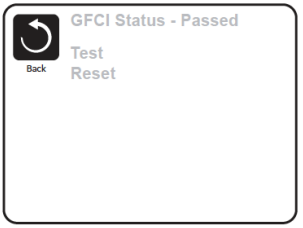
Ready and Rest Modes

READY Mode will allow your hot tub to heat as needed and to maintain the set temperature. In Ready Mode, your spa's water will automatically attempt to maintain it's set temperature. However, using the tub with the cover open during extreme cold temperatures, the set temperature may be unattainable.

REST Mode will only allow heating during programmed filter cycles. Since polling does not occur, the temperature display may not show a current temperature until the filtration pump has been running for a minute or two. READY/REST Mode may appear when Pump 1 is active.

UTILITIES – GFCI TEST FEATURE

The Ground Fault Circuit Interrupter (GFCI) or Residual Current Detector (RCD) is an important Safety device and is required equipment on a hot tub installation.



Used for verifying a proper installation

Your hot tub may be equipped with a GFCI protection feature. GFCI trips will indicate a ground fault or other unsafe condition and the spa must be shut off until a service person can correct the problem.

Forcing a GFCI Trip Test (North America Only)

The installer can cause a GFCI Trip Test to occur by initiating it using the above menu. The GFCI should trip within several seconds and the hot tub should shut down. If it does not, shut down the power manually and verify that a GFCI breaker is installed and that the circuit and spa are wired correctly. Verify the function of the GFCI with its own test button. Restore power to the hot tub and repeat the GFCI Trip Test. After a successful test the display will show "Passed" on the GFCI Status screen as shown above.

Warning:

You should familiarize yourself with where the GFCI is and how to properly reset the it. If freezing conditions exist, the GFCI or RCD should be reset immediately or hot tub damage could result.

WATER PURITY & FILTRATION

Keeping the water clean – chemical sanitizers

One of the main reasons that people require service on their hot tub is because they haven't followed a proper water sterilization regiment. Water can accumulate impurities that can worsen the performance, or damage the filtration system if chemicals are not properly applied at appropriate intervals. The water can even become unhealthy if chemicals are not used to sanitize the water. Improper pH levels or calcium levels can cause either corrosion of parts or scale build-up.

We recommend that you begin a routine of sterilization that you are comfortable with, and that you can follow through with. If you get into a scheduled regiment, it will be easier to remember when to apply the chemicals or run your alternative system (like Salt, Ozone or UV).

Your hot tub comes with an ozonator that will do a very good job at killing bacteria and oxygenating the water, but chlorine or bromine are often used to compliment the work of the ozonator.

The best way to keep the water clean over long periods of time is to change the water four times a year. Connect a hose to the drain valve and open it all the way to allow the hot tub to drain all the way. Use a shop-vac to remove any standing water and debris at the bottom of the tub. Refer to the maintenance section for instructions on cleaning the spa before refilling it.

Hot Tub Chemistry 101

At first, learning to understand hot tub water chemistry can seem like a daunting task to say the least. We intend on helping you understand spa chemicals so that you can maintain the health of your water chemistry at all times.

There are three basic principals to hot tub water chemistry.

1. Sanitize/Disinfect (kill viruses, germs, etc.)
2. Oxidize (break down organic compounds like oils and sweat)
3. Maintain slightly base (alkaline) water (pH of 7.4 - 7.6). This controls the corrosiveness of the water, prevents excessive scaling (mineral

formation on surfaces exposed to water, and insures that the water is comfortable to the skin.

Once you have a good understanding of the chemicals that are used in your hot tub, you will be able to maintain proper water balance. Water balance is reached when all elements (pH, total alkalinity, calcium hardness and total dissolved solids) are within their proper ranges.

IMPORTANT! Always read directions on chemical container thoroughly before using hot tub chemicals.

The pH scale goes from 0 to 14, with zero being extremely acidic and 14 being extremely base (alkaline). Seven is considered neutral pH.

The following definitions for chemicals will help you understand what the chemical is and what it is used for:

Sanitizers

CHLORINE - Chlorine is widely used as a sanitizer in pool and hot tub water to kill bacteria, viruses and algae. It also oxidizes ammonia and nitrogen compounds such as swimmer waste. Its formal name is Sodium Dichlor and is referred to as a chlorinated concentrate. Sodium Dichlor is a fast-dissolving, granular, stabilized organic chlorine compound providing either 56% or 63% available chlorine. Cyanuric acid and/or stabilizers are added to prevent U.V. light destruction of the chlorine by the sun. Use of improper Chlorine additives can cause excessive Cyanuric acid which can corrode and destroy hot tub components.

BROMINE – Bromine is the other commonly used sanitizer or disinfectant in pool and hot tub water to kill bacteria and algae, and while oxidizing ammonia and nitrogen compounds such as swimmer waste. This chemical does not eliminate swimmer waste unless it is combined with an appropriate oxidizer such as a non-chlorine shock. It is susceptible to direct sunlight, and is therefore not efficient in outdoor pools. Bromine is sometimes used as an alternative for people whom are allergic or sensitive to chlorine products. Bromine products are available as sodium bromide and bromine tablets. The bromide ion has no effective disinfectant or sanitizing capabilities without the use of non-chlorine shock (potassium monopersulfate). Potassium monopersulfate is added to oxidize, or activate, the bromide ion into bromine, which rapidly forms the active sanitizer hypobromous

acid in the hot tub water. Upon reaction with bacteria and other hot tub contaminants, hypobromous acid is reduced back to bromide ion, ready to be activated again by the next dose of potassium monopersulfate. Potassium monopersulfate begins to produce bromine immediately and continues to do so for several hours, providing time for oxidation of bather waste and other organic contaminants such as ammonia and nitrogen.

NON-CHLORINE SHOCK (Potassium Monopersulfate) – Also known as "Oxy- Shock", is an important chemical used in the process of disinfecting and sanitizing the hot tub water. Non-chlorine shock is used to oxidize and eliminate organic contaminants, dead algae and debris, and will also convert the chlorine by-products (chlorides and chloramines) back into free available chlorine.

When used with bromine products, non-chlorine shock is used with sodium bromide in a two-part disinfection system. Potassium monopersulfate (non-chlorine shock) is added to oxidize, or activate, bromide ion into bromine which rapidly forms the active sanitizer - hypobromous acid - in hot tub water. Upon reaction with bacteria and other hot tub contaminants, hypobromous acid is reduced back to bromide ion, ready to be activated again by the next dose of potassium monopersulfate. Most non-chlorine shock products have buffers that reduce pH instability, and corrosion inhibitors that help protect the heater and other metal surfaces.

OZONE – Ozone is a proven sanitizing gas created by an ozonator. It is 3000 times more powerful than chlorine. Although it dissipates quickly and has no residual sanitizer, maintenance time and chemical costs are cut by as much as 75%. Ozone is dispensed during the filtration mode.

pH Controllers

SODIUM BICARBONATE - Commonly used to increase pH and total alkalinity of spa water. Sodium bicarbonate is also known as natural baking soda. SODIUM CARBONATE – Also known as soda ash, is a substance used to raise pH and total alkalinity.

SODIUM BISULFATE – Also known as dry acid, the chemical used to lower pH and total alkalinity of hot tub water.

Water Conditioners

FLOCCULENT – A compound which clarifies hot tub water by gathering oils, dirt, scum, metal deposits and small contaminant particles into larger globules, which then can be filtered more effectively.

CLARIFIER – A compound used to remove dissolved solids, metals, dirt, oils, or other contaminants from hot tub water.

SCUM BALL™ – A softball sized ball that is kept in the water. The ball is chemically treated so that it attracts contaminants that would normally be trapped in the filter.

SEQUESTERING AGENT – Stain and scale preventing compounds that sequesters dissolved metals to prevent water discoloration.

CALCIUM CHLORIDE – A soluble white compound used to raise the calcium hardness of hot tub & pool water, to protect equipment from corrosion.

ALGAECIDE – A chemical used to kill algae and prevent it from growing back.

DEFOAMER – A compound used to reduce or eliminate foaming in hot tub water.

CHITIN – A naturally occurring polymer (pronounced KY-tin) found in crab and lobster shells. As a hot tub clarifier, it is the best flocculating agent available. Removes oils, dirt, scum, and metal deposits, allowing the filtering system to work more effectively.

How To Use The Chemicals

Now that you have some knowledge about hot tub chemicals, you will learn how to use them to maintain balanced water in your hot tub. This section will explain how to apply chemicals, how much to use, and when to use them.

Usage Definitions

Before getting into how much and when, it is important to understand some of the terminology that is used to describe how the chemicals are applied:

P.P.M. – Parts Per Million. Expressed as a ratio of number out of 1 million.

SHOCK – Addition of an oxidizer ("Oxy-Shock") or superchlorinator to the water to break-down the organic contaminates on which bacteria feed and to destroy ammonia and nitrogen compounds (oxidize only).

SUPERCHLORINATION – Means the addition of enough chlorine in the water to kill all living things (sanitize) and destroy any organic wastes present in the water (oxidize). Usually this means about double your normal dose of chlorine. Superchlorination can be done once a day for heavy bather loads or as infrequent as once a week for a moderately used hot tub.

CHLORINATION – To add chlorine to your hot tub on a regular basis to disinfect and oxidize your spa's water.

BREAK POINT CHLORINATION – The process of shocking the water with significant quantities of chlorine to oxidize all contaminants and organic wastes and leave all remaining chlorine as free chlorine.

CALCIUM HARDNESS – A measure of the amount of calcium dissolved in water. Water with low hardness can lead to corrosion of metal parts. Water with high level of hardness can cause scale (calcium crust) build up on spa surfaces which can clog filters, heaters and pumps.

WATER BALANCE – Water balance is reached when all elements (pH, total alkalinity, calcium hardness and total dissolved solids) are within their proper ranges.

ENZYMES – Biodegradable proteins which breakdown oils, films and digest scum in hot tub water.

FREE CHLORINE – The amount of chlorine available to kill bacteria or algae. Also known as "Available Chlorine".

COMBINED CHLORINE – The portion of the total chlorine in water in chemical combination with ammonia, organics, and nitrogen, most of which are chloramines.

TOTAL ALKALINITY (TA) – The measure in PPM of all the dissolved base/alkaline material in the water. The acid-neutralizing capacity of water which in-dicates its buffering ability, or resistance to fluctuations in pH.

TOTAL DISSOLVED SOLIDS (TDS) – The total amount of dissolved materials in spa water. The ideal range is 1,500 ppm above the start-up TDS in hot tubs.

Starting A Chemical Maintenance Program

A chemical maintenance program's goal is to maintain water balance. If you apply chemicals and test your water on a regular basis, water balance is easy to maintain sanitation and your spa water will stay clear and healthy. Test strips are fairly accurate. Test kits are also available that are very accurate and will test everything that you will need to monitor your spa's chemistry.

Three main parameters should be tracked closely:

1. pH
2. Free chlorine
3. Alkalinity

T.D.S. (Total Dissolved Solids) and calcium hardness should be checked after the first three are in the correct range. Test strips and test kits come with instructions on how to determine whether the chemicals are in the right range. Table 2-1 shows how to dispense chemicals and how

often to do it.

Water Balance is reached when all elements (free chlorine, pH, total alkalinity, calcium hardness and total dissolved solids) are within their proper ranges.

Figure 2-1: Spa water care

TEST	PARAMETER	HOW OFTEN	TREATMENT
pH	< 7.2 pH	2x weekly or more for heavy use	Add Spa Up™
pH	< 7.8 pH	2x weekly or more for heavy use	Add Spa Down™
Chlorine/ Bromine	3 – 5 ppm	2x weekly or more for heavy use	Add Chlorine or Bromine
Alkalinity	80 – 120 ppm	2x weekly or more for heavy use	Add Alkalinity Increaser
TDS	< 3000 ppm	Check monthly	Drain and refill if > 3000 ppm
Oxy-Shock		Add 2x weekly or more for heavy use	Add Oxy-Shock
Hardness	150 – 400	Check monthly or with new water	Add calcium increaser if < 200 ppm. Drain and refill if > 400 ppm
Ozone		Ozonator runs on filter cycles	

In the beginning, it is a good idea to test your water daily to learn how the water changes with the addition of chemicals. By keeping a log, you will be able to keep better track of your water condition.

When adding water to your spa for the first time or changing the water, you should superchlorinate it by doubling (1tbsp. per 100 gallons) the regular dos of chlorine. It is a good idea to wait a few hours before entering your hot tub after this process.

Remember that keeping your hot tub water healthy keeps you, your family, and your guests healthy. Most service calls for spa repairs are related to problems caused by improperly balanced water.

Filtration

For the system to work properly, the filters must be hosed off at least once a week and thoroughly cleaned once a month with a degreaser. We recommend that you buy an extra filter cartridge from your dealer to alternate with the filters included with your hot tub. A dirty filter will restrict water flow and will prohibit the filtering system from keeping your hot tub clean. If the filters are not cleaned for extended periods, it could possibly damage the pumps.

If you have a problem with floating contaminants, you may want to purchase a skimmer net to easily remove bugs, leaves, etc…

Details on cleaning the filters are included in the maintenance section, but as a reminder, it is important to first turn off the power to the hot tub. Leaving the power on while changing the filters could allow objects to be drawn into the heater and/or pump and may damage your equipment.

CAUTION! Turn off the power to the hot tub before removing the filter!

For the best performance possible, clean the filter weekly.

To remove filter:

Turn filter housing ring counter-clockwise.

Remove housing ring.

Remove filter basket.

Remove filter and clean or replace.

Ozone Generator

Ozonators supply the hot tub water with ozone, which is an extremely effective oxidant that will kill bacteria and microorganisms. The Ozonator will distribute ozone into your spa automatically during the filter cycles and will keep your spa and water sparkling clean. Even though ozone is effective at keeping your water clean, it cannot replace the use of chlorine or bromine. Refer to the chemical section for more information.

No maintenance is necessary on the ozonator. The ozonator works during the filter cycles set by the controller.

MAINTENANCE

Jet Removal

To remove jets simply turn the outside ring of the jet counterclockwise approximately one quarter turn and pull jet out (Figure 3-1). To replace the jet, simply place the jet in the shell and turn the jet until the slots line up, then turn jet one quarter turn clockwise until secured. The jet will easily push into place and "snap" when it is locked.

Pillows

Your spa is equipped with high quality polyurethane foam pillows. These pillows can be removed by simply pulling up on them firmly. To replace them, line the receptacle holes up with the buttons on the hot tub.

DuraTech Spa Cabinetry

Your spa's cabinet systems offer the beautiful look of tongue and groove wood cabinetry with low maintenance durability. They are designed to withstand heat, cold and rain while retaining the long lasting look of elegance. If access to the plumbing, motors or the controller is required, remove the screws on the service panels using a screwdriver. Panels can then be easily removed by pulling the panel away from the hot tub.

The Shell

WARNING! Do not sand hot tub finish

Your spa is constructed with a high quality, impact resistant, thermoplastic shell that requires very little maintenance. Make sure that when you drain and clean your hot tub you use a mild, nonabrasive cleaner and cleaning pads. We recommend that you use a cleaner made specifically for cleaning hot tubs. They tend to be non-abrasive and easy to rinse off completely. Contact your hot tub dealer for information on waxes and sealers.

Cover

You will want to be sure to keep your hot tub cover clean and protected. Your protective cover exposed to the outdoors take a beating from the elements. Use a vinyl protectant to discourage deterioration caused by the UV rays from the sun. This will also minimize rain penetration. See your local hot tub dealer for a vinyl protectant.

Once a month, take the cover off of the hot tub and use a sponge and dish soap to scrub it clean. Keeping it free of dirt and debris is the most important maintenance task. Be sure to clean the seams thoroughly as well.

Cover Locks

Your cover comes with screws that are used to fasten the receiving end of the strap locks. Simply align the cover on the hot tub and stretch out the straps until they are tight. Mark the location of the strap receptacles, then fasten them to the hot tub skirt with the screws supplied.

Winterizing

Since 'freeze damage' is not covered under the Limited Warranty, we recommend contacting and having a professional prepare your hot tub for winterizing protection. If you live in a climate where winter temperatures are below freezing and power to the hot tub will be disconnected, follow these procedures for draining:

Winterizing guidelines:

1. Add an algaecide to the water and run pumps for half an hour to evenly disperse algaecide.
2. Turn off power to the unit at the circuit breaker.
3. Drain the hot tub by attaching a garden hose to the drain and opening the valve. After the hot tub is empty, remove the hose and leave the drain valve open.
4. For freeze protection – Access motor area by removing the outer front panels to the right and left of the controller panel and unscrew the plumbing collars from the pumps. Leave union

couplings disconnected. Vacuum out lines with a wet/dry shop vacuum.

5. Soak up any excess water that drains from motors and associated plumbing with a towel. Keep water and debris out by covering with a rigid hot tub cover.
6. Before using the hot tub again, reattach pump couplings, close drain valve, and review filling/startup instructions.

If your spa is to be used during the winter, save energy by turning the temperature down and keeping the hot tub covered. If it reaches freezing temperatures, the main pumps will automatically turn on to circulate the water.

Note: It is recommended that the hot tub be run in **Rest Mode** as opposed to being winterized. **Rest Mode** and the **Low Range** heat setting are the best methods to ensure your hot tub remains functional and undamaged through the winter months.

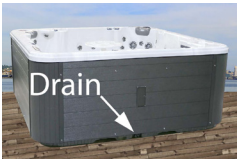
Draining The Hot Tub

The drain is located on the base at the front of the spa below the control panel.

Capped Position

Closed Position

Open Position



Drain Location: The drain is located on the base under the control panel.

Step 1: Remove the drain cap.

Step 2: Attach hose and place other end of hose in the area you want the water to drain to.

Step 3: Twist drain counter-clockwise and pull out to open.

Step 4: When you are finished draining your spa, reverse these steps to close the drain, and screw on the cap.

Step 5: Refill spa as recommended in manual.

APPENDIX A

Troubleshooting

For error message on your topside control, see control reference from the Initial Start-up.

System Trouble

PROBLEM	PROBABLE CAUSE	REMEDY
GFCI trips (on startup)	Improper or defective wiring.	Improper or defective wiring.
GFCI trips	A) Ozone generator defective.	Unplug from controller and reset breaker to verify problem.
	B) Unknown cause.	Unplug components one at a time until breaker holds.
System inoperative	A) System lockup.	Reset power source or GFCI.
	B) Loss of power.	Reset breakers. Check fuses. Call for service.

Controls

PROBLEM	PROBABLE CAUSE	REMEDY
System overheating, shutdown	A) Restricted filter.	Clean filter overnight with filter degreaser.
	B) Water too low.	Raise water level above filter inlet.
	C) Filtration time too long. (only applies on non-circ. pump set ups)	Reduce filtration time.
System not maintaining temp.	A) Spa is in REST mode.	Switch mode back to READY.
	B) Spa is set to Low Range for temperature	Reset to High Range.
	C) Restricted filter.	Clean filter overnight with filter degreaser.
	D) Water level is too low.	Raise water level above filter inlet.

Pumps

PROBLEM	PROBABLE CAUSE	REMEDY
Noisy pump or motor	A) Clogged filter or pump inlets.	Clean filter, filter basket and pump inlets
	B) Low water level.	Raise water level above filters.
	C) Slice valves not open.	Remove service panels and open slice valves.
	D) Debris in pump(s).	Call for service.
	E) Damaged or worn motor bearings.	Call for service.
Pump not working	A) Fuse on circuit board blown.	Replace fuse.
	B) Motor overloaded.	Let motor cool for one hour, open all jets. Motor will reset automatically.
	C) Defective Pump button.	Call for service.
	D) Blockage in line.	Call for service.
	E) Broken pump or failed motor.	Call for service.
	F) Slice valves not open.	Remove service panels and open slice valves.

Jets

PROBLEM	PROBABLE CAUSE	REMEDY
Rotating jets won't rotate	Debris in jet housing.	See 'Cleaning the rotating jets' section of the JETS chapter.
	Spinner worn out.	Replace jet insert.

Water

PROBLEM	PROBABLE CAUSE	REMEDY
Water leak	A) Compression fitting (unions) have loosened.	Tighten fitting.
	B) Pump seals leaking.	Call for service.
	C) Heater gaskets leaking.	Replace gaskets or call for service.
Cloudy water	A) Clogged or dirty filter.	Rinse off debris and clean filter with degreaser.
	B) Insufficient sanitizer or calcium hardness.	Add sanitizer and calcium hardness.
	C) Insufficient filtration time (does NOT apply to 24hr. circ. pump set ups).	Increase filtration to a minimum 4 hours per filter cycle (8 hours per day).
	D) Particles too small for filter.	Add clarifier.
	E) High pH and / or alkalinity.	Adjust pH with pH Down.
	F) Trace metals in water.	Use metal remover
	G) Too much clarifier use.	Wait to be filtered out.
Green water	A) Algae.	Add algaecide, super chlorinate and add Shock. Check ozone generator.
	B) Metal corrosion in equipment.	PH too low, adjust to 7.2 to 7.6 with pH Up.
Brown water	Iron present in water.	Super-chlorinate and add Shock. Add metal remover.
Bleached hair/bathing suits. Eye irritation.	Too much chlorine.	Allow to dissipate. Add Oxy Shock.
Bad smell, eye & skin irritation, complaints of too much chlorine.	Too many chloramines, not enough free chlorine in water.	Super-chlorinate and maintain 3 - 5 PPM. Add Shock.
Scale formation on walls and equipment.	A) High pH.	Reduce pH to 7.2 to 7.6.
	B) Calcium too high.	Drain 20% to 40% of tub and refill with "soft" water. Maintain at 150 to 400 PPM.
pH fluctuates radically	Total alkalinity out of balance.	Balance alkalinity.

FAQ'S - FREQUENTLY ASKED QUESTIONS

Q: Why is my hot tub not heating?

A. Check which mode you are in: Ready or Rest. See 'Topside Control'. Rest can allow the temperature to drop between cycles
B. Check the temperature Range. The lower range only goes up to 99 degrees.

Q: Why won't my hot tub heat above 99 degrees?

A. Please reference Dual Temperature Ranges in your Manual (page 15).

Q: The system is receiving proper voltage, why doesn't anything function?

A. Check for blown fuses, burn marks or signs of tampering in the box.
A. Power down the hot tub, and reset the GFCI. If problem persists, contact customer service for tech support.

Q: What does the ozone generator do?

A. An ozonator purifies naturally. It produces an active oxygen that attacks bacteria at microscopic levels reducing the number of chemicals needed for perfect water. Ozone is also useful in coagulation of metals and other contaminants found in some areas.

Q: How do I know if my ozonator is working?

A. During a filter cycle, a green LED light on the ozonator will light and bubbles will move through the clear water line that connects to the ozonator.

Q: How do I fill the hot tub with water?

A. Place your garden hose into the filter housing. This will ensure that air bubbles are removed from the lines while you fill the hot tub.
B. Turn the water on so that most of the water enters through the filter chamber.
C. Fill the water to the proper level – half way up the filter housing.

LIMITED WARRANTY

Thermal Hydra Plastics, LLC, dba Hatana Hot Tubs ("Hatana"), warrants solely to the original consumer purchaser ("owner") at the original installation site the following about your new Hatana Hot Tub manufactured after March 1, 2020 and purchased from an authorized dealer/service provider ("dealer") for residential use in the United States or Canada.

10 YEARS

Shell Structure & Surface

Hatana warrants the acrylic shell not to leak due to defects in material or workmanship for ten years from the original hot tub purchase date. Hatana also warrants to repair the hot tub shell interior surface if it blisters, cracks, or delaminates for ten years from the original hot tub purchase date.

3 YEARS

Equipment

Hatana warrants the operating equipment against defects in materials and workmanship for three years from the original hot tub purchase date. This specifically covers the control system, pump(s), and heater. Other equipment, but not limited to, such as pump seals & shafts, LED Lighting, and Ozonator, are not included in the three-year warranty.

3 YEARS

Plumbing

Hatana warrants the plumbing and fittings not to leak for three years from the original hot tub purchase date. Gaskets and seals are not included in this warranty.

1 YEAR

Cabinetry

Hatana warrants the cabinetry against defects in material and workmanship and shall not crack, splinter, rot or suffer water damage

or structural damage from termites or fungal decay for one year from the original hot tub purchase date.

1 YEAR

Other Equipment and Parts

Hatana warrants the following against defects in material and workmanship for one year from the original hot tub purchase date.

- Pump Seal & Shaft
- LED Lighting Controller, power supply, and lights.
- Ozonator
- Control valves including air, water features, and diverter valves.
- et Inserts*

*Labor is excluded as these are defined as and deemed an "Easily Removed Component (ERC)" and will be repaired or replaced at an authorized Hatana Hot Tub/ Service Dealer.

OTHER WARRANTY

Hatana warrants the following against defects in material and workmanship through time of delivery. No labor claim can be made against these items and is excluded from our warranty.

- Headrests, Cartridge Filters, Fuses, Jet Facings, and motor/pump power cords.
- Filter Baskets & Skimmers
- Gaskets or O-Rings within pump(s), heater unions, and valves.
- The insulated hot tub cover and other hot tub accessories attached to the hot tub AFTER date of manufacture are not covered by this limited warranty.

PERFORMANCE OF WARRANTY

Please register your hot tub within 7 days of delivery. Your hot tub must be registered before any authorized warranty service work can be performed. In the event of a covered defect under this Limited Warranty, Hatana or its agent will make repair in accordance with conditions contained in this Limited Warranty. In doing so, Hatana reserves the right, at its option, to either repair or replace the defective hot tub or component. The homeowner is required to provide full access to the hot tub cabinet's entire service side panels, without obstruction, to service all internal components. There will be no charge for parts or labor to repair the hot tub, however, you may incur a core-charge and shipping on the parts as well as a reasonable repair-person travel and mileage charge by the servicing company. Hatana reserves the right to use either new or reconditioned replacement parts and

they will carry the balance of the original part's warranty. If the covered defect cannot be repaired in the field, as determined by Hatana, we reserve the right to have the hot tub shipped to the factory for repair or provide a replacement/exchange hot tub of equal value. In such an event, the hot tub owner will be solely responsible for the cost associated with the removal and shipping costs to the factory of the defective hot tub, shipping costs from the factory of the repaired/replacement hot tub, and the installation of the replacement hot tub. The replacement hot tub will carry the balance of the original hot tub's warranty. The liability of Hatana under this Limited Warranty, if any, shall not exceed the original amount paid for the defective product. It is the responsibility of the hot tub owner to notify your selling Dealer, in writing, immediately upon discovery of a warranty claim. Neglecting this notification may void your claim.

EXCLUSIONS

The Hatana Hot Tubs limited warranty is void if any of the following occur:

- The hot tub has been altered, neglected, abused, or misused.
- Damage is caused by the shipping, mishandling, or moving of the hot tub.
- Any repair is attempted by an unauthorized Hatana service agent.
- The hot tub has been used in a commercial setting.
- Damage is caused by an Act of God or another cause outside Hatana's control.
- Damage is caused by improper installation, operation, or maintenance (including water chemistry) according to the owner's manual or any other printed instructions from Hatana.
- Damage is caused by the addition of any non-approved chemical substance.
- Damage is caused by subjecting an uncovered, unfilled hot tub to direct sunlight.
- Damage is caused by the hot tub's water being outside the temperature range of 32°F-120°F (0°C-49°C).
- Scratches or micro-crazing in the hot tub shell reported after the day of installation are not covered under the warranty. Micro-crazing is defined as an area of tiny shiny lines visible in area on the surface of some thermoplastic sheets. Additionally, although rare, minor imperfections, mold lines, orange peel on surface are known to occur in many types of plastic vacuum sheet materials. The surfaces of thermoformed acrylic hot tubs are not immune to this possibility and are not covered under the warranty.

LIMITATIONS

All warranties, implied or otherwise, including implied warranties for merchantability and fitness for a particular purpose, are limited to the terms set forth in this warranty. No representative of Hatana, not its agents, distributors or dealers, has any authority to alter in any manner the terms of this Limited Warranty and Hatana is not responsible for any undertaking, representation of warranty made by any other person beyond those expressly set forth in this warranty. This Limited Warranty only covers those items manufactured by Hatana.

DISCLAIMERS

The manufacturer and its representatives will not be responsible for incidental or consequential damages and shall not be liable for any injury, loss, cost or other damage, whether incidental or consequential, arising out of any defect covered by this limited warranty, including without limitation, loss of use of the hot tub, cost for removal of defective product and removal of deck or custom surrounding, and water or chemical replacement cost. The liability of the Manufacturer under this limited warranty, if any, shall not exceed the original amount paid for the defective product. Coverage under this limited warranty shall commence as of the original date of purchase and the duration of such coverage shall not extend for any reason whatsoever beyond the stated time periods. These disclaimers shall be equally applicable to any service provided by the Manufacturer and its designated representatives.

LEGAL REMEDIES

This Limited Warranty gives you specific legal rights. There are no warranties applicable to Hatana products except as expressly stated herein or as implied by applicable state and federal laws. You may also have other rights that vary from state to state. Some states do not allow limitations on how long an implied warranty lasts, disclaimer of certain warranties, or the exclusion or limitation of incidental or consequential damages so some of the above limitations may not apply to you.

Notes

Notes


Hatana
Hot Tubs