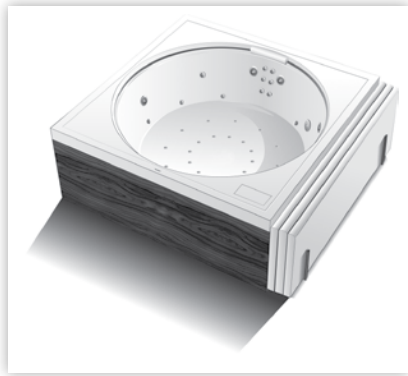


Blue Moon / Sundeck

Owner's Manual



Blue Moon 710169008000090



Sundeck 710171008000090

This Owner's Manual will acquaint you with the operation and general maintenance of your new spa. Please keep this manual available for reference.

If you have any questions about any aspect of your spa's set-up, operation or maintenance, contact your authorized dealer. They are trained professionals who are familiar with the product as well as new spa ownership concerns. Their expertise will facilitate the enjoyment of your new spa. The serial number label is located within the equipment compartment of your Duravit spa.

IMPORTANT: Duravit reserves the right to change specifications, or design, without notification and without incurring any obligation.

DATE PURCHASED:

DATE INSTALLED:

DEALER:

ADDRESS:

TELEPHONE:

SPA MODEL/SERIAL NUMBER:

Duravit spa you have purchased complies with plumbing testing USA and Canadian standard Z124.7-2007 and ASME A112.19.8 and Electrical testing USA and Canadian standard UL1563, CSA C22.2 No. 218.1. The integral spa covers are tested and listed to ASTM F1346.

Duravit congratulates you on your decision to enjoy the finest spa available... Welcome to the growing family of Duravit spa owners.

In most cities and counties, permits will be required for the installation of electrical circuits or the construction of exterior surfaces (decks and gazebos). In addition, some communities have adopted residential barrier codes which may require fencing and/or self-closing gates on the property to prevent unsupervised access to a pool (or spa) by children under 5 years of age. As a general practice, your local Building Department will inform you of any applicable barrier requirements at the time a permit is obtained for the installation of an electrical circuit. Your Duravit dealer can provide information on which permits may be required.

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1. Safety Information

1.1 Important safety instructions

Read and follow all instructions

Save these instructions

WARNING: CHILDREN SHOULD NOT USE SPAS OR HOT TUBS WITHOUT ADULT SUPERVISION and AVERTISSEMENT : NE PAS LAISSER LES ENFANTS UTILISER UNE CUVE DE RELAXATION SANS SURVEILLANCE

WARNING: PEOPLE USING MEDICATIONS AND/OR HAVING AN ADVERSE MEDICAL HISTORY SHOULD CONSULT A PHYSICIAN BEFORE USING A SPA OR HOT TUB and AVERTISSEMENT : LES PERSONNES QUI PRENNENT DES MEDICAMENTS OU ONT DES PROBLEMES DE SANTE DEVRAIENT CONSULTER UN MEDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

WARNING: PEOPLE WITH INFECTIOUS DISEASES SHOULD NOT USE A SPA OR HOT TUB and AVERTISSEMENT : LES PERSONNES ATTEINTES DE MALADIES INFECTIEUSES NE DEVRAIENT PAS UTILISER UNE CUVE DE RELAXATION

WARNING: TO AVOID INJURY EXERCISE CARE WHEN ENTERING OR EXITING THE SPA OR HOT TUB and AVERTISSEMENT : POUR EVITER DES BLESSURES, USER DE PRUDENCE EN ENTRANT DANS ONE COVE DE RELAXATION ET E SORTANT

WARNING: DO NOT USE DRUGS OR ALCOHOL BEFORE OR DURING THE USE OF A SPA OR HOT TUB TO AVOID UNCONSCIOUSNESS AND POSSIBLE DROWNING and AVERTISSEMENT : POUR EVITER L'EVANOUISSEMENT ET LA NOYADE EVENTUELLE, NE PRENDRE NI DROGUE NI ALCOOL AVANT D'UTILISER UNE CUVE DE RELAXATION NI QUAND ON S'Y TROUVE

WARNING: PREGNANT OR POSSIBLY PREGNANT WOMEN SHOULD CONSULT A PHYSICIAN BEFORE USING A SPA OR HOT TUB and AVERTISSEMENT : LES FEMMES ENCEINTES, QU'ELLES LEUR GROSSESSE SOIT CONFIRMEE OU NON, DEVRAIENT CONSULTER UN MEDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

WARNING: WATER TEMPERATURE IN EXCESS OF 38°C MAY BE INJURIOUS TO YOUR HEALTH and AVERTISSEMENT : IL PEUT ETRE DANGEREUX POUR LA SANTE DE SE PLONGER DANS DE L'EAU A PLUS DE 38°C

WARNING: BEFORE ENTERING THE SPA OR HOT TUB MEASURE THE WATER TEMPERATURE WITH AN ACCURATE THERMOMETER and AVERTISSEMENT : AVANT D'UTILISER ONE CUVE DE RELAXATION MESURER LA TEMPERATURE DE L'EAU A L'AIDE D'UN THERMOMETRE PRECIS

WARNING: DO NOT USE A SPA OR HOT TUB IMMEDIATELY FOLLOWING STRENUOUS EXERCISE and AVERTISSEMENT : NE PAS UTILISER ONE CUVE DE RELAXATION IMMEDIATEMENT APRES UN EXERCICE FATIGANT

WARNING: PROLONGED IMMERSION IN A SPA OR HOT TUB MAY BE INJURIOUS TO YOUR HEALTH and AVERTISSEMENT : L'UTILISATION PROLONGEE D'UNE COVE DE RELAXATION PEUT ETRE DANGEREUSE POUR LA SANTE

WARNING: DO NOT PERMIT ELECTRIC APPLIANCES (SUCH AS A LIGHT, TELEPHONE, RADIO, OR TELEVISION) WITHIN 1.5 M OF THIS SPA OR HOT TUB and AVERTISSEMENT : NE PAS PLACER D'APPAREIL ELECTRIQUE (LUMINAIRE, TELEPHONE, RADIO, TELEVISEUR, ETC) A MOINS DE 1.5 M DE CETTE COVE DE RELAXATION

CAUTION: MAINTAIN WATER CHEMISTRY IN ACCORDANCE WITH MANUFACTURER' S INSTRUCTION and ATTENTION : LA TENEUR DE LEAU EN MATIERES DISSOUTES DOIT ETRE CONFORME AUX DIRECTIVES DU FABRICANT.

1.2 Hyperthermia – Please see pg. 62 how to adjust temperature

WARNING Prolonged immersion in hot water may induce hyperthermia.

The causes, symptoms, and effects of hyperthermia may be described as follows: Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6°F (37°C).. The symptoms of hyperthermia include drowsiness, lethargy, and an increase in the internal temperature of the body.

The effects of hyperthermia include

- unawareness of impending hazard;
- failure to perceive heat;
- failure to recognize the need to exit spa;
- physical inability to exit spa;
- fetal damage in pregnant women; and
- unconsciousness and danger of drowning.

WARNING: THE USE OF ALCOHOL OR DRUGS CAN GREATLY INCREASE THE RISK OF FATAL HYPERTHERMIA IN HOT TUBS AND SPAS and LA CONSOMMATION D'ALCOOL OU DE DROGUE AUGMENTE CONSIDERABLEMENT LES RISQUES D'HYPERTHERMIE MORTELLE DANS UNE CUVE DE RELAXATION.

Important Safety Instructions

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

→ **READ AND FOLLOW ALL INSTRUCTIONS.**

→ A green coloured terminal or a terminal marked G, GR, Ground, Grounding, or the symbol* is located inside the supply terminal box or compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment. *IEC Publication 417, Symbol 5019.

→ At least two lugs marked "BONDING LUGS" are provided on the external surface or on the inside of the supply terminal box or compartment. To reduce the risk of electric shock, connect the local common bonding grid in the area of the hot tub or spa to these terminals with an insulated or bare copper conductor not smaller than No. 6 AWG.

→ All field-installed metal components such as rails, ladders, drains or other similar hardware within 3 m of the spa or hot tub shall be bonded to the equipment grounding bus with copper conductors not smaller than No. 6 AWG.

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

→ WARNING: DO NOT USE SPAS OR HOT TUBS UNLESS ALL SUCTION GUARDS ARE INSTALLED TO PREVENT BODY AND HAIR ENTRAPMENT and AVERTISSEMENT : POUR EVITER QUE LES CHEVEUX OÙ UNE PARTIE DU CORPS PUISSENT ETRE ASPIRES, NE PAS UTILISER UNE CUVE DE RELAXATION SI LES GRILLES DE PRISE D'ASPIRATION NE SONT PAS TOUTES EN PLACE

Save These Instructions.

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
Avoiding The risk to children

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 spa unless they are supervised at all times.

Warning:

- To reduce the risk of injury, do not permit children to use this spa unless they are closely supervised at all times.
- To reduce the risk of injury, lower water temperatures are recommended for young children. Children are especially sensitive to hot water.

DO:

- Make sure you always lock the child resistant locks after using the spa for your children's safety.
- Test the water temperature with your hand before allowing children to enter the spa to be sure that it's comfortable. Children are especially sensitive to hot water.
- Remind children that wet surfaces can be very slippery. Make sure that children are careful when entering, or exiting the spa.

DON'T:

- Allow children to climb onto the spa cover.
- Allow children to have unsupervised access to the spa.

1.3 Avoiding the risk of electrocution

Risk of electrocution

- Connect only to a grounded source.
- Do not bury the power cord. A buried power cord may result in death, or serious personal injury due to electrocution if direct burial-type cable is not used, or if improper digging occurs.

WARNING:

- To reduce the risk of electrical shock, replace a damaged cord immediately. Failure to do so may result in death or serious personal injury due to electrocution.

Danger: risk of electrical shock

- Install at least 5 feet (1.5 m) from all metal surfaces. A spa may be installed within 5 feet of a metal surface if each metal surface is permanently connected by a minimum No. 6 AWG solid copper conductor attached to the wire ground connector on the terminal box that is provided for this purpose if in accordance with National Electrical Code ANSI/NMFA70-1993.
- Do not permit any electrical appliances, such as a light, telephone, radio, or television within 5 feet (1.5 m) of a spa. Failure to maintain a safe distance may result in death, or serious personal injury due to electrocution, if the appliance should fall into the spa.
- Install your spa in such a way that drainage is away from the electrical compartment and from all electrical components.

DO:

- Be sure your spa is connected to the power supply correctly - use a licensed electrical contractor.
- Disconnect the spa from the power supply before draining the spa or servicing the electrical components.
- Test the Ground Fault Circuit Interrupter(s) before each use.

Don't:

- Use the spa with the equipment compartment door removed.
- Place electrical appliances within 5 feet (1.5m) of the spa.

- Use an extension cord to connect the spa to its power source. The cord may not be properly grounded and the connection is a shock hazard. An extension cord may cause a voltage drop, which will cause overheating of the jet pump motor and motor damage.
- Attempt to open the electrical control box. There are no user serviceable parts inside.
- Leave audio compartment door open (if your spa is equipped with an audio component).

1.4 Danger: Risk Of Injury

- To reduce the risk of injury to persons, DO NOT remove suction fittings
- The suction fittings in the spa are sized to match the specific water flow created by the pump. Never replace a suction fitting with one rated less than the flow rate marked on the original suction fitting.
- There is a danger of slipping and falling. Remember that wet surfaces can be very slippery. Take care when entering or exiting the spa.
- Never operate spa if the suction fittings are broken or missing.
- People with infectious diseases should not use the spa.
- Keep any loose articles of clothing, long hair or hanging jewelry away from rotating jets or other moving components.

Increased side effects of medication

- The use of drugs, alcohol, or medication before or during spa use may lead to unconsciousness with the possibility of drowning.
- Persons using medications should consult a physician before using a spa; some medication may cause a user to become drowsy, while other medication may affect heart rate, blood pressure, and circulation.
- Persons taking medications which induce drowsiness, such as tranquilizers, antihistamines or anticoagulants should not use the spa.

Health problems affected by spa use

- Pregnant women should consult a physician before using spa.
- 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 spa.

Important Safety Information

Unclean water

- Keep the water clean and sanitized with correct chemical care. The recommended levels for your Duravit spa:
(Refer to Water Quality and Maintenance section for complete instructions.)
Important : Turn on the jet pump for a least ten minutes after adding any spa water chemicals into the filter compartment.
- Clean the filter cartridges monthly to remove debris and mineral buildup which may affect the performance of the hydromassage jets, limit the flow, or trip the high limit thermostat, which will turn off the entire spa. Avoiding the risk of hyperthermia. Prolonged immersion in hot water can result in HYPERTHERMIA, a dangerous condition which occurs when the internal temperature of the body reaches a level above normal 98.6°F (37°C). The symptoms of hyperthermia include unawareness of impending hazard, failure to perceive heat, failure to recognize the need to exit the spa, physical inability to exit the spa, fetal damage in pregnant women, and 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.

To reduce the risk of injury:

- The water in the spa should never exceed 104°F (40°C). Water temperatures between 100°F and 104°F (36°C and 40°C) are considered safe for a healthy adult. Lower water temperatures are recommended for extended use (exceeding ten minutes) and for young children.

Extended use can cause hyperthermia.

- Pregnant or possibly pregnant women should limit spa water temperatures to 100°F (36°C). Failure to do so may result in permanent injury to your baby.
- Do not use spa immediately following strenuous exercise.

Avoiding the risk of skin burns:

- To reduce the risk of injury, before entering a spa the user should measure the water temperature with an accurate thermometer.
- Test the water with your hand before entering the spa to be sure it's comfortable.

Important spa instructions

The following contains important spa information, and we strongly encourage you to read and apply them.

DO:

- Use the vinyl cover when the spa is not in use, whether it is empty or full.
- Follow the Spa Care and Maintenance recommendations stated in this manual.
- Use only approved accessories and recommended spa chemicals and cleaners.

Don't:

- Leave the Duravit spa exposed to the sun without water or the cover in place. Exposure to direct sunlight can cause solar distress of the shell material.
- Roll or slide the spa on its side. This will damage the siding.
- Lift or drag the vinyl cover by using the cover lock straps; always lift or carry the cover by using the handles.
- Attempt to open the electrical control box. There are no user serviceable parts inside. Opening of the control box by the spa owner will void the warranty. If you have an operational problem, carefully go through the steps outlined in the Troubleshooting section. If you are not able to resolve the problem, contact your authorized Duravit dealer. Many problems can easily be diagnosed over the telephone by an Authorized Service Technician.

Save these instructions

CAUTION:

Duravit suggests a structural engineer or contractor be consulted before the spa is placed on an elevated deck.

* NOTE: The "Filled weight" and "Dead weight" of the spa includes the weight of the occupants (assuming an average occupant weight of 175 lbs).

** Effective filter area is based on 6.5 square feet actual area per filter (5 filters used) with 10 times affectivity rating.

2. Installation

2.1 Site Preparation

You probably have a spot picked out for your new spa, whether it's indoors or outdoors, on a patio or on a deck. Just make sure you check the following:

- Always put your spa on a structurally sound, level surface. A filled spa can weigh a great deal. Make certain that the location you choose can support the weight of your filled spa.
- Don't forget to level your spa before filling it.
- Locate your equipment compartment, which houses all of the electrical components, in a place where water drainage will be away from it. Do not allow water into the equipment compartment. Water can cause damage to the electronics, or may trip the circuit breaker on your house's electrical panel.
- Leave yourself easy access to the circuit breakers in the subpanel.
- Never let water get into the subpanel. Your spa's subpanel is rain-tight when installed correctly with the door closed. Periodically check these conditions and correct any flaws if detected.
- Leave access to the equipment compartment for periodic spa care and maintenance.
- If your spa is going to be installed in a location known to be frequented by mice, rats or other nocturnal creatures, Duravit recommends covering the access opening to the spa's equipment compartment with a heavy gauge screen material available at your local hardware store.

WARNING: Damage to the spa's equipment compartment components or internal plumbing as a result of rodent infestation is NOT covered under your warranty!

2.2 Outdoor and Patio Installation

No matter where you install your new spa, it's important that you have a solid foundation to support it. Structural damage to the spa, resulting from incorrect installation, or placement on an inadequate foundation, is not covered under the spa's limited warranty.

If you install the spa outdoors, we recommend a reinforced concrete pad at least four inches thick. The reinforcing rod or mesh in the pad should be attached to a #8 AWG bonding wire per national electrical codes (contact your local electrical code compliance inspector for more information; inspection for proper grounding may be required before pouring concrete to form the slab).

If you place the spa on the ground, even temporarily, place stepping stones under the leveling areas. The stones should be at least two inches thick and twelve inches square. Even with stones in place, the spa will inevitably settle and become unlevel. Plus, a spa surrounded by dirt or grass will soon be filled with dirt or grass from users' feet; therefore, it is important to get it onto a solid foundation as soon as possible.

2.3 Deck Installation

To be certain your deck can support your spa, you must know the deck's maximum load capacity. Consult a qualified building contractor or structural engineer.

2.4 Indoor/basement Installation

Be aware of some special requirements if you place your spa indoors. Water will accumulate around the spa, so flooring materials must provide a good grip when wet. Proper drainage is essential to prevent a build-up of water around the spa. When building a new room for the spa it is recommended that a floor drain be installed. The humidity will naturally increase with the spa installed. Water may get into woodwork and produce dry rot, mildew, or other problems. Check for airborne moisture's effects on exposed wood, paper, etc. in the room. To minimize these effects, it is best to provide plenty of ventilation to the spa area. An architect can help to determine if more ventilation must be installed.

WARNING: Please keep the area around your spa well ventilated when it is installed indoors or in a confined area. Inadequate ventilation around the spa could cause a build-up of a higher-than-normal concentration of spa chemicals and/or bacterial fragments. These dispersed spa chemicals and/or bacterial fragments can be inhaled, and may result in breathing difficulties or lung damage in certain people suffering from a compromised immune system or respiratory infection. If you or other bathers are affected by this condition, please seek medical attention as soon as possible.

In addition to the above, properly clean and maintain your spa as follows:

- Follow all procedures in this owner's manual and printed instructions on all water care (chemical) products packaging.
- Test the water regularly to ensure proper levels of sanitizers, pH, and other water care requirements.
- Drain, clean, and refill your spa with fresh water on a regular schedule, and in accordance with this owner's manual.

- Clean the filter(s) at least once per month.
- Check to make sure you have proper circulation throughout your spa water system.
- Have spa users bathe before entering the spa water.

2.5 Spa Leveling Instructions

In order for your Duravit spa to operate properly, and the internal plumbing to drain completely, the spa must be level.

WARNING: Duravit recommends that a structural engineer or contractor be consulted prior to placing the spa on an elevated deck, or platform. Use the Dead Weight in the to determine the structure's requirements.

IMPORTANT: Duravit reserves the right to change any specifications or design without incurring any obligation.

Approved Shim Material

- Cedar shingles
 - Exterior rated plywood
 - Redwood
 - Exterior rated lumber
- NOTE: Duravit requires the spas be installed on a level 4" thick concrete pad or structurally engineered deck and NOT shimmed in any manner.

2.6 Spa Leveling Preparation

Concrete sloped at 0.5 inch (1.3 cm) per 10 feet (305 cm) is preferred so that rain water and water spillover will run off and not puddle underneath the spa.

NOTE: Placing the spa on grass or dirt may increase the amount of debris which is inadvertently brought into the spa water and may cause harm to your equipment as well as the spa surface, which is not covered under warranty.

Notice: Though designed for outdoor installation, your Duravit spa is not impervious to damage that may be caused by insects, rodents, or other living creatures. Please note, the electronics within the compartment need adequate airflow to cool the equipment and maintain the optimal temperature range. Sealing the opening completely, or allowing debris to build-up on will adversely affect the spas' performance. Damage to the spa or its components caused by an "act of nature", rodent or insect damage is not covered under the terms of your spa's Limited Warranty.

3. Electrical Requirements

Your Duravit spa has been carefully designed to give you maximum safety against electrical shock. Connecting the spa to an improperly wired circuit will negate many of the spa's safety features. Improper wiring may also cause electrocution, risk of fire, and other risks of injuries. Please read and follow the electrical installation requirements and instructions for your specific spa model completely! The models are intended for 240V, permanent connection only. Installer should utilize a Class A GFCI during installation. The controls employ a GFCI Trip feature that will test for the presence of a GFCI and will not allow the spa to operate if the GFCI is not installed. The GFCI Trip feature is also used to cut power to the spa in the event that a pump is stuck in the ON position, which can heat the water beyond the normal high-limit temperature

CAUTION: CONNECT ONLY TO A CIRCUIT PROTECTED BY A CLASS A GROUND FAULT CIRCUIT INTERRUPTER" and "ATTENTION: CONNECTER UNIQUEMENT A UN CIRCUIT PROTEGE PAR UN DISJONCTEUR DIFFERENTIEL DE CLASSE A.

These units are intended for indoor and outdoor use. These units are intended for permanent connection to the facility plumbing or drainage system.

4. Water Treatment

DO NOT CONECT POWER TO AN EMPTY SPA. Power to the spa automatically activates critical components within the spa, such as controls, heater, circulation pump, and other systems. If power is supplied to these components prior to the spa being filled, the components will be damaged, and this may result in a non-warranty component failure.

- Do not use your spa after filling until all of the steps listed below are completed.
- Do not add chlorine if treating your spa with polyhexamethylene biguanide (Biguanide, PHMB) sanitizer.

4.1 Introduction To Ozone

Your CSS 5 System produces both ozone and chlorine. The Ozone Generator produces ozone with light energy, the way the sun does. Therefore it is only emitting pure O₃ ozone that has no harmful by-products, unlike other ozone generators that use corona technology which produce nitrous acid compounds and other harmful byproducts. Ozone is a molecule of oxygen that is formed when three atoms of oxygen are bound together instead of the normal two atoms. The extra oxygen atom makes ozone the most powerful, naturally occurring oxidizer and sanitizer readily available. Pioneers of the original ozone generator cartridge, produced the

first Ultraviolet Ozone Generating cartridge in 1977 for the swimming pool and spa industry. The O₃, naturally produced ozone, generated by the CSS 5 System serves as the primary sanitizer and oxidizer, however, a small residual of free available chlorine is required at all times to control algae growth and provide a residual sanitizer requirement.

The CSS 5 System provides the necessary chlorine residual for your spa. A measured amount of pool grade salt is dissolved in the spa water. The Chlorine is made by passing a very low voltage electric current through the salt water as it flows through the Cell and back in to the spa.

The CSS 5 System (Advanced Oxidation Processor™) produces and combines ozone and chlorine. These super oxide compounds, even stronger oxidizers than ozone or chlorine alone, are injected in to the spa water through a patented Venturi Injection system.

4.2 Preparing Your Spa

Draining and refilling of your spa is recommended, but not required unless bromine or Baquaspa was previously used.

Shock spa to 20 ppm with chlorine shock. DO NOT use non-chlorine shock. The Table below summarizes the levels that are recommended by The Association of Pool and Spa Professionals (APSP). It is important to maintain these levels in order to prevent corrosion or scaling and to ensure maximum enjoyment of the pool. Test your water periodically. Take a water sample in to be professionally tested by a Pool and Spa Professional at least once a month.

pH 7.2 – 8.0
Alkalinity 80 – 120 ppm
TDS < 1,000
Cyanuric Acid 30 – 70 ppm
Free Chlorine 0.5 – 1.5 ppm
Calcium Hardness < 300 ppm
Metals 0 ppm
Nitrates / Phosphates < 30 ppm

4.3 Adding Salt

Mix required amount of salt with warm water in a bucket or pitcher. Ensure it is thoroughly mixed and pour the mixture into the spa, distributing it evenly. Repeat as necessary to dissolve all salt required. Add salt when spa water temperature is 75 degrees or higher to ensure it dissolves fully. Use the chart below to determine the amount of salt required for your spa. It is recommended that 2,600 ppm be used as a starting point. If salt levels reach > 4,000 ppm, the unit will shut down automatically. CSS System should be reset, by turning the system off then back on again after 10 seconds, when salt is added to the spa. DO NOT USE: Table salt, Kosher salt, or any Food grade salt unless it specially states "for swimming pools". Use ONLY swimming pool salt which may be purchased at pool and spa dealers or home improvement stores.

Start-Up Salt Requirements (Sundeck 130 GALLONS, Blue Moon 190 Gallons)

Start-Up Salt Requirements

Spa Size (gallons) 200

Salt (PPM)	Pounds of Salt Required if Starting at 0 ppm
1,600	2.7
1,800	3.0
2,000	3.3
2,200	3.7
2,400	4.0
2,600	4.3
2,800	4.7
3,000	5.0
3,200	5.3
3,400	5.7
3,600	6.0
3,800	6.3
4,000	6.7

4.4 Start-Up

After salt has been added to your spa, it is recommended that the system be run for 48 hours to ensure adequate amount of chlorine is generated. For outdoor spas, the addition of cyanuric acid will help stabilize the chlorine level as chlorine is unstable and will evaporate out of the water over time. Verify the ozonator is working by checking for a blue glow around the top and/or bottom of the gaskets between the end plates and body of the unit. Monitor the filter closely during the initial start-up period. Depending on water quality, the ozonation process may generate considerable amounts of precipitants which must be removed by filtration and may clog filter if not cleaned often during this stage. After the 48 hour start-up period, backwash or clean the filter and perform a Cell cleaning.

4.5 Normal Operation

CSS 5-1: Chlorine levels are adjusted by increasing or decreasing the salt level in the spa. CSS5-2: Chlorine levels are adjusted using the adjustment knob on top of the unit and maintaining recommended salt levels. The recommended run time to generate adequate amounts of chlorine is 6-8 hours per day. Increased run times of 12 hours per day are recommended for highly loaded spas. The system will generate chlorine and ozone ONLY when the spa pump is running.

The CSS System is designed to produce a low level of chlorine that ensures the spa has adequate disinfection. This quantity of chlorine can be as much as 90 percent less than what is required in a chlorine-only spa with no ozonator. Normal test kits measure chlorine residual (combined chlorine, which is chlorine combined with bather load). Since ozone will normally keep bather load at very low levels, combined chlorines will be at very low levels, making detection difficult. For water testing, DPD liquid test kits work the best, as opposed to test strips. The best indication of proper operation is water clarity. If cloudy or odorous conditions persist, drain or shock spa, check filter and operate complete sanitation system continuously for 48 hours. To get an accurate chlorine reading, a water sample should be taken to your pool/spa dealer for testing (test strips will not be accurate enough for this). Water should be tested every two weeks to maintain maximum water quality and enjoyment. Salt chlorine generators may naturally increase the pH of the spa. Monitor pH regularly and adjust if it is not between 7.2 and 7.6.

NOTE: The pH value is a very important factor for ensuring maximum chlorine readings. As pH increases above 8.0, chlorine readings will decrease rapidly.

Optimum pH is 7.6. Muriatic acid is used to reduce pH value and when added to the spa, using the optional acid injection kit, will help to keep the Chlorine Generator Cell plates clean. Water with high calcium levels will result in scaling of the Chlorine Generator Cell plates (high pH will worsen the effect of high calcium). Shocking the spa is required periodically (normally about every 30-60 days) using dichloride. DO NOT use non-chlorine shock or calcium hypo-chloride. CSS System should be reset, by turning the system off then back on again after 10 seconds, when salt is added to the spa. Chlorine Generator Cell should be checked periodically for blockages or obstructions and cleaned as necessary.

4.5 Cleaning The Cell

The auto reversing feature of your CSS System will help to keep the Chlorine Generator Cell clean and will also generate precipitants. Calcium build-up can occur on the edges of the chlorine generation plates. This is normal as long as it is not sufficient to block flow. If it appears that calcium build-up will affect the water flow pattern, then the Cell can be cleaned as follows:

1. Detach ozone feed line to the Injector from the Check Valve.
2. Insert this end into a small bottle (4-6 oz) of DILUTED Muriatic acid while the spa is operating.
3. Allow suction to draw 4-6 ounces of acid into the Cell and shut off circulation pump.
4. Allow system to sit for 5-10 minutes.
5. Reconnect ozone tube to Check Valve.
6. Restart system.
7. Alternately, Cell can be removed and dropped into a container of Muriatic acid.

4.6 Water Treatment Process

Water treatment is accomplished by two processes: Oxidation and Disinfection.

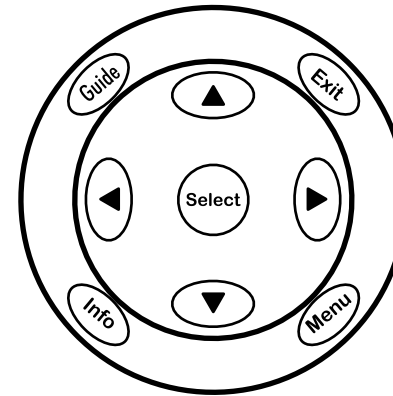
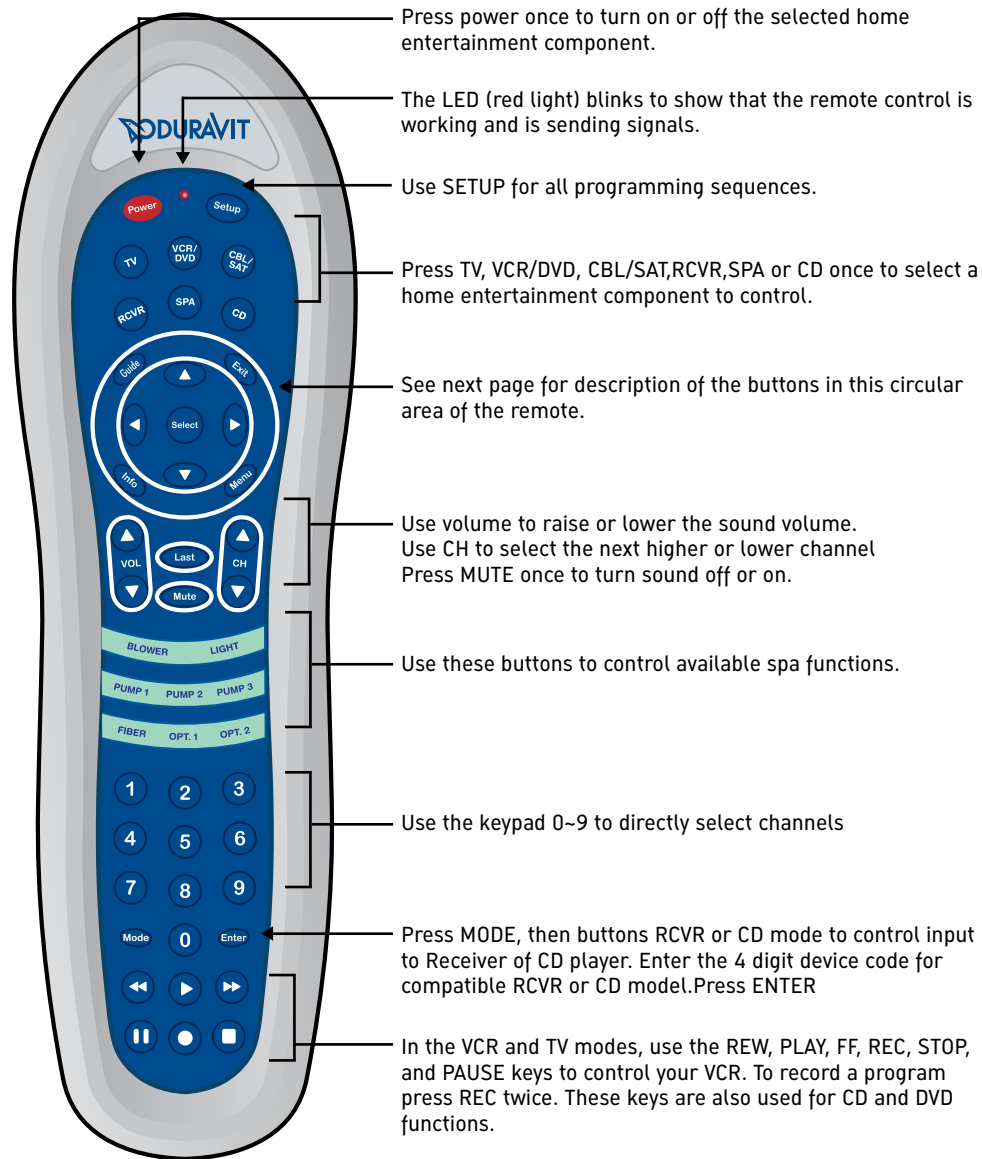
Oxidation: Oxidation is a process by which chlorine or ozone react with contaminants in the spa (referred to as bather loading). Bather loading consists of sweat, mucus, oils, urine, cosmetics, and other contaminants shed by spa users. They worsen water quality and provide an environment which promotes the growth of microorganisms. In a chlorine only spa, this reaction creates combined chlorines, which are the source of odors and irritation. Combined chlorines are normally removed by a process called breakpoint chlorination (shocking). Upwards of 90 percent of chlorine can be consumed in oxidation reactions.

Ozone, which is the most powerful oxidant available, replaces chlorine as the primary oxidant in the spa. Ozone reacts with bather loading and precipitates it so that it can be removed by filtration and generates breakpoint oxidation continually on the combined chlorine.

Disinfection: Disinfection is the process by which microorganisms are killed. Although most people associate water treatment with disinfection, it actually consumes relatively little chlorine. Ozone is the most powerful sanitizer readily available.

Water Treatment: Water treatment equals oxidation plus disinfection. The CSS System provides both functions: Ozone for oxidation and chlorine for disinfection. The system is designed so that ozone does most of the work in the water treatment process, at the point of contact. The chlorination level is set so that only enough of a residual is produced to kill remaining microorganisms in the spa. The amount of chlorine required for this process is very low, less than 0.5 ppm.

5. Water Resistant Remote Control



- > Use GUIDE to display the program guide.
- > Use EXIT to exit out of an on-screen menu and guide.
- > Use the four directional keys to move the cursor in the program guide and menu screens.
- > Use SELECT to choose options, PPV events, and to tune programs from the program guide.
- > Use INFO to display current channel and program information.
- > Press MENU once to display an on-screen menu.

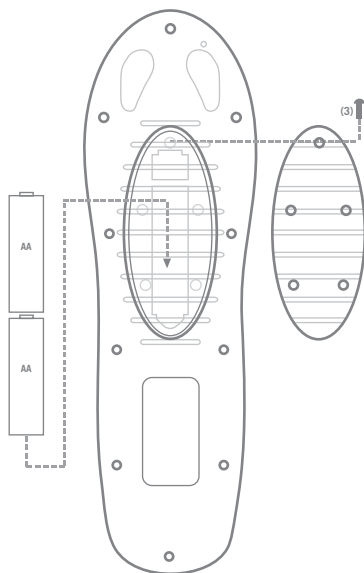
Latest generation remote control. It is designed with sophisticated technology that will allow you to consolidate many of your existing remote controls along with the entertainment system in your spa.

5.1 Batteries

Whenever batteries need to be replaced, the remote will blink twice with every key press. Simply replace the batteries. The remote retains your favorite settings.

Installing Batteries

1. On the back of the Dolphin Remote, remove the screws that hold the battery cover in place and lift off the battery cover.



2 Obtain two (2) fully-charged AA alkaline batteries. Match the + and – marks on the batteries to the + and – marks in the battery case, then insert the new batteries.

3. Press the battery cover back into place, being careful to align it with the rubber seal.

4. Replace the screws that hold the battery cover by carefully starting each one without tightening it. Once they are all started, snug up one screw and then do the same to the screw on the opposite side of the door. Repeat this in a crossing pattern until all screws are snug. Do not overtighten them. This will assure an adequate water seal around the battery cover

5. Test the unit by pressing any mode key (e.g.,TV, VCR/DVD, CBL/SAT, RCVR, SPA, or CD).If the batteries are inserted correctly, the LED will blink once.

Remote control is packed with easy-to-use features such as:

1. Pre-programmed to operate the cable converter supplied by your cable system provider
2. Pre-programmed technology for easy setup
3. Color-coded keys to quickly locate popular functions
4. Code library for video and audio components
5. Code Search to help program control of older components
6. Learning function to allow programming with another infrared (IR)remote
7. Combination IR and RF (radio frequency) capability that can send commands through the optional RF base station to devices in your house.

Before you can use your new remote control, you will need to program it to operate the specific home entertainment components you wish to control. Follow the instructions detailed in this manual to set up your Dolphin Remote and enjoy your new remote control.

IMPORTANT! PLEASE READ:

Remote should be stored outside of spa when not in use. Do not store in direct sunlight.

5.2 Programming TV Control

Locate the brand name of your TV in the Setup Codes For TVs section below, and write it in the following space.

TV Brand:

The brands are listed in alphabetical order with the most popular codes listed first. You will use one of these codes to program the Dolphin to operate your TV:

1. Turn on the TV.
2. On the Dolphin, press TV once. Press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter the first four-digit code for your TV. If you perform this procedure correctly, the LED will blink twice.

NOTE: If the LED did not blink twice after entering the code's last digit, repeat steps 2 through 3 and try entering the same code again.

4. Aim the Dolphin at your TV and press POWER once. The TV should turn off. If it does not respond, repeat steps 2-4, trying each code for your brand until you find one that works. If it still does not work, try searching for the code (see Searching For Your Code on page 25).

5. Write your TV code in the boxes below for future reference.

NOTE: Remember, to use the Dolphin to operate your TV, press TV first.

Setup Codes for TVs:

Admiral	0463, 0093
Advent	0761, 0842
Aiko	0092
Akai	0702, 0672, 0030, 0812
Albatron	0700
Alfide	0672
America Action	0180
Anam	0180
AOC	0030
Apex Digital	0748, 0765, 0879, 0767
Audinac	0180
Audiovox	0451, 0180, 0092, 0623
Aurora Systems	0801
Baysonic	0180
Bell & Howell	0154
Blaupunkt	0763
Blue Sky	1254
Bradford	0180
Broksonic	0463, 0236
Candle	0030
Carnivale	0030
Carver	0054
Casio	1205
CCD TV	0463
Celebrity	0000
Celera	0765
Changhong	0765
Cineral	0451, 0092
Citizen.....	0060, 0030, 0092
Clarion	0180
Concept.....	0763
Contec	0180
Craig	0180
Crosley	0054
Crown	0180, 0672
Crown Mustang	0672

Curtis Mathes0047, 0054, 0154, 0451, 0093, 0060, 0702, 0030, 0145, 0166,
1147, 1347

CXC	0180
Daewoo	0451, 1661, 0672, 0092, 0623
Denon	0511, 0145
Dumont	0017
Durabrand	0463, 0180, 0178, 0171
Electroband	0000
Elektra.....	0017, 1661
Emerson	0154, 0463, 0180, 0236, 0178, 0171, 0623
Envision	0030
Fahrenheit	1598
Fisher	0154
Fujitsu	0683, 0809
Funai	0180, 0171
Futuretech	0180
Gateway	1755, 1756
GE	0047, 0051, 0451, 0178, 1147, 1347, 1447
Gibraltar	0017, 0030
GoldStar	0030, 0178
Goodmans	0360
Gradiente	0053
Grundig	0672
Grunpy	0180
Hallmark	0178
Harman/Kardon	0054
Harvard	0180
Havermy	0093
Hello Kitty.....	0451
Himitsu	0180
Hisense	0748
Hitachi	0145, 1145
Infinity.....	0054
Initial	1990
IRT	0451, 1661
JBL	0054
JCB	0000
Jensen	0761, 1299
JVC	0463, 0053, 1253, 0731

KEC0180
 Kenwood0030
 Kioto 0054, 0706
 KLH0765, 0767
 Kost 1262, 1483
 KTV 0180, 0030, 1593
 LG0030, 0178
 Loewe0136
 LXI0047, 0054, 0154, 0156, 0178
 M & S0054
 Magnavox 0054, 0706, 0030, 1454, 1254
 RCA0047, 0060, 1047, 1147, 1247, 1347, 1447, 1547, 0679
 Realistic 0154, 0180, 0030, 0178
 Runco..... 0017, 0030
 Sampo0030, 1755
 Samsung0060, 0702, 0030, 0178, 1060, 0812, 0814, 1575, 1312
 Initial1990
 IRT 0451, 1661
 JBL0054
 JCB0000
 Jensen 0761, 1299
 JVC 0463, 0053, 1253, 0731
 KEC0180
 Kenwood0030
 Kioto 0054, 0706
 KLH0765, 0767
 Kost 1262, 1483
 KTV 0180, 0030, 1593
 LG0030, 0178
 Loewe0136
 LXI0047, 0054, 0154, 0156, 0178
 M & S0054
 Magnavox 0054, 0706, 0030, 1454, 1254
 Marantz 0054, 0030
 Matsushita 0250, 0650
 Megapower 0700
 Megatron0178, 0145
 Memorex..... 0154, 0463, 0150, 0178
 MGA 0150, 0030, 0178

Micro Model1436
 Midland 0047, 0017, 0051
 Misc1530
 Mitsubishi 0093, 0150, 1250, 0178, 0836
 Monivision0700
 Motorola0093
 MTC 0060, 0030
 Multitech0180
 NAD 0156, 0178, 0866
 NEC0030, 1704
 Nesa0763
 Nikko 0030, 0178, 0092
 Noblex..... 0154
 Norcent..... 0748
 NTC0092
 Onwa0180
 Optimus 0154, 0250, 0166, 0650
 Optonica0093
 Orion 0463, 0236
 Panasonic 0051, 0250, 0650
 Penney 0047, 0156, 0051, 0060, 0030, 0178, 1347
 Philco 0054, 0463, 1661, 0030, 0145
 Philips 0054, 1454, 0690
 Pilot0030
 Pioneer0166, 0866, 0679, 1398
 Portland0092
 Prima0761
 Princeton0700
 Prism 0051
 Proscan..... 0047, 1347, 1447
 Proton..... 0178
 Pulsar0017
 Quasar 0051, 0250, 0650
 RadioShack 0047, 0154, 0180, 0030, 0178
 RCA0047, 0060, 1047, 1147, 1247, 1347, 1447, 1547, 0679
 Realistic 0154, 0180, 0030, 0178
 Runco..... 0017, 0030
 Sampo0030, 1755
 Samsung0060, 0702, 0030, 0178, 1060, 0812, 0814, 1575, 1312

Sansei	0451
Sansui	0463
Sanyo	0088, 0154
Scotch	0178
Scott	0180, 0236, 0178
Sears	0047, 0054, 0154, 0156, 0178, 0171
Semivox	0180
Semp	0156, 1356
Sharp	0093, 0818, 1393
Sheng Chia	0093
Signet	0800, 0844, 1262
Sony	0000, 1100
Soundesign	0180, 0178
SSS	0180
Starlite	0180
Sunbrite	1435, 1420
Supreme	0000
SVA	0748, 0865
Sylvania	0054, 0030, 0171
Symphonic	0180, 0171
Tandy.....	0093
Tatung	1756
Technics	0051, 0250
Techwood	0051
Teknika	0054, 0180, 0150, 0060, 0092
Telefunken	0702
TMK.....	0178
TNC	0017
Tophouse	0180
Toshiba	0154, 0156, 0093, 0060, 1156, 1356, 1656, 1704, 0650, 1256
TVS	0463
V Inc.	1756
Vector Research	0030
Victor	0053
Vidikron	0054
Vidtech.....	0178
Viewsonic	1755
Wards	0054, 0030, 0178, 1156, 0866
Waycon	0156

White Westinghouse	0463, 0623, 1577
Yamaha	0030
Zenith	0017, 0463, 0178, 0092

5.3 Programming VCR Control

Locate the brand name of your VCR in the Setup Codes For VCRs section below, and write it in the following space.

VCR Brand:

The brands are listed in alphabetical order with the most popular codes listed first. You will use one of these codes to program the Dolphin to operate your VCR:

1. Turn on your VCR and insert a video cassette.
2. On the Dolphin, press VCR once. Press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter the first four-digit code for your VCR. If you perform this procedure correctly, the LED will blink twice.

NOTE: If the LED did not blink twice after entering the code's last digit, repeat steps 2 through 3 and try entering the same code again.

4. Aim the Dolphin at your VCR and press POWER once. The VCR should turn off. If your VCR remote control does not have a POWER key, press PLAY. If the VCR does not respond, repeat steps 2-4, trying each code listed for your brand until you find one that works. If the VCR still does not work, try searching for the code (see Searching For Your Code on page 25).

5. Write your VCR code in the boxes below for future reference.

NOTE: Remember to use the Dolphin to operate your VCR, press VCR first.

Setup Codes for VCRs:

ABS	1972
Admiral.....	0048, 0209
Adventura	0000
Aiwa	0124, 0000, 0037
Akai	0175
Alienware	1972
American High	0035
Asha.....	0240

Audiovox	0037
Beaumont	0240
Bell & Howell	0104
Broksonic.....	1479, 0184, 0121, 0209, 0002
Calix.....	0037
Canon	0035
Carver	0081
CCE	0072
Citizen	1278, 0037
Clarion.....	0889, 0888
Colt	0072
Craig	0037, 0047, 0240, 0072
Curtis Mathes	1035, 0035, 0060, 0162
CyberPower	1972
Cybernex	0240
Daewoo	1278, 0045
Dell	1972
Denon	0042
DirecTV	0739
Durabrand	0039
Dynatech	0000
Electrohome	0037
Electroponic.....	0037
Emerex	0032
Emerson	1479, 1278, 0000, 0037, 0184,0121, 0043, 0209, 0002
Fisher	0047, 0104
Fuji	0035, 0033
Funai	0000
Garrard	0000
Gateway	1972
GE	1035, 1060, 0807, 0035, 0060,0240
Goldstar	1237, 0037
Gradiente	0000
Harley Davidson.....	0000
Harman/Kardon	0081
Harwood	0072
Hewlett Packard	1972
Hitachi	0000, 0042
HI-Q	0047

Howard Computer	1972
HP	1972
Hughes Network Systems	0739, 0042
IBUYPOWER	1972
Jenson	0889
JVC	0067
KEC	0037
Kenwood	0067
KLH.....	0072
Kodak	0035, 0037
LG	0037
Lloyd's	0000
Logik	0072
LXI	0037
Magnasonic	1278
Magnavox	1781, 0000, 0035, 0039, 0081
Magnin	0240
Marantz	0035, 0081
Marta	0037
Matsushita.....	0035, 0162
Media Center PC	1972
MEI	0035
Memorex	1237, 0000, 0035, 0037, 0048, 0039, 0047, 0162, 0240, 0104,0209
MGA	0240, 0043
MGN Technology	0240
Microsoft	1972
Mind	1972
Minolta	0042
Mitsubishi	0807, 0067, 0043
Motorola	0035, 0048
MTC.....	0000, 0240
Multitech	0000, 0072
NEC	0067, 0104
Nikko	0037
Noblex.....	0240
Northgate	1972
Olympus	0035
Onkyo.....	0222
Optimus	0037, 1062, 0048, 0162, 0104

Orion	1479, 0184, 0209, 0002
Panasonic	0225, 1035, 0616, 0035, 1062,0162
Penney	1237, 1035, 0035, 0037, 0042,0240
Pentax.....	0042
Philco	0035, 0209
Philips	0618, 0739, 0035, 0081
Pilot	0037
Pioneer	0067
Polk Audio	0081
Profitronic	0240
Proscan	1060, 0060
Protec	0072
Pulsar	0039
Quasar	1035, 0035, 0162
RadioShack	0000
Radix	0037
Randex	0037
RCA	1035, 1060, 0807, 0880, 0060,0042, 0240, 0060
Realistic	0000, 0035, 0037, 0048, 0047,0104
ReplayTV.....	0614, 0616
Runco	0039
Samsung	1014, 0045, 0240
Sanky	0048, 0039
Sansui	1479, 0000, 0067, 0209
Sanyo	0159, 0047, 0240, 0104
Scott	0184, 0045, 0121, 0043
Sears	1237, 0000, 0035, 0037, 0047,0042, 0104
Semp	0045
Sharp	0807, 0048
Shintom	0072
Shogun	0240
Singer	0072
Sonic Blue	0614, 0616
Sony	1232, 0000, 0636, 1972, 0032,0035, 0033
STS	0042
Sylvania	1781, 0000, 0035, 0081, 0043
Symphonic	0000
Systemax	1972
Tagar Systems	1972

Teac	0000
Technics.....	0035, 0162
Teknika	0000, 0035, 0037
Thomas.....	0000
Tivo	0618, 0636, 0739, 1503
TMK	0240
Toshiba.....	0845, 1145, 1503, 1008, 1972, 0045,0043
Totevision	0037, 0240
Touch	1972
Unitech	0240
Vector	0045
Video Concepts	0045
Videomagic	0037
Videosonic	0240
Viewsonic	1972
Villain.....	0000
Wards	0000, 0035, 0060, 0048, 0047, 0081, 0042, 0240, 0072
White Westinghouse	0209, 0072
XR	1000 0000, 0035, 0072, 0035
Zenith	1479, 0000, 0039, 0033, 0209
ZT Group	1972

5.4 Programming Cable Converter (Or Satellite Receiver) Control

Locate the brand name of your Cable Converter (or Satellite Receiver) in the Setup Codes For Cable Converters (or Setup Codes For Satellite Receivers) section starting on the next page, and write it in the appropriate space.

Cable Converter Brand:

or

Satellite Receiver Brand:

The brands are listed in alphabetical order with the most popular codes listed first.

You will use one of these codes to reprogram the Dolphin to operate your Cable Converter or Satellite Receiver.

1. Turn on the Cable Converter or the Satellite Receiver.
2. On the Dolphin, press CBL/SAT once. Press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter the first four-digit code for your Cable Converter or Satellite Receiver. If you perform this procedure correctly, the LED will blink twice.

NOTE: If the LED did not blink twice after entering the code's last digit, repeat steps 2-3 and try entering the same code again.

4. Aim the Dolphin at your Cable Converter or Satellite Receiver and press POWER once. The unit should turn off. If it does not respond, repeat steps 2-4, trying each code listed for your brand until you find one that works. If it still does not work, try searching for the code (see Searching For Your Code on page 25).

5. Write your Cable Converter or Satellite Receiver code in the boxes below for future reference.

NOTE: Remember to use the Dolphin to operate your Cable Converter or Satellite Receiver, press CBL/SAT first.

5.5 Setup Codes for Cable Converters:

ABC	0003, 0008
Americast.....	0899
Bell South	0899
Director.....	0476
General Instruments.....	0476, 0810, 0276, 0003
GoldStar	0144
Jerrold.....	0476, 0810, 0276, 0003
Memorex	0000
Motorola	0476, 1376, 0810, 0276
Pace	1877, 0237
Panasonic	0000
Paragon	0000
Philips.....	0305, 0317
Pioneer	0877, 1877, 0144, 0533
Pioneer	0533
Pulsar	0000
Quasar	0000
Runco	0000
Samsung	0144
Scientific Atlanta.....	0877, 1877, 0477, 0008
Starcom	0003
Supercable	0276
Torx	0003
Toshiba	0000
Zenith	0000, 0525, 0899

5.6 Setup Codes for Satellite Receivers:

AlphaStar	0772
Century	0856
Chaparral	0216
DirecTV	0566, 0639, 1639, 1640, 0247, 0749, 1749, 1142, 1442, 0724, 0819, 1856, 0392, 1392, 1414, 1109, 1444, 1076, 0099
Dish Network System	0775, 1005, 1170
DishPro	0775, 1005
Echostar	0775, 1005, 1170
Expressvu	0775
GE	0566
General Instruments	0869
GOI	0775
Goodmans	1246
Gradiente	0856
Hitachi	0819
HTS	0775
Hughes Network Systems.....	0749, 1749, 1142, 1442, 1443, 1444
Innova	0099
JVC	0775, 1170
LG	1226, 1414
Magnavox	0724, 0722
Mega Sat	1551
Memorex	0724
Mitsubishi	0749
Motorola	0869
NEC	1270
Netsat	0099
Next Level	0869
Panasonic	0701, 0247
Paysat	0724
Philips	0749, 1749, 1142, 1442, 0724, 0722, 0856, 1076, 0099
Proscan	0566, 0392
RadioShack	0869
RCA	0566, 0143, 0855, 0392, 1392

SKY	0856, 1856, 0099
Samsung	1276, 1109
Sanyo	1219
Sony	0639, 1639, 1640
Star Choice	0869
Tivo	1142, 1442, 1443, 1444
Toshiba	0749, 1749, 0790, 1285
UltimateTV	1640, 1392
Uniden	0724, 0722
Voom 0.....	869
Zenith.....	0856, 1856

5.7 Programming DVD Control

Locate the brand name of your DVD player in the Setup Codes For DVD Players section below, and write it in the following space.

DVD Player Brand:

The brands are listed in alphabetical order with the most popular codes listed first. You will use one of these codes to program the Dolphin to operate your DVD Player:

1. Turn on the DVD Player.
2. On the Dolphin, press DVD once. Press and hold SETUP until the LED blinks twice, then release SETUP.

3. Enter the first four-digit code for your DVD Player. If you perform this procedure correctly, the LED will blink twice.

NOTE: If the LED did not blink twice after entering the code's last digit, repeat steps 2 through 3 and try entering the same code again.

4. Aim the Dolphin at your DVD Player and press POWER once. The DVD Player should turn off. If it does not respond, repeat steps 2-4, trying each code for your brand until you find one that works. If it still does not work, try searching for the code (see Searching For Your Code on page 25).

5. Write your DVD code below for future reference.

NOTE: Remember, to use the Dolphin to operate your DVD Player, press DVD first.

5.8 Setup Codes for DVD Players:

Allegro	0869
Anaba	0813
Apex Digital	0672, 1020, 0794, 0796, 0797, 1100, 1004, 0755, 056, 1061, 0830, 0717
Aspire Digital	1168
Audiovox	1072
Axion	1072
Blaupunkt	0717
Blue Parade	0571
Boss.....	1680
Broksonic	0695
Cinevision	0876, 0869
Clarion	0891, 0892, 1039, 1559
Coby	1086
Concept	1564
Curtis Mathes	1087
CyberHome	0816, 1023, 1024, 1117, 1129
Daewoo	1172, 0784, 0869, 0833
Denon	0490
Dual	1068, 1085
DVD2000	0521
Emerson	0591, 0675
Enterprise	0591
Fahrenheit	0887, 0890, 1054, 1066, 1142
Fisher	0670
Funai	0675
Gateway	1158, 1073
GE	0522, 0815, 0717
Go Video	0783, 1099, 1730, 0869, 0833, 0715, 0744, 1075
GPX	0699
Gradiente	0651
Greenhill	0717
Harman/Kardon	0582, 0702
Hitachi	0573, 0664, 0695
Hiteker	0672
Honyas	1142

Initial	0717, 1472
IRT	0783
JBL	0702
Jensen	1016, 1700
JVC	0558, 0623, 0867, 1872
KEC	1238
Kenwood	0490, 0534
KLH	1020, 0717
Koss	0651
Lanzar	1398
Lasonic	0798
Lite-On	1058, 1158
Loewe	0511
Magnavox	0503, 0675
Marantz	0539
Memorex.....	0695
Microsoft	0522
Mintek.....	0839, 0717
Mitsubishi	0521, 1521
NEC	0785
Nesa	0717, 1603
Norcent	1003
Onkyo	0792, 0503
Optiview	0813
Oritron	0651
Panasonic	0490, 1762,
Philips	0503, 0539, 0646, 0854
Pioneer	0525, 0571
Polaroid	1086, 1061
Polk Audio	0539
Proscan	0522
Pyle	1300, 1746
Qwestar	0651
RCA	0522, 0571, 0822, 1132, 1022, 0717
Rio	0869
Rotel	0623
Rowa.....	0823
Sampo	0752
Samsung	0490, 0573, 0744, 0820, 1075

Sansui	0695
Sanyo	0670, 0873, 0695
Semp	0503
Sharp	0752, 0630
Sharper Image	1117
Sherwood.....	0770
Shinsonic	0533, 0839
Sonic Blue	1099, 0869
Sony	0533, 1033, 0864
Sound Mobile	1298
Starvision	1300
Superscan	0821
Sylvania	0675
Symphonic	0675
T-View	0813
Teac	0809
Technics	0490
Theta Digital	0571
Toshiba	0503, 1154, 0695
Tredex	0799
US Logic.....	0839
Urban Concepts	0503
Xbox	0522
Yamaha	0490, 0539, 0545
Zenith.....	0503, 0591, 0869

5.9 Programming CD Control

Locate the brand name of your CD Player in the Setup Codes For CD Players section below, and write it in the following space.

CD Player Brand:

The brands are listed in alphabetical order with the most popular codes listed first. You will use one of these codes to program the Dolphin to operate your CD Player:

1. Turn on the CD Player.
2. On the Dolphin, press CD once. Press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter the first four-digit code for your CD Player. If you perform this procedure correctly, the LED will blink twice.

NOTE: If the LED did not blink twice after entering the code's last digit, repeat steps 2 through 3 and try entering the same code again.

4. Aim the Dolphin at your CD Player and press POWER once. The CD Player should turn off. If it does not respond, repeat steps 2-4, trying each code for your brand until you find one that works. If it still does not work, try searching for the code (see Searching For Your Code on page 25).

5. Write your CD code in the boxes below for future reference.

NOTE: Remember, to use the Dolphin to operate your CD Player, press CD first.

5.10 Setup Codes for CD Players:

Aiwa	0157
Burmester	0420
California Audio Labs.....	0029, 0303
Carver	0157, 0179, 0437
CCE	0157
Classic	1297
Denon	0003, 0873
DKK.....	0000
DMX Electronics	0157
Emerson	0305
Fisher	0179, 1325
Garrard	0420, 0393
Genexxa	0032, 0305
GPX	1296
Harman/Kardon	0157, 0173, 1202
Hitachi.....	0032
Integra	0101
JVC	0072, 1294
Kenwood	0826, 0626, 0028, 0037, 0190, 0681
KHL.....	1711
KLH	1318
Koss	1317
Krell	0157
LG	1208
Linn	0157
LXI	0305
Magnavox	0157, 0305

Marantz	0626, 0029, 0157, 0180
Mark Levinson	1484
Matsui.....	0157
MCS	0029
Miro.....	0000
Mission	0157
MTC	0420
Nikko	0174, 0164, 0170
NSM	0157
Onkyo.....	0101, 0868
Optimus	1063, 0032, 0000, 0179, 0305, 0037, 0420, 0145, 0468, 0437, 1075
Panasonic	0029, 0303
Parasound	0420
Philips	0626, 0157
Pioneer	1063, 0032, 0305, 0468, 1062, 1087
Polk Audio.....	0157
Proton	0157
QED	0157
Quad	0157
Quasar	0029
Radio Shack	1075
RCA	0032, 0179, 0305, 0053, 0468, 0764, 0420
Realistic	0179, 0420, 0180
Rotel	0157, 0420
SAE	0157
Sansui.....	0157, 0305
Sanyo	0179
Scott	0305
Sears	0305
Sharp.....	0861, 0037, 0180
Sherwood	1067, 0180
Sonic Frontiers	0157
Sony	0490, 0000, 0185, 0100, 1364
Soundesign	0145
Symphonic	0305
TAG McLaren	0157
Tascam.....	0420

TDK	1208
Teac	0420, 0393, 0180
Technics	0029, 0303
Tivoli Audio	1553
Victor	0072
Wards	0157, 0053
Yamaha	0888, 0036, 0187, 1292
Yorx	0461
Zonda	0157

5.11 Programming Audio Control

Using the Dolphin's RCVR mode, you can also control an audio component, such as a stereo receiver or a stereo amplifier.

Locate the brand name of your audio component in one of accompanying code lists.

Write it in the appropriate space.

Stereo Receiver Brand:

or

Stereo Amplifier Brand:

The brands are listed in alphabetical order with the most popular codes listed first. You will use one of these codes to program the Dolphin to operate your audio component:

1. Turn on the audio component.
2. On the Dolphin, press RCVR once. Press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter the four-digit code for your audio component. If you perform this procedure correctly, the LED will blink twice. NOTE: If the LED did not blink twice after entering the code's last digit, repeat steps 2 through 3 and try entering the same code again.
4. Aim the Dolphin at your audio component and press POWER once. The unit should turn off. If it does not respond, repeat steps 2-4, trying each code listed for your brand until you find one that works. If it still does not work, try searching for the code (see Searching For Your Code on page 25).
5. Write your audio component code in the boxes below for future reference.

NOTE: Remember to use the remote to operate your audio component, press RCVR first.

5.12 Setup Codes for Stereo Receivers/Tuners:

ADC	0531
Aiwa	1243, 1405, 0158, 0189, 0121
Akai	1255
Alco	1390
Anam	1609, 1074
Anam	1609
Apex Digital	1257, 1430
Audiotronic	1189
Audiovox.....	1390
Blaupunkt	1480, 1481, 1499
Bose.....	1229, 0639, 1253, 1355
Capetronic.....	0531
Carver	1189, 0189
Clarion	1377, 1669
Coby.....	1263
Dell	1383
Denon	1360
Fahrenheit	1900, 1598
Glory Horse	1263
Harman/Kardon	0110, 0189
Hitachi	1273
Honyas	1900
Integra	0135, 1298
JBL	0110, 1457
Jensen	0110, 1457, 2045
JVC	0074, 1263, 1400
Kenwood	1313, 1570, 1569, 0239, 0027, 0337, 0338
KHL	1664
KLH	1428, 1390, 1664, 1711
Koss.....	1366
Linn.....	0189
Magnadyne	1745
Magnavox.....	1189, 1269, 0531, 0189, 1514
Marantz	1189, 1269, 0039, 0189
MCS	0039
Mitsubishi	1393

Onkyo	0842, 0135, 1298
Optimus	1023, 0531, 0670, 1074
Oritron	1366, 1497
Panasonic.....	1518, 0039, 0309, 1548, 1288, 1316, 1763, 1764, 1399
Philco	1390
Philips	1189, 1269, 0189, 1266
Pioneer	1023, 0531, 0014, 0150, 1630, 1384, 1456
Polk Audio.....	0189
Poly Planner	1914
Proscan	1254
Quasa.....	r 0039
RadioShack	1263
RCA	1023, 1609, 1254, 0531, 1074, 1390, 1511
Rio	1383
Sansui	0189
Sharper Image	1263
Sonic Blue	1383
Sony.....	1058, 1441, 1258, 1759,
.....	1758, 0158, 1406, 1442,
.....	1858, 1658, 1558, 1349, 1397
Soundesign	0670
Stereophonics.....	1023
Sunfire.....	1313
Teac	1267, 1074, 1390, 1528
Technics.....	1308, 1518, 0039, 0309
Thorens	1189
Venturer	1390
Victor	0074
Wards	0158, 0014, 0189
Yamaha	0176, 1176, 1276

5.13 Setup Codes for Stereo Amplifiers:

Aiwa	0406
Bose	0674
Carver.....	0269
Curtis Mathes	0300
Denon	0160
Durabrand	1561

GE	0078
Harman/Kardon	0892
JVC	0331
Left Coast	0892
Lenoxx	1561
Linn.....	0269
Luxman	0165
Magnavox	0269
Marantz	0892, 0269, 0321
Nakamichi	0321
Optimus	0395, 0300
Panasonic	0308, 0521
Philips	0892, 0269
Pioneer	0013, 0300
Polk Audio	0892, 0269
RCA	0300
Realistic	0395
Sansui.....	0321
Sony	0815, 0220, 0689
Soundesign	0078
Technics	0308, 0521
Victor	0331
Wards	0078, 0013
Yamaha	0354

Searching For Your Code

If your TV, VCR, Cable Converter, Satellite or Audio Component does not respond to the Dolphin after trying all of the codes listed for your brand, or if your brand is not listed at all, try searching for your code.

For example, to search for a code for your TV:

1. Turn on your TV.
2. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter 9 - 9 - 1. The LED will blink twice.
4. Aim the remote control at the TV and slowly alternate between pressing POWER and TV. Stop when the TV turns off.

NOTE: In the search mode, the Dolphin will send IR codes from its library to the selected component, starting with the most popular code first.

5. Press SETUP once to lock in the code.

6. To search for the codes of your other components, repeat steps 1 through 5, but substitute the appropriate key (i.e., VCR, CBL/SAT, DVD, CD, or RCVR) for the component you are searching for.

TV

Aurora Systems TV	0801
Blaupunkt TV	0763
Casio TV	1205
CCD TV	0463
Clarion TV	0180
Fahrenheit TV	1598
JVC Monitor	0731
Signet TV	0844

VCR

Clarion VCR	0800
Clarion/Jenson VCR	0888
Samsung VCR	0889
Sony VCR	0240

DVD

Blaupunkt DVD	0717
Clarion DVD	0891, 0892, 1039
Fahrenheit DVD	-5 0890
Fahrenheit DVD	- 12T 1054
Fahrenheit DVD	- 11N 1066
Fahrenheit DVD	- 16T 0887
Honyas DVD	1142
KEC DVD	1238
T-View DVD	0813

Searching For Your Code

If your TV, VCR, Cable Converter, Satellite or Audio Component does not respond to the Dolphin after trying all of the codes listed for your brand, or if your brand is not listed at all, try searching for your code.

For example, to search for a code for your TV:

1. Turn on your TV.
2. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter 9 - 9 - 1. The LED will blink twice.
4. Aim the remote control at the TV and slowly alternate between pressing POWER and TV. Stop when the TV turns off.

NOTE: In the search mode, the Dolphin will send IR codes from its library to the selected component, starting with the most popular code first.

5. Press SETUP once to lock in the code.

6. To search for the codes of your other components, repeat steps 1 through 5, but substitute the appropriate key (i.e., VCR, CBL/SAT, DVD, CD, or RCVR) for the component you are searching for.

Checking The Codes

If you have set up the Dolphin using the "Searching For Your Code" procedure, you may need to find out which four-digit code is operating

For example, to find out which code is operating your TV:

1. Turn on your TV.
2. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter 9 - 9 - 0. The LED will blink twice.
4. To view the code for the first digit, press 1 once. Wait 3 seconds and count the number of LED blinks (e.g., 3 blinks = 3) and write down the number in the leftmost TV Code box below.

NOTE: If a code digit is "0", the LED will not blink.

5. Repeat step 4 three more times for remaining digits. Use 2 for the second digit, 3 for the third digit, and 4 for the fourth digit. Finish writing down the code in the TV Code boxes below.

6. To check for the codes of your other components, repeat steps 1 through 5, but substitute the appropriate key (i.e., VCR, CBL/ SAT, DVD, CD or RCVR) for the component you are checking.

Reassigning Device Keys

The Dolphin can be set up to control a second TV or VCR, or any combination of four home entertainment components. For example, to have the Dolphin control a TV, a Cable Converter, and two VCRs, you will need to reassign the unused RCVR key to operate the second VCR as follows:

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 2. The LED will blink twice.
3. Press VCR once, then press RCVR once.
4. The RCVR key is now ready to be programmed for your second VCR

To reassign other device keys, repeat steps 1 the following chart for a desired component:

To Reassign Perform Key Sequence

TV as 2nd VCR key: SETUP - 9 - 9 - 2 - VCR - TV

TV as 2nd RCVR key: SETUP - 9 - 9 - 2 - RCVR - TV

TV as 2nd CBL/SAT key: SETUP - 9 - 9 - 2 - CBL/SAT - TV

TV back to TV SETUP - 9 - 9 - 2 - TV - TV

VCR as 2nd TV key: SETUP - 9 - 9 - 2 - TV - VCR

VCR as 2nd RCVR key: SETUP - 9 - 9 - 2 - RCVR - VCR

VCR as 2nd CBL/SAT key: SETUP - 9 - 9 - 2 - CBL/SAT - VCR

VCR back to VCR: SETUP - 9 - 9 - 2 - VCR - VCR

RCVR as 2nd TV key: SETUP - 9 - 9 - 2 - TV - RCVR

RCVR as 2nd VCR key: SETUP - 9 - 9 - 2 - VCR - RCVR

RCVR as 2nd CBL/SAT key: SETUP - 9 - 9 - 2 - CBL/SAT - RCVR

RCVR back to RCVR: SETUP - 9 - 9 - 2 - RCVR - RCVR

Upon completion of a reassignment, the LED will blink twice to confirm your selection. At that time, you will also need to program the Dolphin to control the new component (as described earlier in this document).

5.14 Setting Volume Lock

The Dolphin can be set so that the volume control buttons will always control the same device no matter which device mode is selected.

If your TV is not remote controllable, or if you would like the volume to be controlled by a different component, you can change the Volume

Lock setting to control volume through a non-associated mode (e.g., through the cable in the TV mode).

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 3 and then press CBL/SAT once. The LED will blink twice.
3. Now, whenever you press Volume +, Volume -, or MUTE on the Dolphin, volume will be controlled by your Cable Converter or Satellite.

To Change Volume Lock to the TV mode:

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 3 and then press TV once. The LED will blink twice.
3. Now, whenever you press Volume +, Volume -, or MUTE on the Dolphin, volume will be controlled by your TV.

To Change Volume Lock to the VCR mode:

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 3 and then press VCR once. The LED will blink twice.
3. Now, whenever you press Volume +, Volume -, or MUTE on the Dolphin, volume will be controlled by your VCR.

To Change Volume Lock to the DVD mode:

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 3 and then press DVD once. The LED will blink twice.
3. Now, whenever you press Volume +, Volume -, or MUTE on the Dolphin, volume will be controlled by your DVD Player.

To Change Volume Lock to the CD mode:

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 3 and then press CD once. The LED will blink twice.
3. Now, whenever you press Volume +, Volume -, or MUTE on the Dolphin, volume will be controlled by your CD Player.

To Change Volume Lock to the RCVR mode:

NOTE: Performing these steps will allow you to access the volume control of your audio component in all modes.

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 3 and then press RCVR once. The LED will blink twice.
3. Now, whenever you press Volume +, Volume-, or MUTE on the Dolphin, volume will be controlled by your audio component.

Clearing Volume Lock

The volume lock can be cleared so that the volume control buttons will control whatever device is selected.

To clear the volume lock:

1. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
2. Enter 9 - 9 - 3 and then press Volume Up. The LED will blink 4 times when unlocked.

Clearing Volume Lock For One Device
The volume lock can be cleared for one specific device so that the volume control buttons will control that device when it is selected.

To clear the volume lock for a specific device:

1. Press the device key for the unit to be unlocked.
2. On the Dolphin, press and hold SETUP until the LED blinks twice, then release SETUP.
3. Enter 9 - 9 - 3 and then press Volume Down. The LED will blink 4 times when unlocked

5.15 Using The Learning Feature

You can program the non-spa buttons to add devices (e.g., VCR Tracking Up or Down).

NOTE: PLEASE HAVE YOUR ORIGINAL REMOTE CONTROLS ON HAND BEFORE PROGRAMMING THE LEARNING FEATURE. BE SURE TO PRESS EACH KEY WITHIN 10 SECONDS OF THE PREVIOUS ENTRY. IF 10 SECONDS PASS BETWEEN ENTRIES, THE REMOTE CONTROL WILL EXIT THE PROGRAMMING MODE.
Programming A Learning Key

1. Place your original remote control (e.g., TV remote control) at a 90° angle to the underside of the Dolphin Remote (1.5" to 2" apart).
The original remote LED should point to the area directly in between the two footings on the underside of the Dolphin Remote. (See illustration on next page.)
2. Press and hold SETUP until the LED (red light) blinks twice, then release SETUP.
3. Enter 9 - 7 - 5. The LED will blink twice.
4. Press a device key once (e.g., TV) to assign a mode for learning.
5. Press an open learning key once (e.g., Guide) to store a feature to be learned. The LED will blink rapidly.

NOTE: THE DOLPHIN LED LIGHT MUST BE BLINKING IN ORDER TO PROGRAM. IF AT ANY TIME DURING PROGRAMMING, THE DOLPHIN LED STOPS BLINKING, GO BACK TO STEP 1 AND START AGAIN.

6. On your original remote control, press and hold the key feature to be learned until the LED on the Dolphin Remote Control blinks twice. If the LED does not blink twice, repeat steps 3 through 6.
7. To learn functions onto other learning keys, repeat steps 3 through 6.
8. To exit learning mode, press and hold SETUP until the LED blinks twice, then release SETUP or wait 10 seconds.
9. To test a learned feature, press a device key (e.g., TV) once where the learning mode was assigned. Then press the learning key (e.g., Guide) where the learned feature is stored.

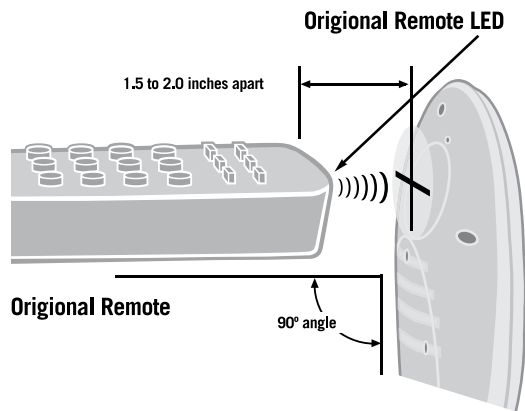
Deleting Functions From The Learning Keys:

1. Press and hold SETUP until the LED (red light) blinks twice, then release SETUP.
2. Enter 9 - 7 - 6. The LED will blink twice.
3. Press the device key once where the learned feature is stored (e.g., TV).
4. Press the learning key (e.g., Guide) twice. The LED will blink twice after the second press.
5. To clear additional functions stored on other learning keys, repeat steps 1 through 4(in this section).

Feature Reset

This function will clear all volume lock and learned key functions. It does not clear device codes and mode reassignments.

1. On the Dolphin, press and hold SETUP until the LED (red light) blinks twice, then release SETUP.
 2. Enter 9 - 8 - 0. The LED will blink 4 times when reset is complete.
- NOTE:** LEARNING SHOULD BE DONE INDOORS AND AWAY FROM FLUORESCENT LIGHTS.



5.16 Using The IR/RF Command Center

The Remote Control can be used with an optional IR/RF Command Center, up to 100 feet away.*

Once it is set up, the IR/RF Command Center will convert the RF signals into Infrared (IR) signals to control your home theater devices.

NOTE: The remote control transmits both an IR and an RF signal simultaneously. It is your option whether you want to install the IR/RF Command Center for extended remote control range.

Setting Up The IR/RF Command Center

1. Find a location several feet in front of your home theater devices (TV, VCR, DVD, RCVR, etc.). It should provide line-of sight access to the IR/RF Command Center.
2. Plug in the IR/RF Command Center's power cord and raise the telescoping antenna.
3. Position the IR/RF Command Center so the black IR Lens is aimed at your home theater devices.
4. To test the IR/RF Command Center, take the remote into another room in your home. Select a device key (e.g., TV) and press it once. Then press POWER once. The device should turn on. If it does not turn on, review the steps 1 through 3 and make the necessary adjustments. Try step 4 again. If you continue to have a problem, perhaps there is an IR line-of sight problem. Try adding the IR Signal

Extension Cord. Also review the tips in Optimizing IR/RF Command Center Reception. Adding The IR Signal Extension Cord Included with the IR/RF Command Center is an IR Signal Extension Cord for use with a home theater device that is not in direct line-of-sight of the IR/RF

Make sure that the remote is not being affected by other RF transmissions (e.g. garage door openers, cordless phone, etc.)

*Distance Note for Command Center

Note: The Remote will operate the Command Center at distances up to 100 feet in an open field. Range will be adversely affected by metal structures, objects blocking the signal path, antenna orientation or extension, radio frequency interference from other sources, or weak batteries in the Remote.

SPECIFICATIONS

Remote Control Power

2 AA Batteries

IR/RF Command Center Power

120 VAC

Remote Control to IR/RF Command Center

RF Range

up to 100 Feet (30.48 m)*

IR/RF Command Center to Audio/Visual

Equipment Range

Up to 30 Feet (7.62 m) ± 30°

Remote Control Dimensions: (H x W x D)

9-2/16 x 2-10/16 x 1-3/16 in.

232 x 65 x 31 mm

IR/RF Command Center Dimensions: (H x W x D)

1-9/16 x 5 -1/16 x 4 in

39.7 x 128.6 x 101.6 mm

Remote Control Weight (without Batteries): 8 oz (220 g)

IR/RF Command Center Weight: 10.4 oz (300 g)

NOTE: Specifications are typical. Individual units may vary. Specifications are subject to change and improvement without notice

*Distance may vary

NOTE: Specifications are typical. Individual units may vary. Specifications are subject to change and improvement without notice.

Compliance With FCC Rules And Regulations

The equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and radiates radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- > Reorient or relocate the receiver and antenna.
- > Increase the separation between the equipment and the receiver
- > Connect the equipment into an outlet that is different from that which the receiver is connected.
- > Consult the dealer or an experienced radio/television technician for help.
- > The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate the modified equipment.

FCC Authorization Label

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference; and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC ID #: MG31033-4

Remote Control with RF Command Center:

(FCC Standards IC:2575-4339BG0)

6. Troubleshooting

PROBLEM: LED does not blink when you press a key.

SOLUTION: Replace the batteries with (2) new AA alkaline batteries (see page 26).

PROBLEM: LED blinks when you press a key, but home entertainment component does not respond.

SOLUTION: Make sure you are aiming the remote at your home entertainment component and that you are within 15 feet of the component you are trying to control.

PROBLEM: The remote does not control home entertainment components or commands are not performing properly.

SOLUTION: Try all listed codes for the component brand being set up. Make sure all components can be operated with an infrared remote control.

PROBLEM: TV/VCR combo does not respond properly.

SOLUTION: Use the VCR codes for your brand. Some combo units may require both a TV code and VCR code for full operation.

PROBLEM: No volume on a second TV.

SOLUTION: Follow instructions in Changing Volume Lock

PROBLEM: CH+, CH-, and LAST do not work for your RCA TV.

SOLUTION: Due to RCA design (1983-1987), only the original remote control will operate these functions.

PROBLEM: Changing channels does not work properly.

SOLUTION: If original remote control required pressing ENTER to change channels, press ENTER on the remote after entering a channel number.

PROBLEM: Tried "Search Method" and still could not find a working code.

SOLUTION: Try the "Search Method" again after clearing out the device key as follows: Press and hold ENTER until red light blinks twice, then release. Next enter 9 - 9 - 2. Then press and release the device key to be cleared twice.

PROBLEM: Remote does not control spa (but does control other devices).

SOLUTION: If spa has RF receiver: 1) Try it at different distances. You may be too close or too far away. 2) Make sure the correct address is set on the spa for the set up code you entered on the remote. Set the spa address back to 0. If your spa has addressing capability, enter set up code 0000 on the remote. If that works, set a new address on the spa, and enter the corresponding set up code on the Remote.

If it stops working again, the necessary equipment for address is probably not installed in your spa. In that case, set it back to 0/0000 and leave it there.

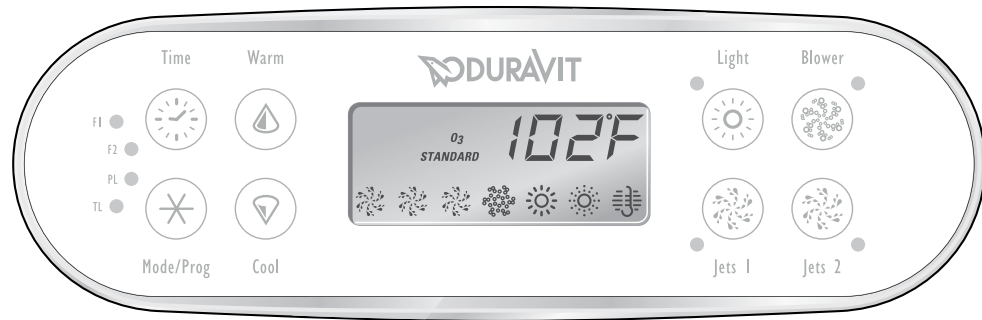
PROBLEM: Remote and spa are set to an address but still experiencing interference from neighbor's spa.

SOLUTION: You and your neighbor may have chosen the same address. Choose a different address and corresponding set up code.

PROBLEM: My spa was just serviced. Everything works now, except for my remote.


SOLUTION: Reprogram the spa address last used. Repeat the Spa Addressing procedure if you don't remember the address.


7. Duravit Control Panel





7.1 Initial Start-up


When your spa is first actuated, it will go into Priming mode (after displaying some configuration information). The Priming mode will last for up to 4 minutes and then the spa will begin to heat and maintain the water temperature in the Standard mode. You can exit Priming mode early by pressing "Warm" or "Cool."


 Heat Icon - Indicates different stages of heating



 Jets Icon - Spins fast on high speed; spins slow on low speed.




 Blower Icon - Biggest in highest speed; smallest in lowest speed.




 Fiber-Optic Light Icon - Spins when the wheel is on; stands still when wheel is off.


 Light Icon - On dim, the LCD will show the center circle plus one quarter of the light beams. Half of the light beams will show on medium brightness, and all of the light beams will show on bright.

Time
 **Time**
 When time hasn't been programmed, the "TIME " icon flashes. To set the time, press "Time" then "Mode/Prog." Use the "Warm" and "Cool" buttons to adjust time. If your spa has an optional pH/ORP sensor , pressing "Time" twice will display the current pH level; pressing it three times will display the current ORP.

Setting the Time
 Press  Once the spa has been properly connected the first time, notice the "TIME " icon appearing on the screen. will show on medium brightness, and all of the light beams will show on bright.
 Then 

Warm **Cool**
 OR  Select the hour by pressing (Each press changes the time by 1 hr)
Mode/Prog
 Press to enter

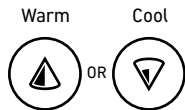
Warm **Cool**
 OR  Select minutes by pressing (Each press changes The time by 1 minute)
Mode/Prog
 Press to exit the time setting procedure and enter the optional filter cycle programming.

Time
 Press to exit programming

7.2 Temp Set (80°F - 104°F / 26.0°C - 40.0°C)

The last measured temperature is constantly displayed on the LCD. Your spa's set temperature range may vary from range shown above depending on your manufacturer's settings. Note that the last measured spa temperature displayed is current only when the pump has been running for at least 1 minute.

7.3 Warm/Cool



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

7.4 Mode/Prog



This button is used to switch between Standard, Economy, and Sleep modes. Press "Mode/Prog" to enter mode programming, press "Cool" to cycle through to desired mode (LCD flashes until confirmed), then press "Mode/Prog" to confirm selection. Standard mode maintains the desired temperature. Note that the last measured spa temperature displayed is current only when the pump has been running for at least 1 minute. The "STANDARD" icon will display until the mode is changed. Economy mode heats the spa to set temperature only during filter cycles. The "ECONOMY" icon will display until mode is changed. Pressing "Jets 1" while in Economy mode puts the spa in Standard-In-Economy mode, which operates the same as Standard Mode, then reverts to Economy Mode automatically after 1 hour. Both the "STANDARD" and "ECONOMY" icons display in this mode. During this time, a press of the "Mode/Prog" button will revert to Economy Mode immediately. Sleep mode heats the spa to within 20°F (11°C) of the set temperature only during filter cycles. The "SLEEP" icon will display until mode is changed.

7.5 Standby Mode

Pressing "Warm" or "Cool" then "Jets 2" will turn off all spa functions temporarily. This is helpful when changing a filter. Pressing any button resets the spa. On some systems the "Jets 1" button will control the pump in Standby Mode ("Drain Mode"). In this case, press any other button to exit. System will revert to previous mode after 1 hour.

Jets 1



Press the "Jets 1" button once to turn pump 1 on or off, and to shift between low and high speeds if equipped. If left running, the pump will turn off after a timeout period. The pump 1 low speed timeout on some systems may be as long as 4 hours. On non-circ systems, the low speed of pump 1 runs when the blower or any other pump is on. It may also activate for at least 1 minute every 30 minutes to detect the spa temperature (polling) and then to heat to the set temperature if needed, depending upon mode. When the low speed turns on automatically, it cannot be deactivated from the panel; however, the high speed may be started.

Jets 2



Press the "Jets 2" button once to turn pump 2 on or off, and to shift between low and high speeds if it is a two-speed pump. If left running, the pump will turn off after a timeout period.

Blower



1-speed operation: on/off;

2-speed operation: med/hi/off; or

3-speed operation: lo/med/hi/off.

If left on, the blower will automatically turn off after a timeout period.

Invert

Press the "Warm" or "Cool" button, then "Blower" to change the numbers in the display to read upside down. Repeat sequence to return the display to its normal right-side-up display

7.6 Preset Filter Cycles

On all systems, the pump and the ozone generator will run during filtration. At the start of each filter cycle, the blower will run briefly on its highest speed to purge the air channels. The lowest speed of any other pumps will also run briefly. On some circ systems, pump 1 may also run for the duration of the filter.

(The following is specific to all systems that are programmed according time)

There are two filter cycles per day. The start/end times of each cycle are programmable. To program, set time as instructed above, then press "Mode/Prog" to advance to the next setting (or to exit after the last setting). Default filter cycles can vary from system to system. A common default is 8:00 AM to 10:00 AM and 8:00 PM to 10:00 PM. Press "Time" then "Mode/Prog" to step through the filter settings to see how they are currently set.

Each filter cycle automatically operates the pump for the duration of the filter cycle. The filter 1 "F1" icon will light when filter 1 is running. The filter 2 "F2" icon will light when filter 2 is running.

7.7 Optional Filter Cycle Programming

You are not required to set filter cycles; however, it is an option available to you. To change the filter cycle settings: Press "Time" "Mode/Prog" "Mode/Prog" "Mode/Prog" within 3 seconds. You will see the "PROGRAM," "FILTER 1" and "START TIME"

icons appear on the display. Press "Warm" or "Cool" to choose the filter start time hour. Enter the hour by pressing "Mode/Prog". Press "Warm" or "Cool" to choose the filter start time minutes. Each press changes the start time by 5 minutes. Enter the minutes by pressing "Mode/Prog". Press "Mode/Prog" to see the "PROGRAM," "FILTER 1" and "END TIME" icons. Adjust the time as done above. Press "Mode/Prog" to see the "PROGRAM," "FILTER 2" and "START TIME" icons. Proceed as above. Press "Mode/Prog" to see "PROGRAM," "FILTER 2" and "END TIME" icons. Adjust the time as done above. Pressing "Mode/Prog" will enter the new filter cycle times into the system and display the current water temperature. Pressing "Time" at any time during this programming sequence will save the values entered up to that point and exit programming.

If you would like to select continuous filtration, set the filter 1 start and end times to be the exact same time. In this case, the filter 2 start time only controls when the second purge happens. Filter 2 end time will be unavailable.

7.8 Light

Some systems are equipped with both a spa light and a fiber optic light; however, only one can be accessed by this panel. (Larger panels may be purchased so that both the spa light and fiber optic light can be utilized.) Depending upon how your spa is equipped and configured, the "Light" button will operate in one of three ways:

- 1) Press the "Light" button to turn the spa light on and off, and to shift between dim and bright settings if your light is dimmable. On dim, the LCD will show center circle plus one quarter of the light beams. Half of the light beams will show on medium brightness, and all of the light beams will show on bright.

- 2) If a fiber-optic light with wheel is installed, press the "Light" button once to start the light and wheel, press it again to stop the wheel, and then again to turn the light off. The fiber icon stands still when the fiber optic light is on by itself, and rotates when the color wheel is also on.

- 3) If a fiber-optic light without a separate wheel stop is installed, press the "Light" button to turn it on and off. If any light is left on, it will automatically turn off after a factory programmed time period.

7.9 Freeze Protection

If the temperature sensors within the heater detect a low enough temperature, then the pump(s) and the blower automatically activate to provide freeze protection. The pump(s) and blower will run either continuously or periodically depending on conditions. In colder climates, an optional additional freeze sensor may be added to

protect against freeze conditions that may not be sensed by the standard sensors. Auxiliary freeze sensor protection acts similarly except with the temperature thresholds determined by the switch. See your dealer for details.

7.10 Locking the Panel

Press "Time" "Jets 1" then "Warm" within 3 seconds. When locked, the PL "PL" light will light. All buttons are frozen except the "Time" button. To unlock the panel, press "Time" "Jets 1" then "Cool."

7.11 Locking the Set Temperature

Press "Warm" or "Cool" then "Time," "Jets 1," and "Warm" within 3 seconds to activate the lock. The TL "TL" light will light when the set temperature is locked. On some systems, locking the set temperature also locks out Mode changes. To unlock the set temperature, press "Warm" or "Cool" then "Time," "Jets 1" and "Cool."

7.12 Clean-up Cycle (optional)

When a pump or blower is turned on by a button press, a clean-up cycle begins 30 minutes after the pump or blower is turned off or times out. The pump and the ozone generator will run for one to four hours, depending on the system (on some systems, you can change this setting; see User Preferences section.)

Circ Pump (optional)

If your system is equipped with a circ pump, it may be configured to work in one of three different ways:

- 1) The circ pump operates continuously (24 hours) with the exception of turning off for 30 minutes at a time when the water temperature reaches 3°F (1.5°C) above the set temperature (most likely to happen in very hot climates).
- 2) The circ pump stays on continuously, regardless of water temperature.
- 3) The circ pump will come on when the system is checking temperature (polling), during filter cycles, during freeze conditions, or when another pump is on.

Ozone (optional)

On most systems, the ozone generator (if installed) runs during filter cycles (except when pump 1 is operating at high speed on a non-circ system) and during clean-up cycles. On some systems, the ozone generator operates whenever the pump runs. If your system is configured with the optional ozone suppress feature, the ozone generator will turn off for 1 hour any time a function button (Jets 1, Jets 2, Blower, etc.) is pressed.

7.13 Displaying Information About Your Spa

There are several pieces of information about your spa that can be called up from the panel, but are only needed in special cases.

To access this information, press "Warm" or "Cool" then "Jets 1", then "Light". (Each press must be within 3 seconds of the previous press.) Then press "Temp" until you see "Sid" on the display. Press "Jets 1" to see the SSID (a series of 3 numbers, such as 100 133 10, which indicates the precise revision of the software in your spa), followed by the Mach software version number (such as 2.1), followed by "CSn" and then your spa's network ID number (consisting of both letters and digits displayed in 5 steps). If you need to see this series of numbers again, and "Sid" is once again on the display, just press "Jets 1" again.

When done, press the "Light" button (more than once if necessary) until you see the normal temperature display.

7.14 User Preferences

There are several aspects of spa operation that you can customize using the User Preferences submenu. Press "Warm" or "Cool" then "Jets 1", then "Light". (Each press must be within 3 seconds of the previous press.) At this point, if "Usr" is not showing on the display, press "Temp" until you see "Usr" on the display. Then press "Jets 1" to enter the User Preferences submenu. Once in the User Preferences submenu, press "Warm" or "Cool" to cycle between these settings:

Sr- Suppress Reminders

When set to "Sr.Y", reminders are never displayed on the panel. When set to "Sr.n", reminders are displayed on the panel periodically.

tc- Temperature in Celsius

When set to "tc.Y", temperatures are displayed on the panel in degrees Celsius.

When set to "tc.n", temperatures are displayed in Fahrenheit.

24- 24-hour Time Display

When set to "24.Y", time is displayed in 24-hour (military) format (00:00 is midnight, 23:00 is one hour before midnight). When set to "24.n", time is displayed in 12-hour (am/pm) format (12:00 is midnight, 11:00 pm is one hour before midnight).

cc- Clean-up Cycle Duration (some systems only)

When set to "cc.0", Clean-up Cycles are disabled. When set to "cc.1" through "cc.4", the number indicates how many hours each Clean-up Cycle will run.

7.15 Ad-Remote Address

When set to "Ad.0", no addressing is used. Use this setting for remote which is set for no address (which is the remote factory default). When set to "Ad.1" through

“Ad.7 ”, the number is the address (see your remote section for details).

8. Editing User Preferences

8.1 View the setting.

The left two characters (before the decimal point) tell you what setting you’re viewing or editing, the right most character (after the decimal point) tells you the value of that setting (for example, “ ” for Yes or “ ” for No).

If the value is flashing, you’re editing it. If the value is not flashing, you’re just viewing it. Press “Jets 1” to switch editing of the value on (flashing) or off (not flashing). Once you’re editing the value (it’s flashing), use the “Warm” or “Cool” buttons to change the value to the one you want. After you change the value, you must press “Jets 1” again to stop the flashing before the change will register, and before you can view or edit another setting. If you don’t interact with the menu for more than 30 seconds, it may time out. If you press “Light” to back out of the menu, or pause long enough for it to time out, while a value was flashing, the changes you were making to that setting are not remembered. But changes you previously made to other settings will be in effect. Any User Preferences that you change will stay in effect “forever” or until you change them again (unless the spa’s “persistent memory” is reset by a service technician), and will override the factory defaults for those settings.

8.2 Time

When time hasn’t been programmed, the “TIME ” icon flashes. To set the time, press “Time” then “Mode/Prog.” Use the “Warm” and “Cool” buttons to adjust time. See previous page for more detailed instructions. If your spa has an optional pH/ORP sensor ,pressing “Time” twice will display the current pH level; pressing it three times will display the current ORP.

On some systems even when spa is shut down, some equipment may occasionally turn on to continue monitoring temperature or if freeze protection is needed.

8.3 Diagnostic Messages

Message	Meaning	Action Required
	No Message on Display. Power has been cut off to the spa.	The Control Panel will be disabled until power returns. Time of day will be preserved for 30 days with a battery back up on EL8000 and EL5000 Systems. EL1000 and some EL2000 systems reset the time of day on each power up. Spa Settings are preserved on all systems.
D H H	"Overheat" - The spa has shut down. On some Systems, and alarm may sound. One of the sensors has detected 118°F (approximately 47.8°C)	DO NOT ENTER THE WATER. Remove the spa cover and allow the water to cool. Once the water has cooled, reset by pushing any button. If Spa does not reset, shut off the power to the spa and call your dealer or service organization.
D H S	"Overheat" - The spa has shut down. One of the sensors has detected water is 110°F (approximately 43.3°C)	DO NOT ENTER THE WATER. Remove the spa cover and allow the water to cool. At 107°F (approximately 41.7°C) the spa should automatically reset. If Spa does not reset, shut off the power to the spa and call your dealer or service organization.
I C E	"Ice" - Potential freeze conditions detected.	No action required. The pumps and the blower will automatically activate regardless of spa status.
S N A	Spa is shut down. The sensor that is plugged into the sensor "A" Jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.
S N S	Sensors are out of balance. If this is alternating with the temperature, it may just be a temporary condition. If the display shows only this message (periodically blinking), the spa is shut down. 1	If the Problem Persists, contact your dealer or service organization.

Message	Meaning	Action Required
<i>HFL</i>	A substantial Difference between the temperature sensors was detected. This should indicate a flow problem.	Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. Press any button to reset.
<i>LF</i>	Presistant low flow problems. (Displays on the fifth occurrence of the "HFL" message within 24hrs.) Heater is shut down, but other spa functions continue to run normally.	Follow action required for "HFL" Message. Heating Capacity of the spa will not reset automaticlly; you may press any button to reset.
<i>DR</i>	Inadequate water detected in heater.	Check water level in spa. Refil if necessary. If water level is not ok, make sure pumps have been primed. Press any button to reset.
<i>DRY</i>	Inadequate water detected in the heater. (displays on third occurrence of "DR" message.) Spa is shut down	Follow action required for "Dr" message. Spa will not automaticlly reset: you may press any button to reset.
<i>PR</i>	When your spa is first acuated, it will go into Priming mode.	See the M-7 Installtion Instruction Manual for complete instructions on the Power-up and Pump Priming. The Priming mode will last for up to 4 minutes and then the spa will be begin to heat and maintain the water temperature in the standard mode.
<i>--F</i> <i>--C</i>	Temperature unknown.	After the pump has been running for 1 minute, the temperature will be displayed.
<i>---</i>	Temperature not current in Economy or Sleep mode.	In Economy or Sleep mode, the pump may be off of hours outside a filer. If you wish to see the current spa temperature, either switch to standard mode or turn Jets 1 on for at least one minute.

Message	Meaning	Action Required
<i>SBY</i>	Standby Mode has been activated by pressing a button combination on the user panel.	Press any button, except "Jets 1", to leave standby mode and return to normal operation.
<i>PHL</i>	PH is low	Add PH Increaser according to Manufacture's Instructions.
<i>PHH</i>	PH is High	Add PH reducer according to manufacture's instructions.
<i>SAL</i>	Sanitizer is low	Add sanitizer according to manufacture's instructions.
<i>SAH</i>	Sanitizer is High	Remove spa cover and allow sanitizer to dissapate.
<i>DRN</i>	The pump is on during Standby Mode to assist in draining the spa.	Press "Jets 1" to turn off the pump when water has drained (or power off the spa.)
<i>RTC</i>	Hardware failure.	Contact your dealer of service organization.
<i>PST</i>	Hardware failure.	Contact your dealer of service organization if message appears on more than one power up.
<i>CRC</i>	Fireware Install problem.	Contact your dealer of service organization if message appears on more than one power up.
<i>CFE</i>	Configuration Error. Spa Cannot start up.	Contact your dealer of service organization.
<i>9FI</i>	Spa could not trip GFCI	Contact your dealer of service organization. Continuted operation my be unsafe.

Message	Meaning	Action Required
STU	A pump appears to be stuck on, causing the water temperature to creep up, possibly to hazardous levels.	POWER DOWN SPA IMMEDIATELY. DO NOT ENTER WATER. Contact your dealer of service organization.
HDT	A pump appears to be stuck on the last time the spa was powered.	POWER DOWN SPA IMMEDIATELY. DO NOT ENTER WATER. Contact your dealer of service organization.

Periodic Reminder Messages (Press the "Mode" button to reset displayed reminder. *)

Message**	Frequency	Action Required
RPH	Every 7 Days	Test and adjust PH chemical levels per manufacture's instructions.
RSA	Every 7 Days	Test and adjust sanitizer chemical levels per manufacture's instructions.
RCL	Every 30 Days	Remove, clean and reinstall filter per manufacture's instructions.
RT9	Every 30 Days	Test and reset GFCI per manufacture's instructions.
RDR	Every 90 Days	Drain and refill spa per manufacture's instructions.
RCD	Every 180 Days	Clean and condition cover per manufacture's instructions.
RTR	Every 180 Days	Clean and condition wood per manufacture's instructions.
RCD	Every 365 Days	Install new filter.
RCA	As Needed	Install new mineral cartridge.

* User can suppress all reminders in User Preferences.

** All of these Periodic Messages can be disabled individually by the spa manufacturer.

*** Any of these frequencies may be changed by the spa manufacturer.

Warning: The Owner should test and reset the GFCI on a regular basis to verify its function.

Note: The GFCI section does not apply on EL systems used outside the United States. This GFCI section does not apply to GL Systems

8.4 GFCI Protection

Your spa is equipped with a GFCI Protection feature. If your spa does have this feature enabled, the GFCI Trip Test must occur to allow proper spa function. Within 1 to 7 days after startup, the spa will trip the GFCI to test it. (The number of days is factory programmed.) The GFCI must be reset once it has been tripped. After passing the GFCI Trip Test, subsequent GFCI trips will indicate a ground fault or other unsafe condition requiring the power to the spa to be shut off.

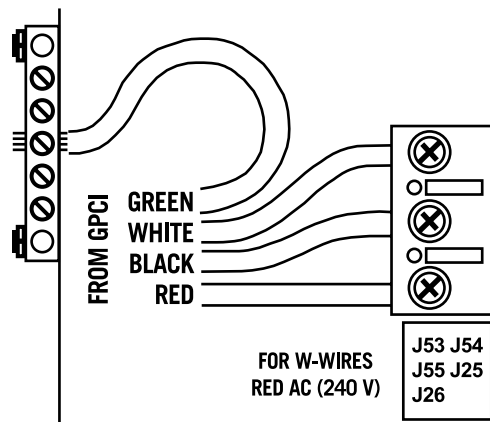
Warning: The Owner should test and reset the GFCI on a regular basis to verify its function.

8.5 GFCI Trip Test Procedure

The installer can cause the GFCI Trip Test to occur sooner by initiating it with the following button sequence. Press "Warm", then "Jets 1", then "Light." (Each press must be within 3 seconds of the previous press.) Press the "Warm" button repeatedly until "9FC " is displayed. Press "Jets 1" to select it. Press the "Warm" button until "9t.n " is displayed. Press "Jets 1" to initiate the GFCI Trip Test. The GFCI should trip within several seconds and the spa should shut down. If it does not, shut down the power and manually 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 spa and repeat the GFCI Trip Test. Once the GFCI is tripped by the test, reset the GFCI and the spa will operate normally from that point. You can verify a successful test by navigating to the "9FC " item as described above, pressing "Jets 1" and then pressing the "Warm" button until you see "95.P ". The code signifies GFCI Status - Passed. The system will exit this menu in 30 seconds if no buttons are pressed.

Warning! Qualified technician required for service and installation.

Basic Installation and Configuration Guidelines for Mach 3 EL-Series Spa Controllers. Use minimum 6AWG copper conductors only. Torque field connections between 21 and 23 in lbs. Readily accessible disconnecting means to be provided at time of installation. Permanently connected. Connect only to a circuit protected by a Class A Ground Fault Circuit Interrupter (GFCI) mounted at least 5' (1.52M) from the inside walls of the spa/hot tub and in line of sight from the equipment compartment. CSA enclosure: Type 3 Typical field connections for main power. Refer to Wiring Diagram inside the cover of the control enclosure. Refer to Installation and Safety Instructions provided by the spa manufacturer.



Warning: People with infectious diseases should not use a spa or hot tub.

Warning: To avoid injury, exercise care when entering or exiting the spa or hot tub.

Warning: Do not use a spa or hot tub immediately following strenuous exercise

Warning: Prolonged immersion in a spa or hot tub may be injurious to your health

Caution: Maintain water chemistry in accordance with the Manufacturers instructions.

Caution: The equipment and controls shall be located not less than 1.5 meters horizontally from the spa or hot tub.

Warning! GFCI Protection.

The Owner should test and reset the GFCI on a regular basis to verify its function.

8.6 CSA Compliance/Conformité

Caution:

- Test the ground fault circuit interrupter before each use of the spa.
- Read the instruction manual.
- Adequate drainage must be provided if the equipment is to be installed in a pit.
- For use only within an enclosure rated CSA Enclosure 3.
- Connect only to a circuit protected by a Class A ground fault circuit interrupter.
- To ensure continued protection against shock hazard, use only identical replacement parts when servicing.
- Install a suitably rated suction guard to match the maximum flow rate marked.

Warning:

- Water temperature in excess of 38°C may be injurious to your health.
- Disconnect the electrical power before servicing.

Attention:

- Toujours vérifier l'efficacité du disjoncteur différentiel avant d'utiliser différentiel avant d'utiliser le bain.
- Lire la notice technique.
- Lorsque l'appareillage est installé dans une fosse, on doit assurer un drainage adéquat.
- Employer uniquement à l'intérieur d'une clôture CSA Enclosure 3.
- Connecter uniquement à un circuit protégé par un disjoncteur différentiel de Class A.
- Afin d'assurer une protection permanente contre le danger de choc électrique, lors de l'entretien employer seulement des pièces de rechange identiques.
- Les prises d'aspiration doivent être équipées de grilles convenant au débit maximal indiqué.

Avertissement:

- Des températures de l'eau supérieures à 38°C peuvent présenter un danger pour la santé.
- Déconnecter du circuit d'alimentation électrique avant l'entretien.

Warning/Advertissement:

- Disconnect the electric power before servicing. Keep access door closed.
- Déconnecter du circuit d'alimentation électrique avant l'entretien. Garder la porte fermée.

Warning! Shock Hazard! No User Serviceable Parts.

Do not attempt service of this control system. Contact your dealer or service organization for assistance. Follow all owner's manual power connection instructions. Installation must be performed by a licensed electrician and all grounding connections must be properly installed.

9. Spa panels

9.1 Blue Moon

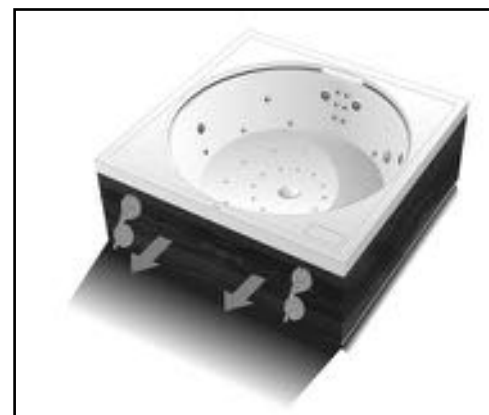


With Easy Click

- > Open the Easy Click connection on the inspection side using the key delivered with the system.



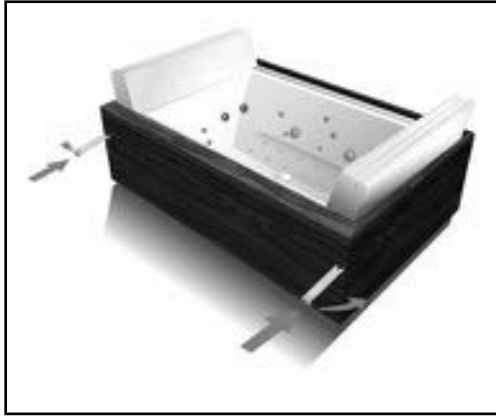
- > Remove the Panel from the Inspection side.



Without Easy Click

- > Remove the Panel with the help of the Duravit vacuum suction unit. Article Nr. 790850 00 0 00 0000).

9.2 Sundeck



- > Open the Easy Click connection on the inspection side using the key delivered with the system.



- > Remove the Panel from the Inspection side.

10. Spa Care And Maintenance

10.1 GENERAL INFORMATION

Your Duravit spa is manufactured from the highest quality, most durable materials available. Even so, the spa care and maintenance program you develop will ultimately determine how long your spa, and its individual components, will last. Regular maintenance and following the advice in this section will help you to protect your investment.

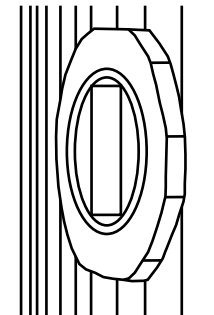
DRAINING THE WATER

Detergent residues from bathing suits and soap film from your body may gradually accumulate in your spa's water. Normally, in about four months the water will become sudsy and should be replaced. Showering without using soap prior to entering the spa, or using only the rinse cycle when laundering your bathing suit, will help to reduce detergent residue in the spa water.

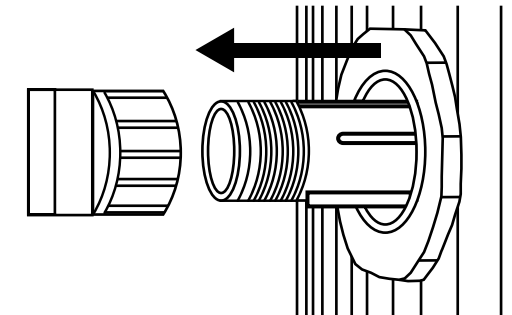
Important : Remember to change your water every three to four months.

To drain your spa :

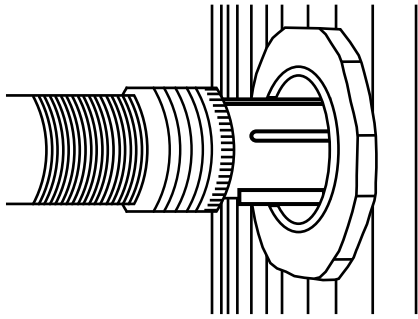
1. Disconnect the spa from the power supply by tripping the GFCI breakers.



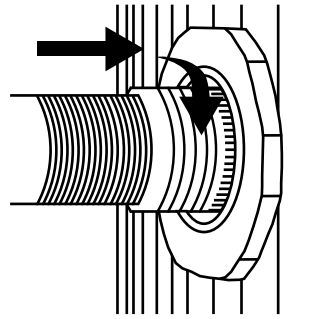
1. Inset closed position



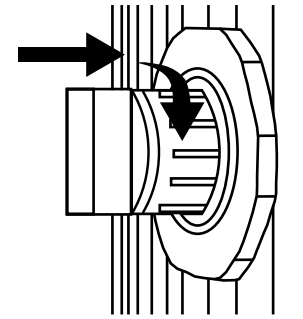
2. Extended closed position (pull out to fully extended position and remove cap); place cap in safe place.



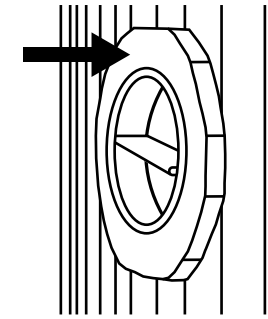
3. Full extended closed position.
(attach garden hose in the full extended closed position).



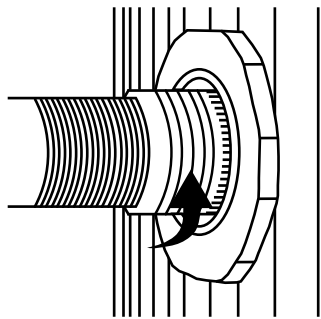
4. Open position for draining
(turn hose and fitting 1/4 turn clockwise and insert 1/2 way to open position for draining).



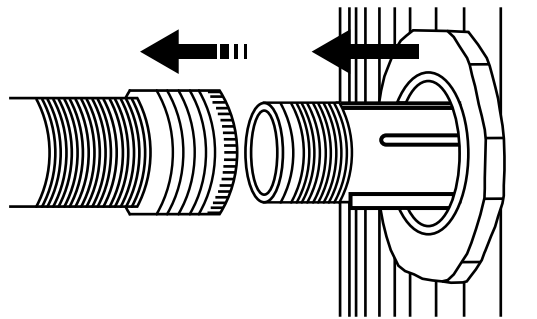
7. With replaced cap screwed on, turn 1/4 turn clockwise and push in all the way to inserted closed position.



8. Closed Inserted position.



5. Open position for draining (turn hose and fitting 1/4 turn counter clockwise and pull out to full extended closed position)



6. Full closed extended position
(Remove hose and replace cap)

2. Locate the main drain valve for the spa and remove the drain cap. Attach the inlet of a garden hose to the drain valve (to avoid flooding of the foundation surrounding the spa) and route the outlet of the hose to an appropriate draining area.

NOTE: Spa water with a high sanitizer level may harm plants and grass.

3. Open the valve by turning the knob. The spa will drain by gravitational flow.

IMPORTANT: All Duravit spa models will drain almost completely through the main drain valve. Equipment such as the jet pump and heating system will drain. Any water remaining within the plumbing or equipment after draining will only need to be removed if the spa is being winterized.

4. Allow most of the water to drain through the main drain.

5. When empty, inspect the spa shell and clean as required. (Follow the Care of the Exterior Finish instructions.)

7. Close the drain valve and reinstall the drain cap.

8. Refill the spa through the filter compartment BEFORE restoring power.

NOTE: Refill water temperature must be between 50° - 70°F to avoid high-limit tripping.

IMPORTANT: Always clean and rotate the filter cartridges each time the spa is drained for cleaning.

10.2 Prevention Of Freezing

Your spa has been designed and engineered for year-round use in any climate. In some areas, extremely cold temperatures (below 10°F) combined with strong wind, may cause partial freezing of the jet pump, even though the water inside the spa remains at the selected temperature. The energy efficiency of the spa may also decrease during these cold periods, as the heater will cycle more frequently. As an additional precaution against partial freezing of some of the components, the equipment compartment can be insulated with an insulating kit (available from your local dealer). This insulating kit will also help to maximize the spa's energy efficiency.

NOTE: When warmer weather returns (approx. 60°-70°F), the insulating kit must be removed to prevent overheating of the jet pump.

11. Winterizing Your Spa

If you leave the spa unused for a long period of time in severely cold weather, you should drain the spa and winterize it to avoid accidental freezing due to a power or equipment failure.

Danger: Use only Propylene Glycol as your anti-freeze (available at most RV or marine supply stores). This is non-toxic. Never use an automobile anti-freeze (Ethylene Glycol) since it is toxic!

Warning: Failure to follow these instructions correctly can lead to freeze damage not covered by warranty. It is strongly recommended that you contact your local dealer to perform this service

1. Drain your spa following the Draining Your Spa section in the owner's manual.
2. Remove the filter cartridges, clean and store in a dry place.

IMPORTANT: These additional instructions must be utilized when draining and winterizing your spa in climates where the temperature falls below 32°F (0°C). A five (5) gallon combination (vacuum/blower) wet/dry shop vac must be used to effectively remove water that is trapped inside the plumbing lines.

3. Attach the vacuum's hose to the blower side of the shop vac.

11.1 Spa Care and Maintenance

a) Remove the filter standpipes by turning them counterclockwise. (The standpipes may have a silicone sealant temporarily holding them in place and it may take firm

pressure to get them to initially break free.)

b) Place the end of the vacuum hose in one of the filter openings and cover the closest filter opening with a clean rag.

c) Turn on the blower function and allow it to blow out any water remaining in the plumbing lines (approximately 3 to 5 minutes).

d) Turn the jet system on and allow that system to purge.

e) If your spa is equipped with more than two jet systems, then each jet system will also need to be blown out.

4. Attach the vacuum hose to the vacuum side of the shop vac. Vacuum all openings and orifices as follows:

a) Jet openings: start with the jets at the top and move downward (if suction is coming from another jet, block off the other jet using a large rag – this will help pull out the water that is trapped deeper inside the main line).

b) Drain outlet and allow it to draw any remaining water from the spa (approximately 3 to 5 minutes).

5. Thoroughly dry the spa shell with a clean towel.

6. Replace the drain caps.

CAUTION: Use only Propylene Glycol as your anti-freeze. This is non-toxic. Never use an automobile anti-freeze (Ethylene Glycol) since it is toxic!

7. Using a long-extension funnel, pour anti-freeze into filter suction fittings, jet orifices. Add enough anti-freeze to ensure adequate protection – in many cases, you will see the liquid in the orifice, or coming out of another location. Re-install the filter standpipes if removed.

8. Close the spa cover and fasten the cover tie downs. Cover the spa cover with two pieces of plywood to evenly distribute the weight of snow and ice. Secure a plastic sheet, or tarp, over the spa cover and plywood.

9. Replace the equipment access door, if removed.

11.2 Opening Instructions:

1. Remove Spa Covers (pg. 77 and pg. 78)

2. Open drain to remove anti-freeze. Replace drain cap.

3. Follow the Start-up and Refill Procedures in the Operating Instructions section of the Owner's Manual. Do not install filters to prevent them from exposure to the anti-freeze.

4. As part of this process, superchlorinate the spa water by adding three teaspoons of chlorine (sodium dichlor) per 250 gallons of spa water into the filter compartment. This is twice the normal amount of chlorine needed for superchlorination. This extra amount of chlorine is needed to destroy the anti-freeze.

NOTE: A defoamer may be needed to decrease the amount of foam caused by the anti-freeze.

5. Drain your spa to ensure removal of anti-freeze. Do not drain water on grass or plants due to excessive chlorine level.

6. After the spa has completely drained, re-install your filters and follow the Start-up and Refill Procedures in the Operating Instructions section of the Owner's Manual.

IMPORTANT: Always keep spa covered when not in use, whether it is empty or full

11.3 Filter System

Duravit spas are equipped with balanced filtration, meaning that the filter cartridges are sized to meet the needs of the jet pump system. As with any water filtering system, the filter cartridges may become clogged, resulting in reduced water flow. It is important to maintain a clean, unobstructed filtering system. This not only provides the maximum performance from the jets, but allows the 24 hour filtration system to function effectively. Duravit recommends the filter cartridges be cleaned (by soaking to dissolve minerals) at least once every month.

SERVICE NOTE: Rotating the placement of the filter cartridges within the filter compartment after each cleaning will help to extend their service life.

WARNING: The frequency and duration of use, and the number of occupants, all contribute to determining the appropriate time between filter cleanings. More use means that more frequent filter cleanings are required. Failure to maintain the cartridges in a Spa Care and Maintenance

Any damage to the spa (due to freezing) caused as a result of poor maintenance (stated under misuse or abuse in the Duravit spa Limited Warranty), will not be covered by your spa warranty.

DANGER: To reduce the risk of injury to persons using the spa, DO NOT remove the suction fittings (filter standpipes) located in the filter compartment and do not sit on the filter lid, in extreme cases the lid could crack and break. This occurrence is considered abuse and is not covered under warranty.

12. Filter Cartridges Removal & Cleaning

1. Disconnect the spa from the power supply by tripping both of the GFCI breakers located in the subpanel.
2. Remove and carefully set aside the filter compartment cover.
3. Remove any floating items from within the filter compartment.
4. Turn the filter retainer handle (located on the top of the filter cartridge) counterclockwise until the retainer can be removed from the filter standpipe.
5. Remove the filter retainer and cartridge.

SERVICE NOTE: Never remove the filter standpipes when debris is present in the filter compartment. Debris may find its way into the internal plumbing which may result in blockage. NEVER REMOVE SUCTION FITTINGS.

6. Always clean standard filter using a filter degreaser, to remove mineral and oil buildup. Simply soak the filter in the degreaser according to the package directions, then place the filter on a clean surface and spray until clean using a garden hose. It may be necessary to rotate the filter while spraying to remove any debris lodged between the filter pleats..

7. To reinstall the filter cartridge, reverse the order of steps in which it was removed. Do not overtighten!

WARNING: Do not use the spa with the filter cartridges, or filter standpipe(s) removed!

Care Of The Spa Pillows

The spa pillows will provide years of comfort if treated with care. They have been positioned above the water level to minimize the bleaching effects of chlorinated water, and other spa water chemicals. To extend their life, whenever the spa shell is being cleaned, the spa pillows should be removed and cleaned. Body oils can be removed with a mild soap and water solution. ALWAYS rinse off the spa pillows thoroughly to remove any soap residue. If the spa is not going to be used for a long period of time (that is during a vacation, or if the spa is winterized), or when the spa water is being superchlorinated, the spa pillows should be removed until the next spa use.

13. Spa Shell Care

Your Duravit spa has an acrylic shell. Stains and dirt generally will not adhere to

your spa's surface. A soft rag or a nylon scrubber should easily remove most dirt. Most household chemicals are harmful to your spa's shell. Always thoroughly rinse off any spa shell cleaning agent with fresh water.

SERVICE NOTES:

1. Iron and copper in the water can stain the spa shell if allowed to go unchecked. Ask your Duravit spa dealer about a Stain and Scale Inhibitor to use if your spa water has a high concentration of dissolved minerals. (Duravit recommends FreshWater Stain & Scale Defense.)

2. The use of alcohol or any household cleaners other than those listed to clean the spa shell surface is NOT recommended. DO NOT use any cleaning products containing abrasives or solvents since they may damage the shell surface. NEVER USE HARSH CHEMICALS! Damage to the shell by the use of harsh chemicals is not covered under the warranty.

IMPORTANT: Some surface cleaners contain eye and skin irritants. Keep all cleaners out of the reach of children and use care when applying.

14. Spa Care and Maintenance

14.1 SPA furniture panels

Duravit spas include furniture panels. Outdoor Furniture panels are compact laminated panels, with melamine resin décor(HPL) pressed on one side. This HPL is developed for outdoor use. It is resistant to UV-radiation and has an overall weatherability. Outdoor furniture panels won't crack, peel, blister or delaminate even after prolonged exposure to the elements.

Cleaning of outdoor furniture panels consists of simply spraying the panels with a mild soap and water solution to remove any stains and residue.

Do not rub the furniture panels with an abrasive material or use abrasive cleaners as this may damage its texture.

14.2 Care Of The Spa Cover

WARNING: The cover is a manual safety cover that meets or exceeds all prevailing requirements of ASTM Standards for spa safety covers when installed and used correctly as of the date of manufacture. Non-secured, or improperly secured covers are a hazard. Open the cover to its fully open position before use.

14.3 Vinyl Cover

The vinyl spa cover is an attractive, durable foam insulation product. Monthly cleaning and conditioning are recommended to maintain its beauty.

To clean and condition the vinyl cover:

1. Remove the cover from the spa and gently lean it against a wall or fence.
2. With a garden hose, spray the cover to loosen and rinse away dirt or debris.
3. Using a large sponge and/or a soft bristle brush, and using a very mild soap solution (one teaspoon dishwashing liquid with two gallons of water), or baking soda (sodium bicarbonate), scrub the vinyl top in a circular motion. Do not let the vinyl dry with a soap film on it before it can be rinsed clean.
4. Scrub the cover's perimeter and side flaps. Rinse clean with water.
5. Rinse off the underside of the cover with water only (use no soap), and wipe it clean with a dry rag.

SERVICE NOTE: To remove tree sap, use cigarette lighter fluid (not charcoal lighter fluid). Use sparingly, and rinse with a saddle soap solution immediately afterwards, then wipe dry.

Important reminders:

- DO remove snow buildup to avoid breakage of the foam core from the additional weight of the snow.
- DO lock cover lock straps to secure the cover when the spa is not in use.
- DO NOT drag or lift the spa cover using either the flaps, or the cover lock straps.
- DO NOT walk, stand, or sit on the cover.
- DO NOT place any metal or heat transferring object on the cover or place any type of plastic tarp or drop cloth over the cover as this may result in a melted foam core, which would not be covered under the warranty.
- DO NOT use any lifting mechanisms, chemicals, or cleaners except those recommended by Duravit, or its Authorized Sales and Service Dealer.
- DO always practice safety around your spa.
- DO unlock and release all cover locks before attempting to open cover.
- DO lock the cover when the spa is not in use.
- DO cover the spa with the vinyl cover when the spa is not in use, whether it is empty or full.
- DO remove snow build-up to prevent cover damage.
- DO keep the cover open during super-chlorination or shock treatment of the spa water.
- DO NOT walk, stand, climb, or sit on the vinyl cover.
- DO NOT use any chemicals or cleaners except those recommended by Duravit or its Authorized Sales and Service Dealer.
- DO NOT use hard, sharp, or metal objects, such as a car windshield scraper, to

remove ice. Such objects can cut, mar, or puncture the vinyl surfaces.

WARNING: Keep unsupervised children away from the cover. Always lock the cover in place after use! Keep hands away from the hinging points. Do not allow anyone to climb, sit, or stand on the cover when in the open position. Injury may occur, as well as damage to the cover and mechanism.

15. Vacation Care Instructions

If you plan to be away from home, follow these instructions to ensure that the water quality of your spa is maintained:

Short Time Periods (3-5 Days):

1. Adjust the pH by following the instructions outlined in the Water Quality and Maintenance section.
2. Sanitize the water by following the shock procedures also listed in the Water Quality section.
3. Lock your cover in place using the coverlocks.
4. Upon your return, sanitize the water by following the shock procedures, and balance the pH.

Long time Periods (5-14 Days):

Prior to leaving:

1. At least one day before you leave, set the temperature to its lowest level. This setting should represent an approximate water temperature of 80°F.

IMPORTANT NOTE: Spa water oxidizers such as sodium dichlor (chlorine) maintain their level of effectiveness substantially longer in warm water (80°F) than in hot water (101°F to 104°F).

2. Adjust the pH as required. Sanitize the water by following the shock procedures.

Spa Care and Maintenance Upon your return:

3. Sanitize the water by following the shock procedures. Return the set temperature to its original setting. The spa water will be safe for you to use once the Free Available Chlorine residual level has dropped below 5.0 ppm.

NOTE: If you will not be using your spa for an extended period of time (in excess of 14 days) and an outside maintenance service (or neighbor) is not available to assist with the water maintenance, draining or winterizing of the spa is recommended.

Water Quality And Maintenance

It's important to have clean water. Water maintenance is one of the least understood, yet most important, areas of spa ownership. Your dealer can guide you through the process of achieving and maintaining perfect water in your spa, given your local

conditions. Your program will depend on your water's mineral content, how often you use your spa, and how many people use it.

15.1 The Three Fundamental Areas of Water Maintenance:

- Water Filtration
- Chemical Balance/pH Control
- Water Sanitation

Water sanitation is the responsibility of the spa owner, achieved through the regular and periodic (daily, if necessary) addition of an approved sanitizer. The sanitizer will chemically control the bacteria and viruses present in the fill water or introduced during use of the spa. Bacteria and viruses can grow quickly in undersanitized spa water. The water's chemical balance and pH control are also the responsibility of the spa owner. You will have to add chemicals to maintain proper levels of Total Alkalinity (TA), Calcium Hardness (CH) and pH. Proper water balance and pH control will minimize scale buildup and corrosion of metals, extend the life of the spa, and allow the sanitizer to work at maximum efficiency.

15.2 Methods for Testing the Spa Water

Accurate water testing and analysis are an important part of effectively maintaining your spa water. You must have the ability to test for:

- Total Alkalinity (TA)
- Calcium Hardness (CH)
- pH • Sanitizer

Two types of testing methods are recognized and recommended by Duravit. The Reagent Test Kit is a method which provides a high level of accuracy. The reagents come in either liquid or tablet form.

Test Strips are a convenient testing method used by many spa owners. Keep in mind that test strips are susceptible to heat and moisture contamination, which will result in inaccurate readings.

IMPORTANT: Always read and carefully follow the directions included with the Test Kit or Test Strips to ensure the accuracy of the test results.

15.3 Basic Chemical Safety

When using chemicals, read the labels carefully and follow directions precisely. Though chemicals protect you and your spa when used correctly, they can be hazardous in concentrated form. Always observe the following guidelines:

- Allow only a responsible person to handle spa chemicals. Keep them out of the reach of children.

- Accurately measure the exact quantities specified, never more. Do not overdose your spa.
- Handle all containers with care. Store in a cool, dry, well ventilated place.
- Always keep chemical containers closed when not in use. Replace caps on their proper containers.
- Don't inhale fumes, or allow chemicals to come in contact with your eyes, nose, or mouth. Wash your hands immediately after use.
- Follow the emergency advice on the product label in case of accidental contact, or if the chemical is swallowed. Call a doctor or the local Poison Control Center. If a doctor is needed, take the product container along with you so that the substance can be identified.
- Don't let chemicals get on surrounding surfaces or landscaping. Don't use a vacuum cleaner to clean up chemical spills.
- Never smoke around chemicals. Some fumes can be highly flammable.
- Don't store any chemicals in the spa equipment compartment.

16. Water Quality and Maintenance

16.1 How To Add Chemicals To The Water

IMPORTANT: All spa water chemicals, including granulated dichlor, MPS, granulated pH increaser or decreaser, granulated total alkalinity increaser, liquid stain and scale inhibitor, and liquid defoamer must always be added directly into the filter compartment while the jet pump is running in its high speed mode, and it must run for a minimum of ten minutes.

16.2 To Administer Spa Water Chemicals:

1. Fold back the cover. Carefully remove and set aside the filter compartment cover.
2. Push the Clean soft button (on home screen) to turn on the jet pump.
3. Carefully measure the recommended amount of chemical and slowly pour it into the filter compartment. Use care not to splash chemicals on your hands, in your eyes, on the spa shell surface, or on the spa cabinet.
4. Replace the filter compartment cover. After ten minutes, the jet pump will automatically shut off to complete the procedure. Close and secure the cover. Risk of Drowning: Never leave an open spa unattended!

IMPORTANT "SUPER CHLORINATION/NON-CHLORINE SHOCK TREATMENT" NOTE: After administering a super chlorination treatment or non-chlorine shock to your spa, leave the cover open for a minimum of 20 minutes to allow the oxidizer gas to vent. A high concentration of trapped oxidizer gas which may exist as a result of the shock treatment (not daily sanitation) may eventually cause discoloration or

vinyl degradation to the bottom of the cover. This type of damage is considered chemical abuse and is not covered under the terms of the limited warranty.

16.3 Duravit spa Water Maintenance Program

Each step in your water maintenance program is dependent on the completion of the previous steps. Omitting a step, or failing to reach the recommended range may cause an imbalance in your water chemistry. Unbalanced water chemistry can damage the spa, and its components, as well as cause discomfort for the user.

16.4 Balancing the Total Alkalinity (TA)

A. The recommended Total Alkalinity (TA) for your spa water is 80-120 ppm.

B. Total Alkalinity is a measure of the total levels of carbonates, bicarbonates, hydroxides, and other alkaline substances in the water. TA is referred to as the water's "pH buffer". In other words, it's a measure of the ability of the water to resist changes in pH level.

C. If the TA is too low, the pH level will fluctuate widely from high to low.

Fluctuations in pH can cause corrosion or scaling of the spa components. Low TA can be corrected by adding sodium hydrogen carbonate.

D. If the Total Alkalinity is too high, the pH level will tend to be high and may be difficult to bring down. It can be lowered by adding sodium bisulfate.

E. Once the TA is balanced, it normally remains stable, although the addition of more water with a high or low alkalinity will raise or lower the TA reading of the water.

F. When the Total Alkalinity is within the recommended range, proceed to the next step.

16.5 Balancing the Calcium Hardness (CH)

A. The recommended Calcium Hardness (CH) level for your spa is 150-200 ppm.

B. Calcium Hardness is a measure of the total amount of dissolved calcium in the water. Calcium helps control the corrosive nature of the spa's water. That's why calcium-low water (commonly known as "soft" water) is not recommended. It is very corrosive to the equipment, and can cause staining of the spa shell. If the calcium level is too low, we recommend to bring the calcium hardness level to within the recommended range.

C. If the CH is too high (commonly known as "hard" water), formation of scale on the spa's shell surface and equipment can result. CH can be decreased by dilution – a mixture of 75% hard and 25% soft water will be a good starting point. If soft water is not available, or practical for you, a stain and scale control should be added to the spa water, according to instructions on its label.

D. Once the CH is balanced, it normally remains stable, although the addition of more water with a high or low calcium content will raise or lower the CH reading of the water.

E. When the Calcium Hardness is within the recommended range, proceed to the next step.

16.6 Water Quality and Maintenance

Balancing the pH

A. The ideal pH level for your spa water is 7.4-7.6.

B. The pH level is the measure of acidity and alkalinity. Values above 7 are alkaline; those below

7 are acidic. Maintaining the proper pH level is extremely important for:

- Optimizing the effectiveness of the sanitizer.
- Maintaining water that is comfortable for the user.
- Preventing equipment deterioration.

C. If the spa water's pH level is too low, the following may result:

- The sanitizer will dissipate rapidly.
- The water may become irritating to spa users.
- The spa's equipment may corrode.

If the pH is too low, it can be increased by adding sodium hydrogen carbonate to the spa water.

D. If the pH level is too high, the following may result:

- The sanitizer is less effective.
- Scale will form on the spa shell surface and the equipment.
- The water may become cloudy.
- The filter cartridge pores may become obstructed.

If the pH is too high, it can be decreased by adding sodium bisulfate to the spa water.

NOTE: After adding pH/Alkalinity Up (sodium hydrogen carbonate) or pH/Alkalinity Down (sodium bisulfate), wait two hours before testing the water for pH. Measurements taken too soon may not be accurate.

E. It is important to check the pH on a regular basis. The pH will be affected by the bather load, the addition of new water, the addition of various chemicals, and the type of sanitizer used.

F. When the pH is within the recommended range, proceed to the final step.

16.7 Maintaining the sanitizer level

A. Sanitizer is extremely important for killing algae, bacteria and viruses, and preventing unwanted organisms from growing in the spa. At the same time, you don't want too high a sanitizer level, or it can irritate your skin, lungs, and eyes.

B. Always maintain the sanitizer level in your spa at the recommended level for each type of sanitizer.

16.8 Foam Inhibitors

Spa water requires changing due to the buildup of soap in the water. Typically, soap will cause the spa water to foam when the jets are used. Soap is introduced into the spa water from two sources: users' bodies, which retain a soap residual after showering, and swimming apparel, which retains soap after washing.

Foam inhibitors can suppress foam, but cannot remove soap from the water. Soap is very difficult to remove from the water because soap is not oxidized by any chemical added to the spa. Only ozone can oxidize soap. Eventually the soap build-up in the water will be concentrated, resulting in an unclean feeling on the bather's skin, which is impossible to remedy. When this occurs, it's time to drain and refill the spa. Depending on the soap input, the water should last about four months before needing to be drained.

16.9 Ozone

Contrary to some information circulated throughout the pool and spa industry regarding ozone systems, ozone CAN NOT be used as a single-source sanitizer, water clarifier, anti-foamer, and mineral chelating agent. A secondary source sanitizer must be used to maintain 2.0 ppm (2.0 mg/L) of Free Available Chlorine (FAC). Duravit recommends that a chemical maintenance program based on recognized and documented industry standards still be followed when using an ozone purification system to assure water sanitation and the highest quality purified water.

WARNING: Duravit DOES NOT recommend the use of any floating chemical dispenser. Damage to the spa shell or components caused by a floating chemical dispenser is specifically not covered under the terms of the limited warranty. The spa shell easily can withstand the effects of a properly administered sanitizer. Floating dispensers can become trapped in one area and cause an over-sanitization (or chemical burn) of that particular area. If the dispenser setting is too high, the high concentration can discolor the spa shell and damage the underside of the cover.

Automatic floating dispensers have a tendency to either over-brominate or under-brominate as the rate of erosion varies greatly.

Damage to the spa and cover can occur very quickly.

- DON'T use a sanitizer which is not designed for spas.
- DON'T use household bleach (liquid sodium hypochlorite).
- DON'T broadcast or sprinkle the chemicals onto the water surface. This method may cause chemically-induced spa surface blistering (chemical abuse).

16.10 Common Water Chemistry Questions

Question: Why can't I use a floater to sanitize my spa water?

Answer: Duravit does not recommend the use of a floater for three reasons:

1. The floater is unable to control the rate at which the sanitizer is dissolved into the water. When a floater is first placed in a spa, the sanitizer level can be extremely high. High sanitizer levels can chemically burn or discolor the spa's shell or the underside of the cover. Then, after a period of time, the sanitizer level dispensed by the floater will fall to near zero. A low sanitizer level will allow viruses, bacteria or algae to grow.
2. Floater tend to stay in one area of the spa most of the time (usually over the cool down seat), causing this area to be exposed to extreme sanitizer levels.
3. The floater may allow pieces of the highly concentrated sanitizer to fall out and settle on the floor or seat of the spa shell. These pieces of sanitizer will chemically burn (blister) the spa shell. Although your spa shell is specifically designed to resist the effects of spa chemicals, no spa surface can withstand this type of highly concentrated chemical. Remember, chemical abuse is specifically not covered under the terms of the warranty.

Water Quality and Maintenance

Nitric acid accumulates in the air lines of the ozonator and injector. Nitric acid will cause severe chemical burns if direct skin contact is made, so always wear protective gloves, glasses and clothing when working on the ozonator or injector lines. To prevent inhalation or ingestion of the nitric acid, DO NOT blow or inhale with your mouth to any of the adapters, fittings or tubing of the ozonator or injector air lines.

WARNING

Question: When I open my spa, I smell chlorine. How do I get rid of this smell?

Answer: There are two types of chlorine in your spa. The first is the Free Available Chlorine (FAC), which is the chlorine available to sanitize your spa. This type of

chlorine does not have an odor. The second is Chloramine, which is residue from chlorine already expended. Chloramines have a strong chlorine odor. The smell from Chloramines can be eliminated by "shocking" the water. If you smell chlorine in the water, your spa is reminding you to add a shock treatment.

Question: Why can't I fill my spa with soft water?

Answer: Soft water is essentially the same as regular water except that most or all of the calcium has been replaced by sodium. Soft water may be corrosive to the heater and other components. Replacement of spa components damaged by soft water is extremely expensive.

Question: I am trying to reduce the number of chemicals to which my family is exposed. Do I really need to use so many chemicals and in such large amounts?

Answer: While over-exposure to any chemical can be unhealthy, many low levels of chemicals are effective and beneficial. In the case of spa water, the chemicals recommended are needed to protect the user from water-borne pathogens (disease-causing microbes) and to prevent corrosion of spa components.

Question: Why isn't water chemistry damage covered by the warranty?

Answer: The chemical levels and water quality of the water in the spa are under your direct control. With proper basic care, the spa will provide many years of hot water relaxation. If you are unsure about any chemical or its usage in the spa, contact your Authorized Dealer, or Duravit.

17. Water Terminology

The following chemical terms are used in this Water Quality and Maintenance section. Understanding their meaning will help you to better understand the water maintenance process.

Bromamines: Compounds formed when bromine combines with nitrogen from body oils, urine, perspiration, etc. Unlike chloramines, bromamines have no pungent odor, and are effective sanitizers.

Bromine: A halogen sanitizer (in the same chemical family as chlorine). Bromine is commonly used in stick, tablet, or granular form.

Calcium Hardness: The amount of dissolved calcium in the spa water. This should be approximately 150-200 ppm. High levels of calcium can cause cloudy water and scaling. Low levels can cause harm to the spa equipment.

Chloramines: Compounds formed when chlorine combines with nitrogen from body oils, urine, perspiration, etc. Chloramines can cause eye irritation as well as having

a strong odor. Unlike bromamines, chloramines are weaker, slower sanitizers.

Chlorine: An efficient sanitizing chemical for spas. Duravit recommends the use of sodium dichlor-type granulated chlorine. This type is preferred because it is totally soluble and nearly pH neutral.

Chlorine (or Bromine) Residual: The amount of chlorine or bromine remaining after chlorine or bromine demand has been satisfied. The residual is, therefore, the amount of sanitizer which is chemically available to kill bacteria, viruses and algae.

Corrosion: The gradual wearing away of metal spa parts, usually caused by chemical action. Generally, corrosion is caused by low pH or by water with levels of TA, CH, pH or sanitizer which are outside the recommended ranges.

DPD: The preferred reagent used in test kits to measure the Free Available Chlorine.

Halogen: Any one of these five elements: fluorine, chlorine, bromine, iodine, and astatine.

MPS: Monopersulfate is the non-chlorine oxidizer

Nitric Acid: The formulation of nitric acid, a highly corrosive chemical, is a byproduct of the ozone generating process. Nitric acid is produced in very small quantities and is readily dissolved in the water stream with ozone.

Oxidizer: The use of an oxidizing chemical is to prevent the buildup of contaminants, maximize sanitizer efficiency, minimize combined chlorine and improve water clarity.

Ozone: Ozone is a powerful oxidizing agent which is produced in nature and artificially by man. Ozone forms no byproducts of chloramines (ozone actually oxidizes chloramines) and will not alter the water's pH.

Pathogen: A microorganism such as bacterium that cause disease.

pH: The measure of the spa water's acidity and alkalinity. The recommended pH for the spa water is 7.4 to 7.6. Below 7.0 (considered neutral), the spa water is too acidic and can damage the heating system. Above 7.8, the water is too alkaline and can result in cloudy water, and scale formation on the shell and heater.

Water Quality and Maintenance

ppm: The abbreviation of "parts per million", the standard measurement of chemical concentration in water. Identical to mg/l (milligrams per liter).

Reagent: A chemical material in liquid, powder, or tablet form for use in chemical testing.

Sanitizer: Sanitizers are added and maintained at recommended residuals to protect bathers against pathogenic organisms which can cause disease and infection in spa water.

Scale: Rough calcium-bearing deposits that can coat spa surfaces, heaters, plumbing lines, and clog filters. Generally, scaling is caused by mineral content

combined with high pH. Additionally, scale forms more readily at higher water temperatures.

Super-Chlorination: Also known as "shock treatment." Super-Chlorination is a process of adding significant doses of a quick dissolving sanitizer ("dichlor" is recommended) to oxidize non-filterable organic waste and to remove chloramines and bromamines.

Total Alkalinity: The amount of bicarbonates, carbonates, and hydroxides present in spa water. Proper total alkalinity is important for pH control. If the TA is too high, the pH is difficult to adjust. If the TA is too low, the pH will be difficult to hold at the proper level. The desired range of TA in spa water is 125 to 150 ppm.

18. Service Information

18.1 General Information

Your Duravit spa has been designed to provide years of trouble-free use. As with any appliance, problems may occasionally occur that require the expertise of a qualified service person. Though such simple repairs as resetting a GFCI switch or breaker, resetting a high limit thermostat or replacing a light bulb may not require a service call, they may indicate that a more serious condition exists.

These conditions may require an experienced service person. Before calling for service, please refer to the Troubleshooting Guide.

NOTE: Always retain your original sales receipt for future reference.

GFCI AND HIGH LIMIT THERMOSTAT

If your spa fails to operate at any time, first check the power supply to the spa. Check each of the GFCI breakers in the subpanel. If a GFCI has tripped, reset it. If it will not reset, this may be an indication of a ground fault (short circuit) within the electrical components. Contact an Authorized Service Technician for a complete diagnosis. If upon checking the GFCI's you find that they have not tripped, check the house breaker panel and ensure the main breaker for the electrical circuit supplying the spa has not tripped. If it has, this is an indication that the circuit was either overloaded or a ground fault exists between the breaker panel and the spa receptacle or subpanel. Contact a qualified electrician. If upon checking the main house breaker and spa GFCI's you find no failures, check the high limit thermostat. To check it, simply turn off power to the spa for 30 seconds. This will automatically reset the high limit thermostat if it has tripped. If the spa energizes once you turn the power back on, this indicates reduced water flow through the heating system. Tripping of the high limit thermostat is normally a result of one or a combination of these problems. 1) clogged filter cartridge(s), 2) blockage within the system

plumbing, 3) a non-functioning heater circulation pump, 4) power was not disconnected from the spa before it was drained, 5) an air lock in the plumbing lines. (The Power Indicator on the front of the spa's control panel will also be blinking if the high limit thermostat circuit has tripped.) If the spa does not function after tripping and resetting the GFCI's or resetting the high limit thermostat, then the problem should be referred to an Authorized Service Technician. Refer to the Heater section if the spa operates but does not heat, or refer to the Troubleshooting Guide for additional service information.

18.2 No-Fault® Heater And Integrated Pressure Switch

Duravit unconditionally warrants the No-Fault heater against any failure that would require replacement. This warranty's duration is equal to the time period identified in the Component Warranty. This warranty defines unconditional as warranty coverage without exception provided that the component has failed to operate properly within the spa's system. This means that conditions that would normally invalidate the limited warranty, such as water chemistry damage, do not apply to the No-Fault heater. It is important to note that the No-Fault heater is protected by both the heater high limit thermostat circuit and the integrated pressure switch. The causes of heater high limit tripping are discussed in the previous section.

19. Acts Invalidating Warranty

The limited warranty is void if the Duravit spa has been improperly installed, subjected to alteration, misuse, or abuse, or if any repairs on the spa are attempted by anyone other than an authorized representative of Duravit. Alteration shall include any component or plumbing change, electrical conversion, or the addition of any non-approved sanitation or water purification device, or heating system which contributes to component or unit failure or unsafe operating system. Misuse and abuse shall include any operation of the spa other than in accordance with Duravit printed instructions, or use of the spa in an application for which it is not designed; specifically: use of the spa in a non-residential application; damage caused by operation* of the spa at water temperatures outside the range of 35°F and 120 °F; damage caused by a dirty, clogged or calcified filter cartridge; damage to the spa surface caused by the use of tri-chloro chlorine, BCDMH, chemical tablets in a floater, acid, or any other spa chemicals or spa surface cleaners which are not recommended by Duravit; damage caused by allowing undissolved spa sanitizing chemicals to lie on the spa surface (no spa surface material can withstand this kind

of abuse); damage to components or spa surface caused by improper water chemistry maintenance; and damage to the spa surface caused by leaving the spa uncovered while empty of water and in direct exposure to sunlight (this may cause solar heating distress in warm weather regions). These are considered abuses and may invalidate this warranty.

19.1 Service Information

Acts of nature, and damage caused by animals, rodents, and insects are considered abuses and are not covered under this warranty.

*Operation of the spa does not mean "use" of the spa! Duravit does not recommend using the spa if the water temperature is above or below the spa's control panel temperature range.

DISCLAIMERS

Duravit shall not be liable for loss of use of the Duravit spa or other incidental, consequential, special, indirect, or punitive costs, expenses or damages, which may include but are not limited to the removal of a permanent deck or other custom fixture or the necessity for crane removal. Any implied warranty shall have a duration equal to the duration of the applicable limited warranty stated above. Some states do not allow limitations on how long an implied warranty lasts. Under no circumstances shall Duravit or any of its representatives be held liable for injury to any person or damage to any property, however arising. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

If you have any questions about any aspect of your Duravit spa set-up, operation or maintenance that have not been answered by his manual, consult your dealer. Duravit can be reached Monday through Friday, 8 am to 5-pm Eastern Standard Time (EST), or e-mail info@us.duravit.com

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