WATER QUALITY SYSTEM USER'S GUIDE

Original Endless Pool with 7-Button Keypad

ENDLESS POOLS®
SWIMMING MACHINES

Installation Instruction Booklet Information

The entire Endless Pool system is ETL listed, Ref. #2001779 and conforms to UL Standard #1563. Individually, all electrical components of the Endless Pool are UL and/or CSA approved. As defined by the International Residential Code (IRC), the Endless Pool is considered an aboveground or an in-ground pool depending on the installation. That is to say, customers can install our Endless Pool Kit above-ground on a garage or basement floor or in the backyard or they can sink it partially or fully in-ground. The unit is completely self-supporting. As required by the IRC the Endless Pool meets all the following standards: ANSI/NSPI Standards #3 (Permanently Installed Residential Spas), #4 (Aboveground/On-ground Residential Swimming Pools), #5 (Residential In-ground Swimming Pools), and #6 (Portable Spas). The appropriate governing standard is dependent on the installation method and the requirements and definitions used by the local governing bodies.

All electrical connections should be made by a licensed electrician in accordance with the current national and local electrical codes.

All pool equipment including the 4 kW electric heater, circulating pump and 5 HP hydraulic power unit runs off one 30 amp, single phase, GFCI (RCD) protected, 220 volt service. A minimum of 10AWG wire should be used for all field wiring. We recommend you install a shut off within 5' of where you intend to place your power unit.

Please read this Owner's Manual and all associated Supplemental Guides prior to beginning your project.

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IMPORTANT SAFETY INFORMATION

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SAVE THESE INSTRUCTIONS

DANGER **BEFORE INSTALLING OR USING THIS PRODUCT, READ AND FOLLOW ALL SAFETY INSTRUCTIONS. FAILURE TO DO SO CAN RESULT IN PROPERTY DAMAGE, FIRE, INJURY, OR DEATH**

DANGER **SERIOUS BODILY INJURY OR DEATH CAN RESULT IF THIS PRODUCT IS NOT INSTALLED OR USED CORRECTLY**

DANGER **CHILDREN SHOULD NEVER SWIM UNSUPERVISED**

DANGER **RISK OF ELECTRICAL SHOCK-**

- All electrical connections should be made by a licensed electrician in accordance with the all applicable National and local code and ordinances.
- This product must not be installed within 5 (1,5m) feet of any metal surface, unless the surface has been properly bonded and/or grounded in accordance with any applicable national or local electrical code.
- Improper installation will create a hazardous situation that can result in property damage, injury, or death.

WARNING This product must be installed in accordance with any applicable state and local code. Consult your local building and health code for more information.

IT IS THE RESPONSIBILTY OF THE END USER TO ENSURE THAT ANYONE WHO USES THIS PRODUCT IS PROPERLY INFORMED OF ALL SAFTEY PRECAUTIONS.

ALL SAFETY SIGNS PROVIDED WITH THIS PRODUCT SHOULD BE PERMANENTLY INSTALLED SO THAT THEY ARE VISIBLE TO ALL OCCUPANTS. SHOULD YOU REQUIRE ADDITIONAL SIGNS OR REPLACEMENTS, CONTACT CUSTOMER SERVICE.

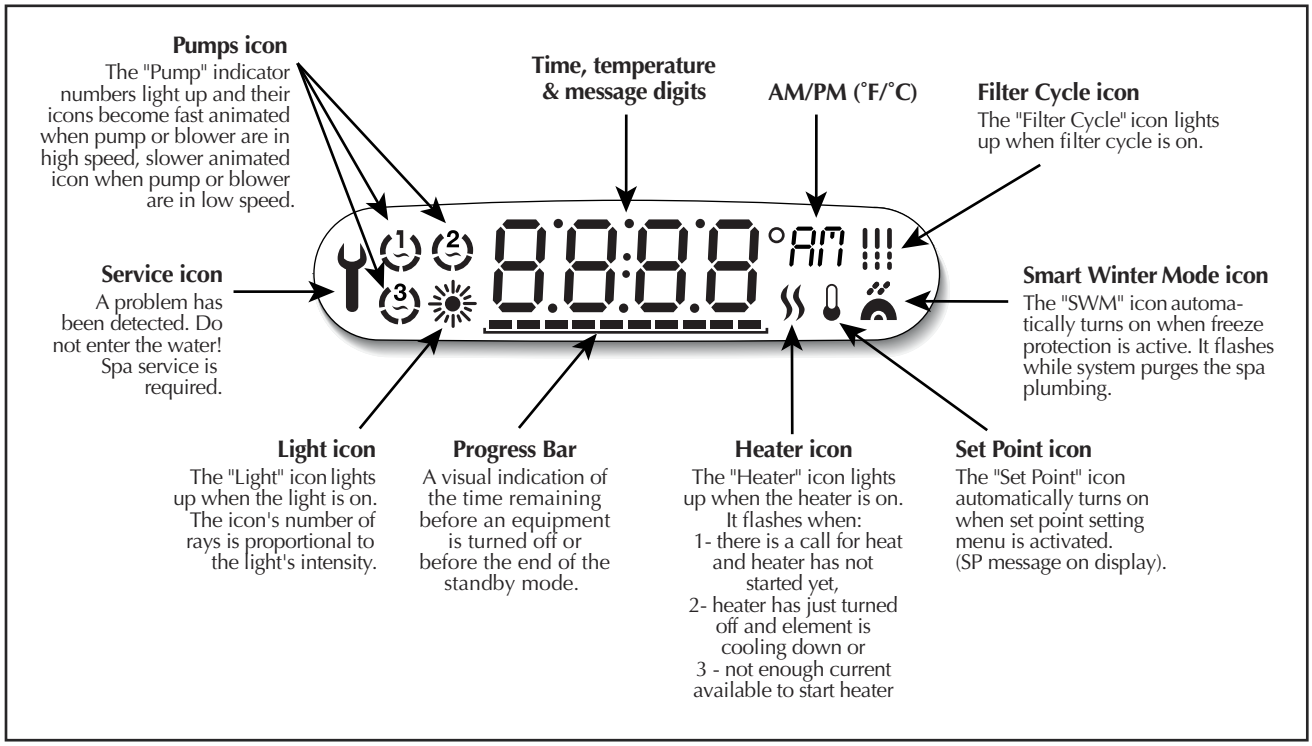
SAFETY INFORMATION

- **Risk of electrical shock**-Do not permit any electrical appliance such as lights, radio, television, or telephone within 5 (1,5m) feet of this product. Do not operate any such product while in this product or while you are wet.
- Test the ground fault circuit interrupter (GFCI) breaker or Residual Current Device (RCD) prior to each use to ensure that it works properly.
- Electrical power should be shut off to this product prior to any service being performed.
- Children should never be allowed to use this product without adult supervision.
- Children should never have unsupervised access to this product.
- Do not remove or tamper with any suction fittings. To do so will create a hazardous situation that can cause injury or death.
- The water temperature in this product must never exceed 104ºF (40ºC).
- Safe temperature for aquatic exercise is approximately 80ºF (27ºC).
- Prolonged immersion in high temperature water can cause hyperthermia, which is injurious to your health. Symptoms include:
    1. Failure to perceive heat
    2. Failure to recognize the need to exit the water
    3. Unawareness of hazardous situation
    4. Fetal damage in pregnant women
    5. Physical inability to exit the water
    6. Unconsciousness-which can lead to drowning
- Any women who is pregnant or anyone who is suffering from heart disease, diabetes, high or low blood pressure, obesity, or circulatory issues should consult a physician prior to using this product.
- Anyone under the influence drugs or alcohol should not use this product.
- Anyone who using is medication should consult a physician before using this product.
- Anyone with an infectious disease or with an open wound or sore should not use this product.
- Do not use this product alone.
- Remove all jewelry, watches, etc. prior to using this product.
- Always completely remove the cover prior to using this product.
- Always check for proper sanitizer levels prior to using this product.
- Maintain water chemistry ranges consistent with the ranges presented in these instructions.
- Use caution when entering and exiting this product, as wet surfaces can be slippery.
- Water splash out can occur when using this product. The finish around this product should be a material that promotes a sound footing.
- Keep all breakables, especially glass, away from this product.
- Do not remove or tamper with any suction fittings. To do so will create a hazardous situation that can cause injury or death.
- All suction fittings in this product are sized to match flow rate. Always use compatible suction fittings should they need to be replaced.
- Keep all chemicals out of the reach of children and pets.
- Store all water-balancing chemical in a cool dry place and in their original containers.
- Do not stack balancing chemicals on top of one another.
- NEVER MIX CHEMICALS
- Store sanitizing chemical separately from balancing chemical.

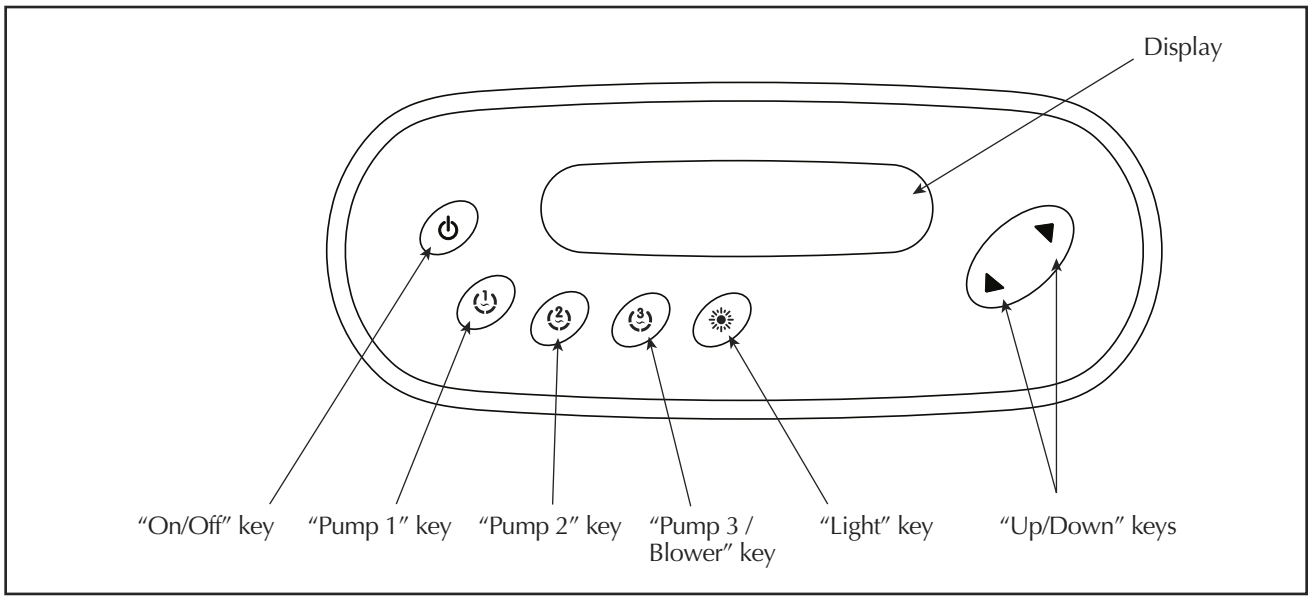
1. Water Quality System Keypad Display Buttons and Indicators

The keypad display is the command center for the Endless Pool Water Quality System. The keypad controls the optional lights and/or the optional hydrotherapy jets. The keypad also controls the temperature of the pool, as well as turning off the system to perform regular maintenance. The following is an overview of its functions.

Keypad Buttons



Keypad Display Indicators



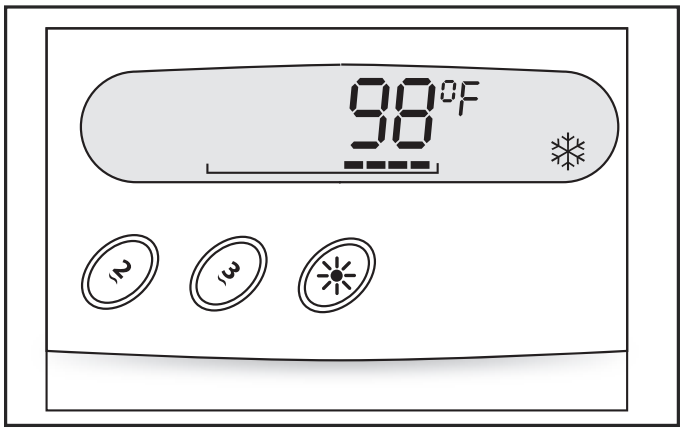
2. Water Quality System Program Features

The Water Quality System program has 3 important features; Smart Winter Mode, water temperature regulation, and Economy Mode.

Smart Winter Mode turns the pump on as the temperature around the heater-controller drops, protecting the pipes from freezing.

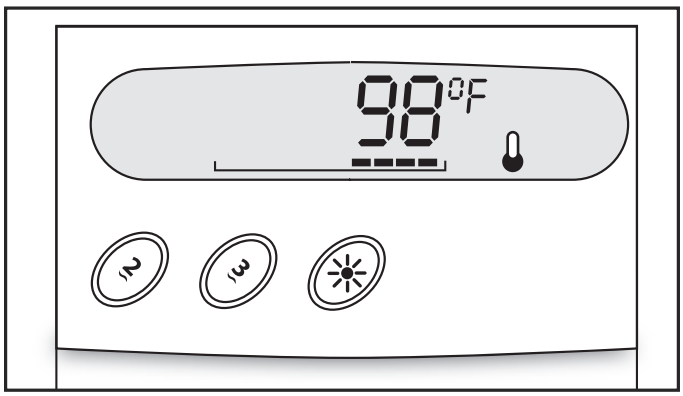
Water temperature regulation is feature that ensures that the water is always heated to the set temperature. Several times a day the circulation pump will turn on so that the heater-controller can sense the water temperature. If the water temperature is below the set temperature, then the pump and heater will stay on until the water reaches the set temperature.

Economy Mode is a feature that allows the user to set a period of time that the heater will not come on (see Programming the Water Quality System). The circulation pump will come on as part of the water temperature regulation cycle, but the heater will not come on. Should the difference between the set temperature and the actual water temperature exceed 20ºF (11ºC) then the pump and heater will stay on to raise the water temperature.



Smart Winter Mode

Our Smart Winter Mode protects your system from the cold by turning pumps on several times a day to prevent water from freezing in pipes.



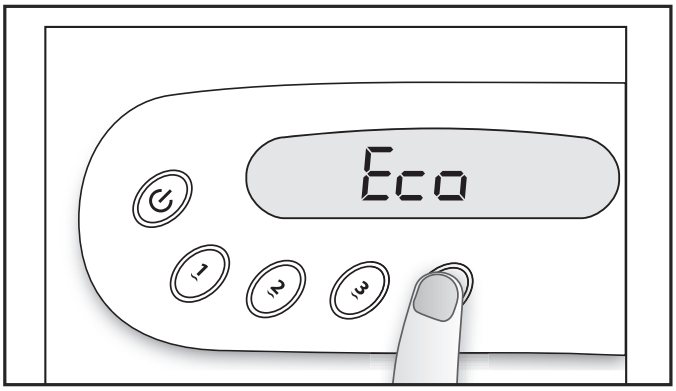
Water temperature regulation

In a regulation cycle, system first generates water flow through the heater housing and the plumbing, to ensure accurate water temperature readings, as well as avoiding heater activation in dry conditions.

After verifying pump activation and taking water temperature reading if required, the system automatically turns heater on to reach and maintain water temperature at Set Point.

Cooldown

After heating the spa water to the desired Set Point, the heater is turned off, but its associated pump (Pump 1 Low-speed or CP) remains on for a predetermined period of time to ensure adequate cooling of the heating element, this prolongs its useful life. The heater icon fl ashes during this time.



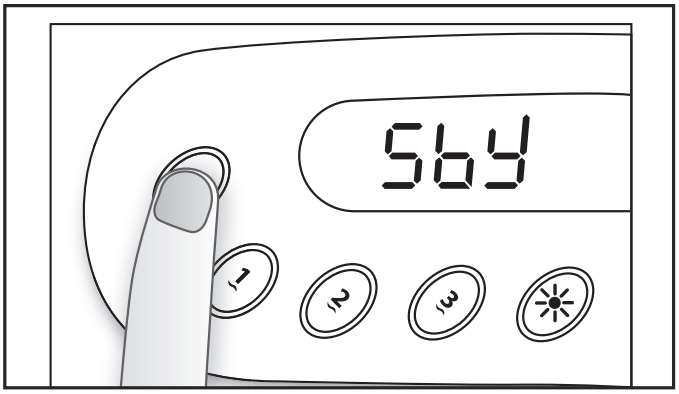
Economy Mode

This mode allows you to lower the temperature set point of the spa by 20 °F (11 °C) during a certain period of the day.

To enable the economy mode: Press and hold On/Off key for 10 sec.

While the Economy mode is enabled the display will toggle between “Eco” and the water temperature. Once the system goes back to nomal mode, the display will show “noE”.

3. Keypad Function



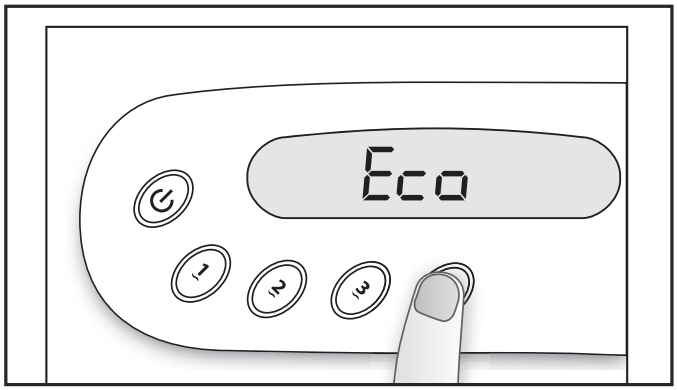
On/Off Key (Standby Mode)

Quick press and release the On/Off key to shut the system down (i.e. to set it to Standby mode) for 30 minutes. The display will toggle between the “SBY” message and water temperature. All keys are then disabled, unless you press On/Off key again to re-activate the system before the expiration of the 30 minutes delay.

In order to warn the user, the spa light will flash for a few seconds before the system returns to normal operation

Important Note: The system may attempt to perform a Temperature Regulation Cycle while in Standby Mode; which will turn

on the circulation pump or the pump will not turn off if there is a call for heat. Turn the system off by pressing and holding the Pump 1 button (see Pump 1 Key function).



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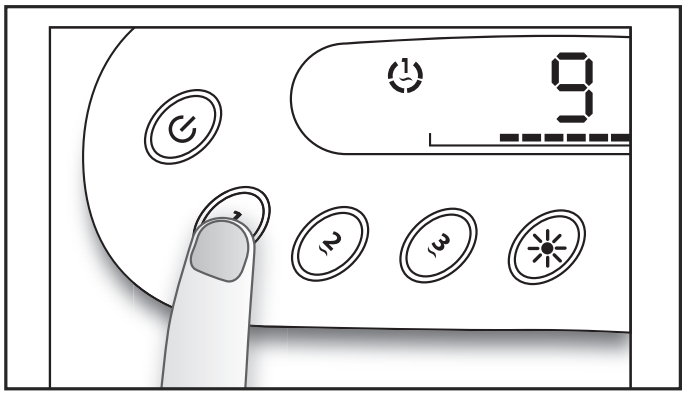
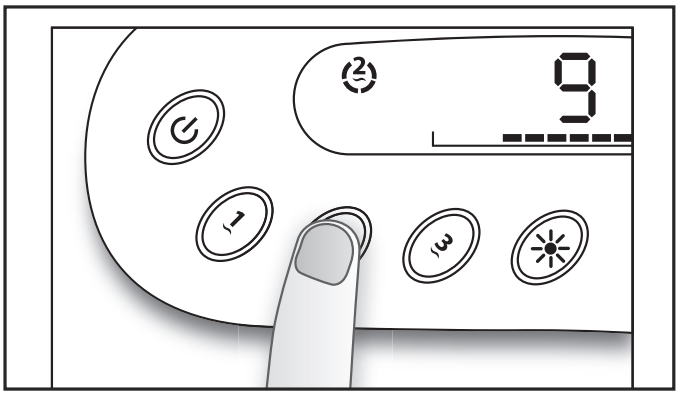


Pump 1 Key

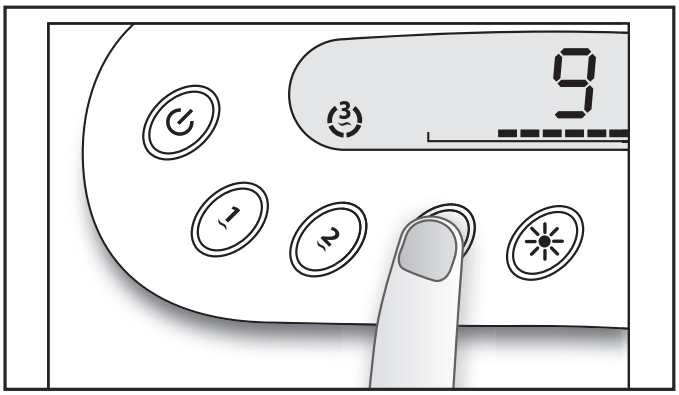
Press Pump 1 Key to turn on the Optional Hydrotherapy Jets. Press a second time to turn them off.

A built-in timer automatically turns pump off after 30 minutes, unless pump has been manually deactivated first.

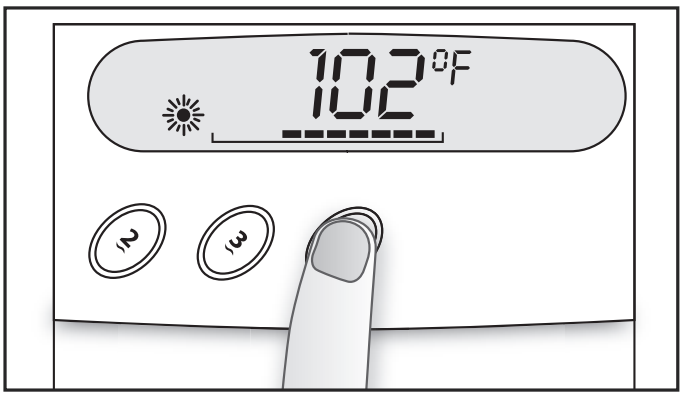
By default, the system is always on. Press and hold Pump 1 key for 5 sec. to shut the system down for 30 minutes. The display will toggle between the “OFF” message and water temperature. Press On/Off key to restart the system before the expiration of the 30 minutes delay.



Pump 2 Key
(Not Applicable for this Unit)



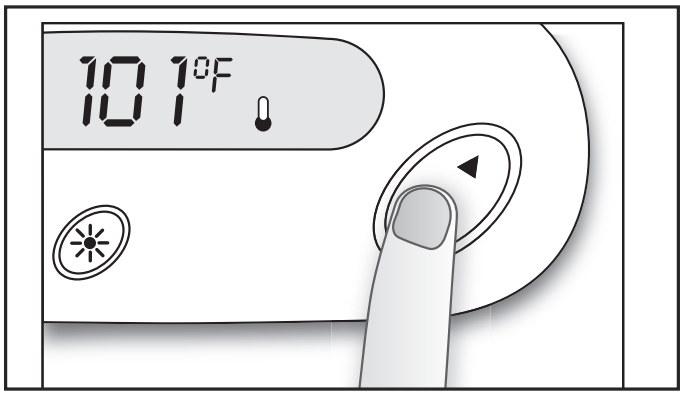
Pump 3/ Blower Key
(Not Applicable for this Unit)



Light Key

Press Light key to turn light on. A second press turns light off.

A built-in timer automatically turns light off after 2 hours, unless it has been manually deactivated first.

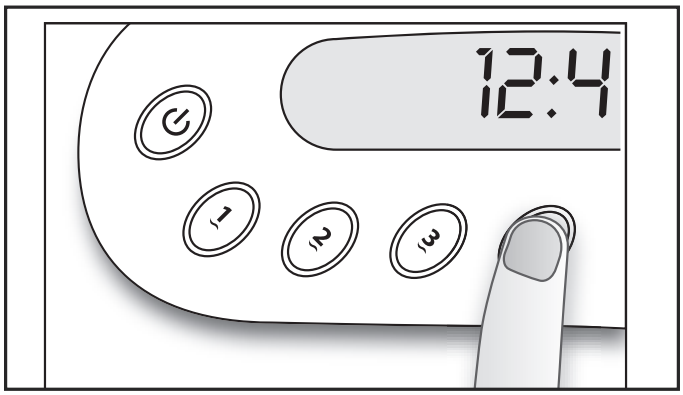


Up / Down Keys

Press Up or Down key to set desired water temperature. The temperature setting will be displayed for 5 seconds to confirm your new selection.

The "Set Point" icon indicates that the display shows the desired temperature, NOT the current water temperature.

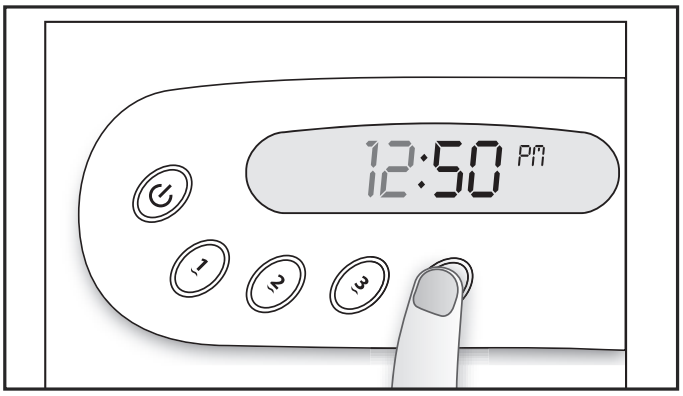
4. Programming Water Quality System



1. Program Key (Light Key)

The light key is the Program Key. Pressing and holding the light key for 3 seconds will access the programming menu. Once a parameter is set, pressing the light key again will move on to the next parameter. The following parameters can be set:

- time of day
- filter cycle start time (when cycle starts)
- filter cycle duration (length of 1 cycle)
- filter cycle frequency (number of cycles in 24 hrs)
- economy mode (turning Economy Made on/off)
- economy start time (when Eco Mode starts)
- economy duration (length of Eco Mode)
- temperature unit (F° or C°)



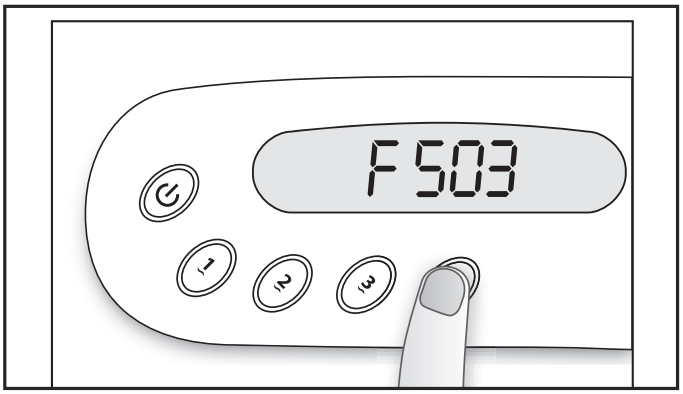
2. Setting the time

Enter Programming mode by holding Prog. Key pressed down for 3 sec. The display will show the current time setting.

Setting the hour: Use Up or Down arrows to change the setting (AM/PM).

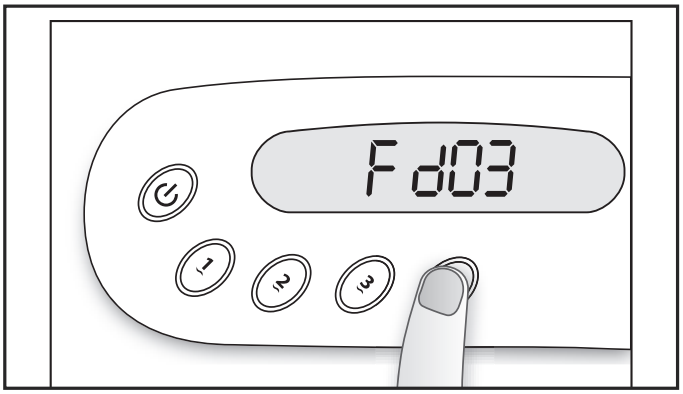
Setting the minutes: Press Prog. Key a second time.

Use Up or Down key to change minutes setting.



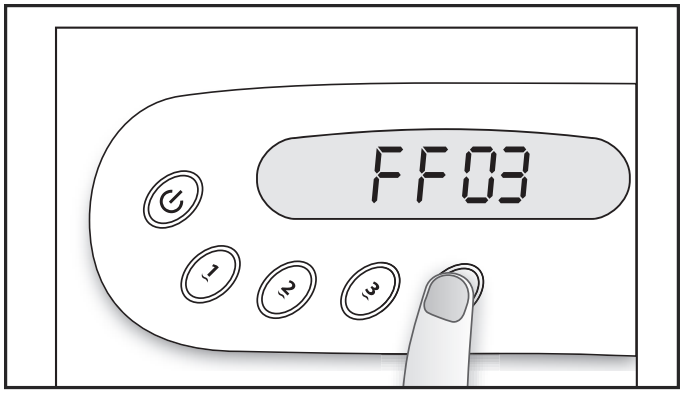
3. Setting filter cycle start time

Press Prog. Key a third time. The display will show FSxx, with "xx" representing the starting hour. Use Up or Down key to change setting.



4. Setting filter cycle duration

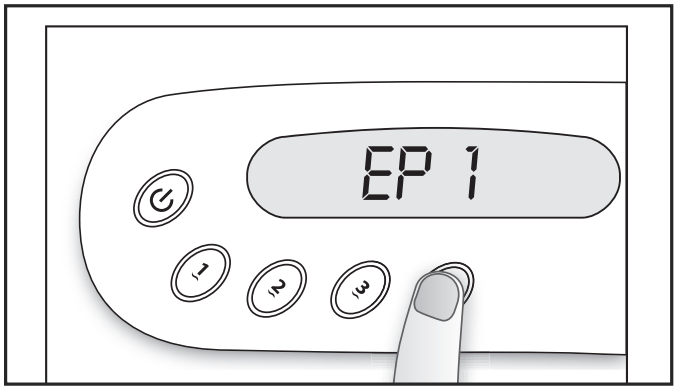
Press Prog. key a fourth time. The display will show Fdxx, with "xx" representing the duration in hours. Use Up or Down key to change setting.



5.Filter cycle frequency

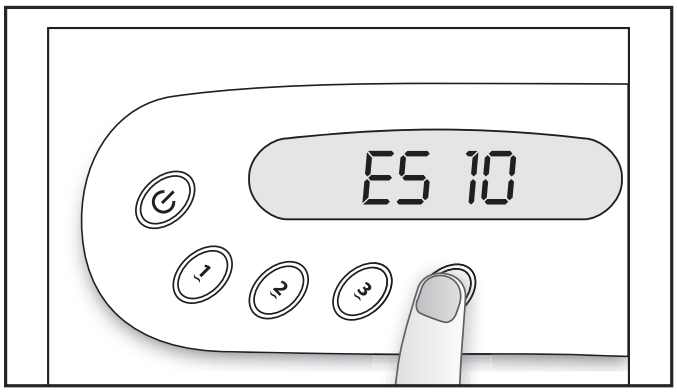
Press Prog. key a fifth time. The display will show FFxx, with "xx" representing the number of filter cycles per day (up to 4).

Use Up or Down key to change setting.



Economy Mode

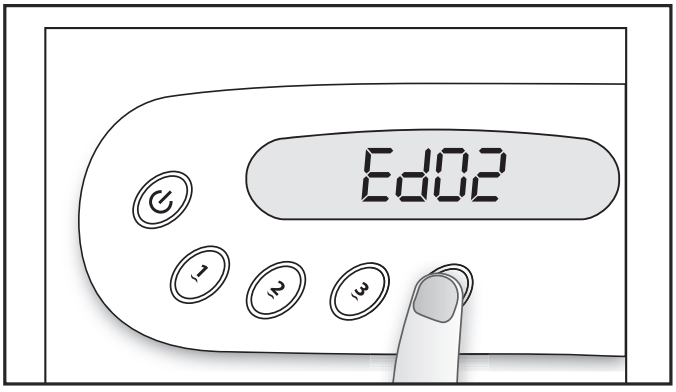
Press Prog. key a sixth time. Use Up key to enable the economy mode, the display will show EP 1 or use Down key to disable economy mode, the display will show EP 0.



7. Economy Mode Start Time

Press Prog. key an seventh time. The display will show ESxx, with "xx" representing the starting hour.

Use Up or Down key to change setting.



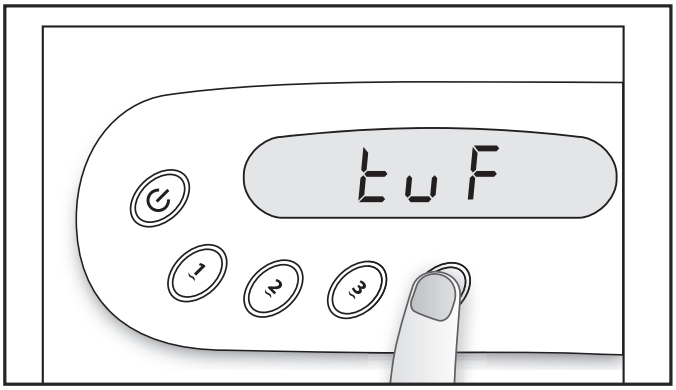
8. Economy Start Duration

Press Prog. key an eighth time. The display shows Edxx, with "xx" representing the duration in hours. (Default: 2 hours).

Use Up or Down key to change setting.

0 = no filtration1 — 24 = continuous filtration

*It's not recommended to set this to "0"



9. Setting temperature unit

Water temperature can be displayed in either Fahrenheit (ºF) or Celsius (ºC). Press Prog. Key a ninth time. Display shows either ºF or ºC.

Use Up or Down key to change setting.

5. Water Chemistry

Safety Instructions

- Always check for proper sanitizer levels prior to using this product.
- Maintain water chemistry ranges consistent with the ranges presented in these instructions.
- Keep all chemicals out of the reach of children and pets.
- Store all water-balancing chemical in a cool dry place and in their original containers.
- Do not stack balancing chemicals on top of one another.
- NEVER MIX CHEMICALS
- Store sanitizing chemical separately from balancing chemical

Overview

A water chemistry start-up kit, including test kit, has been provided with the Endless Pool. This kit should be sufficient to get the pool properly balanced and ready to swim. Over the course of the pool's life, additional balancing chemicals will be required. Endless Pools can only ship these aftermarket chemicals in the continental United States. Ideally, these chemical will be purchased at any local pool and spa retail center.

Household bleach, in its most basic form, is the most appropriate form of chlorine for an indoor Endless Pool (that is covered when not in use). If the pool is to be installed outdoors, a more concentrated form of chlorine may be required. This should be discussed with a local pool and spa professional.

- Recommended chlorine level: .5ppm-1ppm
  - Add approximately ¼ cup of household bleach (12%) per day
- Recommended pH range: 7.4-7.6
  - To raise pH-Soda Ash (Sodium Carbonate)
  - To lower pH-Dry Acid (Sodium Bisulfate)
- Recommended Total Alkalinity (TA) range: 80ppm to 120ppm
  - To raise TA-Baking Soda (Sodium Bicarbonate)
  - To lower TA-Dry Acid (Sodium Bisulfate)

Detailed Instruction

Source Water

Endless Pools, Inc. recommends testing a sample of water before you begin to fill the pool. Doing so will give you an idea of how suitable your water source is for swimming pool use. Testing the water can be done by using your Taylor test kit. A local swimming pool supply store can also test your water at a minimal charge.

Well Water

Certain geographic areas are high in mineral content. For pools where well water is to be the water source, strong consideration should be given to having water tanked in. Well water often has high iron, calcium, and mineral content which is not ideal for your swimming pool. If well water is the only available source, please call our Customer Service Department, or seek advice from a local pool store.

"Hard" Water and Water Softeners

The phrase "hard" water refers to having high levels of calcium in the water. Many homes that have "hard" water will often have a water softener installed in their homes that lowers the level of calcium in the water. For ideal water conditions in a vinyl liner pool, the calcium hardness level should be between 180-250 ppm. Please call us to discuss your options if you have a water softener and/or high calcium in your water supply.

Sanitation

Nature 2

Sanitation of your pool water is partly accomplished by placing one Nature 2 Silver Ion Sanitizer into the filter-cartridge at the front of your pool. The Nature 2 Sanitizer included in your pool kit significantly reduces the amount of chlorine you'll need to use by adding silver ions to the pool, which will kill bacteria and algae in the water. The Nature 2 cartridge should be replaced every four months

Oxidation and Chlorine Requirements

Nature 2 works well as a pool sanitizer, however it does not oxidize or "burn-up" small particles of debris in the pool. Maintaining a minimum level of 0.5 ppm free chlorine in your pool at all times is necessary. Adding 1/4 cup of Clorox a day will add about 0.5 ppm of free chlorine to a standard sized pool. How quickly that chlorine is consumed depends upon water temperature, bather load, and the amount of direct sunlight the pool receives.

Chlorine Stabilizer and Outdoor Pools

Your Taylor test kit comes equipped with testing procedures for cyanuric acid. Cyanuric acid is a chlorine stabilizer, meaning it protects chlorine from getting broken down by sunlight. If your pool is located outdoors, we recommend using the granular form of stabilized chlorine (Should have an active ingredient of sodium dichlor) instead of Clorox. Another option would be to supplement Clorox by adding cyanuric acid. Either method will necessitate testing for cyanuric acid every two weeks. These chemicals are readily available at any pool supply store.

Chlorine Stabilizer and Indoor Pools

Many customers are sold a stabilized chlorine product for use in their indoor Endless Pool. Endless Pools would not recommend this practice, as Clorox bleach is ideal for this setting. Using a stabilized chlorine source is more expensive, and it also requires the periodic testing for cyanuric acid levels. If the level gets too high, it can render the chlorine ineffective, and it may necessitate the partial draining of the pool in order to lower the levels.

Alternatives to Chlorine and Nature 2

Although some alternative Sanitization systems can be used with an Endless Pool, the following precautions must be followed:

- Under NO circumstances can salt chlorine-generating systems be used in an Endless Pool.
- Bacquacil systems damage clear plastic products. Light lenses and pump strainer lids will crack.
- Bromine can be used, but not in conjunction with Nature2.
- Please call Customer Service with any questions about alternate systems.

Balancing Water Chemistry

Test your pool water now with the kit provided and/or take a sample of water to a local pool professional for testing. The test kit provided by Endless Pools tests for chlorine, pH, total alkalinity, calcium hardness and cyanuric acid. While the test kit may first seem intimidating, simply follow the instructions on the underside of the test kit lid. These instructions walk you through each of the tests step by step, and they are color coded with the appropriate reagent bottles to use for that test.

When performing the water quality tests, write down your results on the log sheet provided at the end of this bulletin. We would strongly urge you to make copies of these blank logs for use in the future. Any observations, chemical additions, or actions taken should also be noted. While it may seem a bit tedious, all of this information will prove invaluable in the event of a water quality problem, or when you go to make similar adjustments to the water chemistry in the future.

During this start-up period, which will last a few days, you will need to "Balance" the pool water by following the instructions listed below. After this initial start-up period, the testing procedures and emphasis are a little bit different, and they are explained in the "Maintaining your Endless Pool" instructions a few pages later in this manual.

The following steps need to be followed when the pool is first filled, as well as anytime the pool is partially drained and refilled. They will walk you through testing and adjusting the factors affecting the "balance" of the water i.e., the water's total alkalinity, pH and calcium hardness levels.

The level of chlorine inside the pool, as long as it is not above 5ppm, will not significantly affect the following tests and procedures used to balance the pool water. Therefore, if there is no chlorine in the pool at this time, add some. Add 1-2 cups of liquid bleach (any brand is fine as long as it does not have an added scent to it) to an indoor pool. If you have an outdoor pool, add the appropriate amount of granules out of the bag of "stabilized" chlorine. Test for chlorine in a day or two and add more if necessary.

1. Balance Total Alkalinity (TA)

- Ideal reading: 100ppm
- Acceptable range: 80-120ppm
- Raise with: Sodium Bicarbonate (TA increaser)
- Lower with: Sodium Bisulfate (pH decreaser)

Method of chemical application:

Pre-mix the appropriate chemical into a clean bucket and pour into the pool.

Retest TA and adjust again if necessary.

Add less chemical than you think is necessary to effect the desired change. Keep track of how much chemical it took to make that change.

Notes:
Many regions of the country and world will have water with a TA higher than our recommended range. In a lot of cases, it will be desirable to leave the TA alone as any adjustment to it will also tend to affect the pH. The TA is mainly serving as a buffer for the pH. If it is above 120ppm, but lower than 200-250ppm, leave the level alone. It will simply over-stabilize the pH, which is not a problem, especially if the pH is within range or close to being within range.

If the TA is lower than our recommended range, though, we would recommend increasing it to at least 80ppm. Once again, the TA serves mainly as a buffer for the pH and if the TA is too low, the pH level in the pool can change very rapidly causing bather discomfort and damage to the pool and pool equipment.

Once the TA is within a tolerable range, move on to adjusting the pH in the pool. You should find that the TA will be slow to change—for this reason, test for it once a week.

2. Balance pH

- Ideal reading: 7.5
- Acceptable range: 7.4-7.8
- Raise with: sodium carbonate (pH increaser)
- Lower with: sodium bisulfate (pH decreaser)

Method of chemical application:

Pre-mix the appropriate chemical into a clean bucket and pour into the swim current. Afterwards, make sure you wash some water on the propulsion housing to ensure that no granules are resting on the benches. Test and apply more chemical as necessary.

Notes:
It is very important to keep the pH within range. If the level is too low, severe damage can occur to the pool liner and the submerged hydraulic motor, and the pool equipment. If the level is too high, damage can occur to the liner, and it can make the water prone to "scaling," when minerals and metals dissolved in the water will be dropped out of solution and on to the benches and liner. Having the pH too high or too low may cause bather discomfort in the form of eye or skin irritation.

The pH will change slowly over the course of a week or two. The number of bathers and the type of chlorine used are just two factors that will cause the pH to change. For this reason, pH should be tested three times a week and adjusted as needed.

Once the pH is within range, move on to adjusting the calcium hardness.

3. Balance Calcium Hardness (CH)

- Ideal reading: 180ppm
- Acceptable range: 175-250ppm
- Raise with: calcium chloride (calcium hardness increaser)
- Lower with: water containing less calcium (softened water)

Method of chemical application:

Fill a clean, five gallon bucket with pool water and dissolve the dosage of calcium into this water. Do not mix this solution with your hands. Pour the solution in to the swim current, and let the current circulate the water in the pool for a few minutes. Wait a few hours, test again, and add more calcium if necessary. Once again, always add less chemical than you think will be necessary to effect the desired change.

Notes:
As with TA, many regions will have higher CH than what is specified by our recommended range. If it is available, partially filling the pool with softened water will dilute the calcium content and essentially lower the CH level inside the pool. If softened water is unavailable, perhaps water tanked-in from an outside source would be the best option for you. If this not possible either, we would strongly suggest adding the "sequestering agent" sent with the pool. This chemical helps the water hold all of its dissolved materials in solution, including metals and calcium content. The main concern with having CH levels too high is that the calcium may deposit out of solution—a sequestering agent will help prevent this.

Calcium hardness will tend to slowly increase over time as water evaporates from the pool and leaves its calcium behind.

6. Pool Equipment and Start-Up Operation

The pool is full when the water level completely covers the honeycomb grills where the current is produced. A water level 1/2" (12mm) or more lower than this can cause air to get pulled through the skimmer-filter and into the WQS plumbing lines. This can lead to problems with the filter, and can also cause your heater to work intermittently. A water level 1" (2,5cm) or more, higher than the top of the grills can lead to water getting splashed out of the pool.

Once the pool is full and all connections are made, the water quality system can be started. Verify that the Nature 2 cartridge is installed inside the skimmer-filter cartridge.

When power is first introduced to the system, the heater-controller will go through a boot-up cycle (which can last 2-5 minutes). During this boot-up cycle it is important that no buttons on the keypad are pushed. At the end of the boot up cycle the keypad should display the temperature of the water.

If the keypad is flashing, "FLO" then air may need to be bled out of the system. Turn the power off and slowly unthread one of the pump unions, allowing any air to escape the system. When bleeding the system you will lose some water so it is important to take this into account. Once the air has been bled out, retighten the union.

After the system is turned on and the heater-controller has verified proper water flow (to avoid heater activation in dry conditions), the heater will automatically turn on to reach and maintain the water temperature set point.

Your heater-controller has been programmed to run your circulating pump continuously, meaning that your pool is receiving

automated circulation and filtration (through the skimmer/filter) 24 hours a day. The temperature of your pool is controlled by the up and down keys on your keypad (Refer to the following section for more information on the heater-controller features).

The Heater-Controller has a freeze protection feature called Smart Winter Mode. Smart Winder Mode senses the ambient temperature around the heater-controller and turns on the optional hydrotherapy jet pump as the temperature drops. The colder the temperature, the more frequently the pump will turn on.

The Smart Winter Mode indicator light (see Keypad Function section) is illuminated when this feature is activated.

The heater-controller also is programmed to turn the optional hydrotherapy jet pump on 4 times daily, for 60 seconds.

Heater-Controller

The in.xe is a heater controller used by Endless Pools to control the following water quality features:

- Water temperature can be set between 59ºF and 92ºF (15ºC - 33ºC). Default set point at 84ºF (29ºC). The set point is changed with the up and down keys.
- The Circulating Pump, CP, is always on. The heater can only turn on when CP is on.
- Pressing the light key will turn lights on/off with an on time of 120 minutes.
- Optional Pump #1 is for a single speed Jet pump. Pressing the first key turns pump 1 on/off, with a run time of 30-minutes. The heating element is turned off when Pump #1 is activated. To aid in filtration there are 4-purges per day.
- Optional UV is always on except when the circulation pump is turned off.
- Holding first key for 5-seconds will turn off all devices for 30 minutes to allow for servicing. Pressing again will return to normal operation.

(in.xe) UL/CSA electrical specifications:

Input rating: 120/240 VAC

(2-phase required, with neutral) 48 A maximum, 60Hz. Software limited to 24A. Install on a 30A GFCI circuit.

UL/CSA Standards:

UL 1563 Fifth Ed.
File: E182156
CSA No. 22.2 - 218.1-M89.

TUV Standards:

EN/IEC 60335 - 2 - 60
EN55014-1
EN55014-2
EN61000-3-2
EN61000-3-3

Circulating Pump

The circulating pump has been provided with an integral dry run protection thermostat feature, that turns the pump off when the pump runs dry (thermostat off at 212ºF + 10ºF [100ºC - 5ºC]). If left unattended, the thermostat will automatically reset within a relatively short amount of time when the unit cools down, thereby allowing the pump to again begin operation (at 176ºF + 13ºF [80ºC - 9ºC]). Depending on the system conditions, many times one or two of these off/on cycles will correct an air bound dry run condition by itself with no harm done to the pump, thereby allowing continued trouble free operation. However, if the off/on cycling persists then measures should be taken to correct the problems in the circulation system causing the on/off cycling.

Floating Thermal Cover

Endless Pools, Inc. provides a lightweight cover for the Endless Pool, if a retractable security cover has not been purchased. This cover floats on the water surface, insulating the pool while preventing evaporation. Consistent use of this cover will keep the water cleaner, save energy, and help control humidity. The cover should be completely removed from the water before the machine is used. With standard width Endless Pools (7' [2,13m] inside dimension) the cover is shipped in a box with clips along with a 1-1/4" (3,8cm) PVC pipe. Replacement covers are available from our Customer Service Department. The cover, once cut to size and installed on the PVC pipe, rolls out onto the water surface.

Nature 2 Installation

The Nature 2 purification system will be placed inside of the filter cartridge. A retention strap has been provided to prevent the Nature 2 (slotted blue cartridge) from falling out of the filter.

Remove the Nature 2 cartridge, handle, and retention strap from its packaging (Fig. 47). Loop the retention strap around the Nature 2 cartridge handle, making sure the location of the strap is above the fins on the handle, and interlock the strap end into its locking mechanism. Cut the strap down to approximately two inches using a pair of scissors (Fig. 48).

Attach the handle to the main body of the Nature 2 cartridge by aligning the hole at the top of the handle to the nipple that's attached to the main body of the cartridge (Fig. 49). Make sure there is a firm connection between the handle and the main body of the cartridge.

Next, pull the cylindrical floating cage out of the filter body. Remove the filter cartridge from the filter body inside the pool, by grabbing the top and unthreading the cartridge.

Insert the Nature 2 into the opening at the bottom of the filter cartridge making sure the handle is facing towards the opening (Fig. 50). The retention strap should prevent the Nature 2 cartridge from falling out of the filter cartridge.

Reinstall the filter cartridge and then place the floating skimmer cage over top the cartridge.

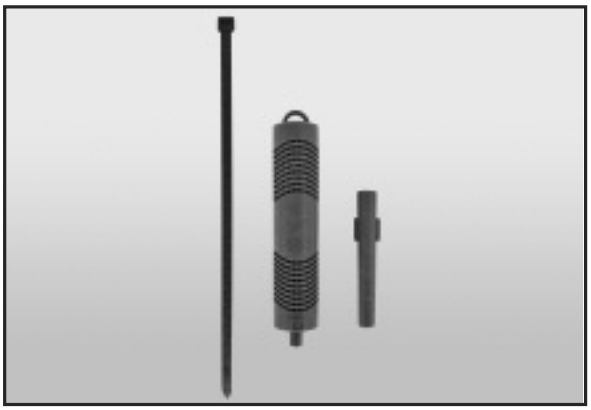


Fig. 47

Fig. 48

Fig. 49

Fig. 50

6. Endless Pool Maintenance

Daily:

- Test for free chlorine (FC) after you swim, or at least a few times a week. Add chlorine to maintain FC levels between 0.5 - 1.5 ppm. As you become familiar with the chlorine demand for your pool, you will find that you may not have to test for chlorine as frequently in order to maintain a minimum level of 0.5ppm.

Twice a week:

- Check and adjust water level. Water should completely cover the honeycomb grill where the current is produced. Water 1/2" (12mm) lower than this can create a choppy current and may cause your skimmer to draw air into the plumbing lines. Having the water level 1" (2,5cm) or more higher that honey comb grill will cause more water to get splashed out of the pool, and may cause the air relief port on the top of the skimmer body to leak water.
- Test for pH at least twice a week. Broadcast (i.e. pour chemical into current) pH increaser or pH decreaser to maintain levels between 7.4-7.8.

Weekly:

- Test for total alkalinity (TA) once a week. Slug (i.e. pour chemical in 4 spots around pool with water calm) TA increaser or pH decreaser to maintain levels between 80-120ppm. If TA is too high, it is usually not necessary to decrease as it merely serves as a buffer for the pH and will not cause damage in the pool.
- Test for total chlorine (TC) once a week. If the test for TC yields a result that is significantly higher than level of FC (i.e. the solution gets noticeably pinker) then you have a significant amount of combined chlorine (CC) in the pool water. Combined chlorine generates a heavy chlorine odor, and can cause bather discomfort in the form of eye and skin irritation. If you have significantly more total chlorine than you do free chlorine, then it is time to shock the pool (i.e. add enough chlorine to get the FC between 3-5ppm, but don't swim until FC falls below 3ppm). Shocking the pool should burn off the combined chlorine.

Every two weeks:

- Test for calcium hardness (CH) once every two weeks. Dissolve calcium hardness increaser (i.e. fill a 5-gallon bucket with pool water and dissolve calcium in bucket) then pour the solution into the current to keep levels between 175-250 ppm. If CH is too high, it can only be decreased by adding water with less calcium (i.e. softened water).

- If you have an outdoor pool, or if you use stabilized chlorine (i.e. sodium dichlor or sodium trichlor), test the cyanuric acid (CYA) level every two weeks. Maintain levels between 20-50 ppm. If CYA is above 80 ppm, the pool should be partially drained and refilled, or un-stabilized chlorine should be temporarily used in place of the stabilized. If CYA is above 100ppm, the pool should be partially drained and refilled.

Every two months:

- Remove and clean the filter that is located inside your pool (attached to the propulsion housing). First, turn the Water Quality System off by pressing and holding the 1 Key (see section Keypad Functions) until the display reads, "OFF." Then remove the cylindrical filter cage from the filter body. Grab the filter inside and unthread it from the filter body. Once out, the filter can be cleaned by simply rinsing it off or by using a filter-specific detergent. If your filter is being cleaned with a detergent, then remove the Nature 2 from the cartridge. Insert the cleaned filter back into the filter body and thread into place. Reinstall the filter cage over the cartridge. The circulation pump will automatically turn back on after 30 minutes.

- After several uses the cartridges will have to be replaced. Replacement cartridges can be purchased on our Customer Service website, www.myendlesspool.com.

Every four months:

- Remove the Nature 2 cartridge located in your skimmer/filter, discard, and install a new one. Because this needs to be done every four months, it is best to coordinate this around the cleaning of your filter cartridges (see "Every two months" above). New Nature 2 cartridges can be purchased on our customer website, www.myendlespool.com.

Annually

- **Have a licensed electrician make sure that all the electrical connections are tight and secure.**

As Needed:

- Clean the water line around the perimeter of the pool and the underside of the cover as needed. Body oils and mold may build up slowly in these areas and should be cleaned off periodically.

- Periodically, remove any debris that has settled on the floor of the pool. A hose-less battery powered vacuum cleaner, which can be installed onto a pool telescoping pole, can be purchased through Endless Pools. If you have an outdoor pool, you may need to remove front grill (from where the swim current is generated) with a Phillips-head screwdriver and clean as necessary. Replace grill before restarting machine. The Endless Pool must not be operated with this front grill removed.

- If you happen to get cloudy water, or if the liner feels slippery, it likely means that you have algae in the pool. A vinyl liner pool brush and pole may be purchased in order to wipe down all the surfaces in the pool, Increasing free chlorine level temporarily to 5 ppm will help, as will maintaining the free chlorine level in the pool at 3 ppm until the water is clear. Test the chlorine level frequently during this time.

- If you have selected the gas heater for your Endless Pool, we would encourage you to have the heater serviced on a yearly basis. This is very important if you have elected to put the gas heater outdoors or if the pool is drained for extended periods of time.

7. Draining the Endless Pool

1. Disconnect electrical power to all pool equipment.

2. Begin to drain down pool water by placing a suitable sump pump in the pool, or by setting up a siphon using a garden hose. If using a siphon, two or more hoses may be used simultaneously in order to expedite the process.

3. If you have full depth stairs, they should be unfastened from the panel and shifted away from the corner enough to a) remove the corner cover underneath, and b) allow the liner to pull in toward the pool a little bit. If you have a corner step, remove the step as the water level lowers to the top of that step. Once the water is within an inch or two from the top of the benches, remove the (4) corner covers located in the corners of the pool. These covers should be removed by unscrewing the (4) machine screws found on the tops of all the covers.

4. Continue draining pool until 6" (15cm) of water is remaining in the standard depth portion of the pool, i.e. the water is half way up the benches. Do not drain further than this as the liner needs this much water in order to be held stretched out and in place. If you are leaving the water like this for an extended period of time, add chlorine and possibly an algaecide in order to minimize the clean-up required before refilling the pool.

5. When you are ready, refill the pool using a garden hose with a "bobby filter" on the end to screen out debris and fine sediment. If you do not have one of these filters, contact Endless Pools Customer Service. If you have high calcium content and/or high metal content in your area, you should also add some "sequestering agent" to the pool water to help prevent scaling/ staining. You may also be able to find both of these items at a local pool store.

6. When the water has risen to the top of the benches, reinstall the four corner covers. Be careful not to push the covers against the liner or hit the liner with the edges of the corner covers. Doing so may cause a leak.

7. The pool is full when the water completely covers the grill at the front of the pool. Reestablish electrical power to the pool equipment, and start balancing the pool water. Shock the pool to 3.0 ppm free chlorine. Turn on your WQS in order to get your new body of water filtered, circulated, and heated.

8. Winterizing the Endless Pool

An Endless Pool may be used year round, even in colder climates. If you will not be using the pool during the winter in an area where freezing is a problem, special consideration must be taken to protect the pool and ancillary equipment if either is located outside. If you have any questions regarding precautions to take against freezing, please call our Customer Service Department at (800) 910-2714.

9. Water Quality Error Codes

Hr
An internal hardware error has been detected in in.xe. Contact Customer Service.

HL
The system has shut the heater down because the temperature at the heater has reached 119˚F (48˚C). Do not enter the water! Remove the spa cover and allow the water to cool down, then shut power off and power your spa up again to reset the system.

AOH
Temperature inside the spa skirt is too high, causing the internal temperature in the in.xe to increase above normal limits. Open skirt and wait until error clears.

FLO
The system does not detect any water flow while the primary pump is running. Check and open water valves. Check for water level. Clean filter. If the problem persists, call Customer Service.

Prr
A problem is detected with the temperature probe.Call Customer Service.

OH
The water temperature in the spa has reached 108˚F (42˚C). Do not enter the water! Remove the spa cover and allow the water to cool down to a lower temperature. Call Customer Service if problem persists.

UPL
No low level configuration software has been installed into the system. Call Customer Service.

10. Water Quality System Troubleshooting

Symptom	Possible Cause	Solution
No power to controller	1.) Tripped breaker	1.) Reset breaker
	2.) Disconnect turned off	2.) Turn disconnect to ON position
	3.) Improperly wired controller	3.) Verify wiring of controller
No Keypad Display	1.) No power to controller	1.) See above diagnosis
	2.) Keypad cord not attached	2.) Plug in keypad cord. Plug must "lock" into place.
	3.) Pins in display receptacle are bent	3.) Straighten pins to allow cord to properly attach
	4.) 1/2 amp fuse blown in heater controller	4.) Check for continuity on fuse and replace if necessary
FLO Reading on Display	1.) Pump housing not filled with water	1.) Remove air from housing (prime pump)
	2.) Water level too low	2.) Add water to pool (should be 1/2 way up skimmer opening)
	3.) Filter is dirty	3.) Clean filter(s)
	4.) Ball valve is closed or return line is plugged	4.)Open valve or remove plug
	5.) Circulating pump is not plugged in	5.) Plug pump in. Plug must "lock" into place
	6.) Swim current turned on	6.) Condition is normal
	7.) Circulating pump turned off at keypad	7.) Turn pump back on by pressing key 1 on keypad or wait 30 minutes for auto restart of circulating pump
	8.) 10amp fuse in heater controller has blown	8.) Check for continuity and replace if necessary
	9.) No power to pump receptacle on	9.) 10 amp fuse may be blown inside heater controller heater controller. If fuse not blown, turn off breaker for 5 minutes and reset. If still no voltage to receptacle replace heater controller
Circulating Pump Makes Noise	1.) Debris in impeller	1.) Remove pump from system, take apart pump and clean ceramic ball that the impeller sits on
	2.) Air trapped in housing	2.) Remove air from housing (prime pump)
	3.) Rotor bearing worn	3.) Replace pump
Pool taking long time to heat	1.) Heater not turning on	1.) Controller not calling for heat-check thermostat set point
	2.) Heat indicator on, no heat gain	2.) Check element continuity (14ohms). Replace if not in this range
	3.) Losing heat from pool	3.) Insulate pool. Keep pool covered when not in use. Refer to “Retaining Heat” Service Instruction

WATER CHEMISTRY TEST LOG

Date	Cl/Br	pH	TA	CH	Notes:

WATER CHEMISTRY TEST LOG

Date	Cl/Br	pH	TA	CH	Notes:

ENDLESS POOLS®
SWIMMING MACHINES

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