



# ZODIAC

## DuoClear™

Complete In-Ground Pool Sanitizing System



Installation Guide  
and Owner's Manual

# IMPORTANT SAFETY INSTRUCTIONS

## READ AND FOLLOW ALL INSTRUCTIONS.



### WARNING

Failure to heed the following warnings can result in permanent injury, electrocution or drowning.

#### ELECTRICAL HAZARD

- To reduce risk of electrical shock
  - Make sure all power to pool equipment area is off prior to any installation or removal of DuoClear system components.
  - Replace damaged power pack cord immediately.
  - Do not bury cord. Locate cord to minimize abuse from lawn mowers, hedge trimmers and other equipment.
- Severe shock or injury will likely occur as a result of a drill or drill cord coming in contact with water. Never allow electric drill or cord to come in contact with water. Only plug drill into a Class A (5 Milliampere Trip) protected Ground Fault Circuit Interrupter (GFCI) in accordance with the National Electrical Code Section 680 (USA only). Please see your drill owner's manual for further safety precautions.
- Install the power pack at least 10 feet from the inside walls of a pool to prevent any possibility of the unit coming in contact with water.
- Your DuoClear system has been designed with an electronic flow sensor. This device automatically switches the chlorinator 'OFF' when the water through the cell stops. To prevent vessel damage and personal injury, do not in any way interfere with this system which has been designed for your protection.

#### CHEMICAL USE HAZARD

- To avoid personal injury when working with pool chemicals, always wear rubber gloves and eye protection and work in a well-ventilated area. Use caution when choosing a location to open and use chemicals as they may damage any surface in which they come in contact.
- The addition of certain chemicals can reduce the effectiveness of chlorine. Always make sure that proper residual chlorine levels are maintained to avoid personal injury.
- This product manufactures chlorine. Individuals with any type of chlorine sensitivity should take the appropriate precautions to avoid injury or illness.

#### EQUIPMENT WATER PRESSURE HAZARD

- Always turn pump off prior to installing or removing any DuoClear system. Your pump/filter system is operated under pressure and the pressure must be released before you begin work. Please see your pump/filter owner's manual for further instructions.
- To avoid vessel damage and personal injury, water pressure in the vessel must not exceed 45 psi.

#### PREVENT CHILD INJURY AND DROWNING

- To reduce the risk of injury, do not permit children to operate this product.
- Do not let anyone, especially small children, sit, step, lean, or climb on any equipment installed as part of your pool's operational system. Unless otherwise stated, ALL components of your pool's operational system should be located at least 3 feet from the pool so children cannot use the equipment to gain access and be injured or drown.



### CAUTION

Failure to heed the following warnings could cause damage to pool equipment or personal injury.

- Chlorinator must be installed and operated as specified.
- Scratching or bending plates in vessel housing can reduce vessel life.
- Power to the DuoClear system should be turned off before unplugging the vessel connectors to prevent cell damage and low voltage sparks.
- Keep the electrode terminals protected with a light coating of silicone grease to allow for a positive electric connection. Use of any other type of grease may damage the terminal seals and 'o' rings. Do not immerse these terminals in acid wash solution, and avoid accidental contact with salt water.
- Water above the temperature of 104 degrees F (40 degrees C) flowing through the vessel can cause plastic vessel to discolor.
- Power pack must not be installed directly above any other heat source such as filter, pump or heater. It must be at least 1.0 Ft. (300 mm) from the ground to allow free circulation of air around it. It must not be installed in a closed box. If the power pack is to be installed on a post, then it must be centrally positioned on a flat panel of suitable waterproof material at least 10 inches (240mm) wide and 18 inches (440mm) high.
- Check the cell frequently to prevent the accumulation of pool debris that for any reason may have by-passed the pool filter.

## SAVE ALL INSTRUCTIONS.

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Congratulations on the purchase of your new Zodiac DuoClear™ complete in-ground pool sanitizing system. Please take the time to read through the entire DuoClear manual before installing or using your new unit.

The manual provides useful information on how to operate the DuoClear system most efficiently and understand more about the maintenance of your pool. Your local pool shop can also be helpful in a more detailed explanation in the care of your pool and assist you with any questions or problems.

## How the DuoClear Works

The DuoClear™ combines Nature<sup>2</sup> mineral sanitizing technology with Clearwater saltwater chlorination. In the DuoClear pool, trace amounts of silver and copper are used to kill bacteria and inhibit algae growth. These minerals work with trace amounts of chlorine to provide complete pool sanitizing.

A measured quantity of salt is dissolved in the pool water to create a mild saline solution. As part of the daily filtration cycle, pool water is passed through the mineral cartridge, then over the DuoClear electrodes where chlorine is produced and dissolved instantly into the water. The chlorine, along with the silver and copper minerals destroys bacteria and algae, and in doing so the chlorine reverts back to saltwater.

Every day, when your DuoClear and the filtration system are switched on, dust and debris are trapped by the filter, and the DuoClear sanitizes the water to make it sparkling clear.

**Important: To ensure the DuoClear works at maximum efficiency, regularly check and maintain the chemistry of your pool.**

### Water Chemistry Requirements

<b>Salt Concentration</b>	4,000 ppm
<b>pH</b>	7.2 to 7.8
<b>Chlorine Stabilizer</b> (Cyanuric Acid)	40 to 100 ppm depending on regional climate
<b>Total Alkalinity</b>	80 to 150 ppm
<b>Total Calcium Hardness</b>	200 to 400 ppm
<b>Free Chlorine</b>	0.5 to 1.0 ppm

### DuoClear Product Specifications

<b>Salt Level Requirement:</b>	4000 ppm	<b>Power Requirements:</b>	220 - 240 VAC, 2 Amp draw
<b>Max Salt Level:</b>	13,000 ppm	<b>Dimensions:</b>	
<b>Min Flow Rate:</b>	20 gallons/minute	Vessel	8 1/4" x 3" x 3 1/4"
<b>Max Flow Rate:</b>	80 gallons/minute	Power Pack	7 5/8" x 14 3/4" x 4 7/8"
<b>Plumbing:</b>	2" Sch 40 PVC		
<b>Max Operating Pressure:</b>	45 psi		
<b>Max Water Temp Through Cell:</b>	104° F		

The DuoClear system should be installed on residential pools only.

Salt level in the DuoClear pool should never exceed 13,000 ppm. Salt levels above 6,000 ppm may void other equipment warranties and damage other components or metal items of your pool equipment.

Operating above 45 psi could lead to personal injury and equipment damage.

# Installation

The DuoClear system must be installed by a qualified swimming pool professional or certified electrician. If you need assistance in finding a qualified installer, please contact us at 1-800-822-7933.

## Before Installation

Read all Important Safety Information and note the following precautions. The DuoClear must be installed and operated as specified. Failure to adhere to proper installation and maintenance procedures may invalidate your warranty and damage pool equipment.

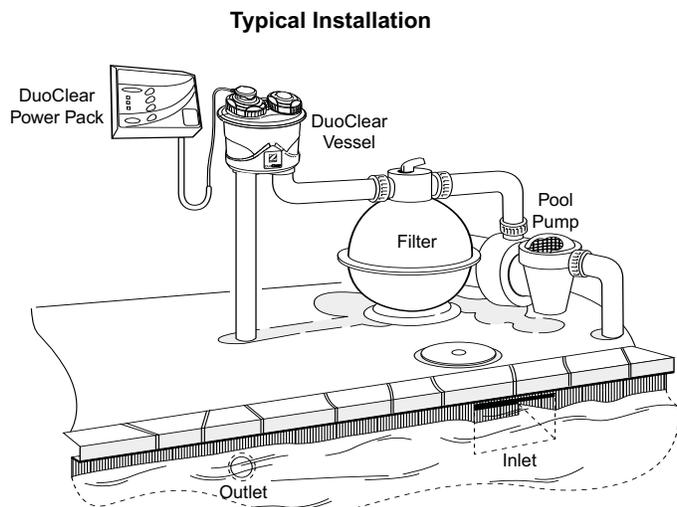
1. Do not tamper with the electronic flow sensor as it is designed for your protection.
2. Do not scratch or bend the electrode in the housing.
3. Turn power to the DuoClear off before unplugging the electrode connectors.
4. Use only silicone grease on electrode terminals.
5. Do not immerse terminals in acid wash solution, and avoid accidental contact with salt water.
6. Water above the temperature of 104° F must not flow through the DuoClear vessel.
7. Water pressure in the DuoClear vessel must not exceed 45 psi.
8. Check the electrode frequently for accumulation of pool debris or scale build-up.
9. Do not install the power pack directly above any heat source. Mount it in a shady spot, out of direct sunlight. Make sure air circulates freely around it.

## Plumbing the Sanitizing System

The DuoClear vessel MUST be installed level, with ports down, as the last piece of pool equipment on the return line.

- **The inlet and outlet ports are labeled.**  
The Nature<sup>2</sup> cartridge is on the inlet side, the chlorinating electrode is on the outlet.
- There are no height restrictions or requirements.
- Install the vessel close to the power pack to accommodate the length of the output cable.
- **When plumbing the DuoClear, do not install a valve on the discharge side of the system.** If a valve is required, due to a flooded plumbing situation, use a one-way check valve on the outlet side.

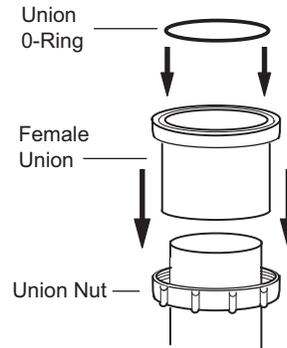
- The maximum flow rate for the DuoClear is 80 GPM. If flow exceeds this, the unit must be plumbed on by-pass. Install a control valve on the inlet side, or between the inlet and discharge side of the vessel, and use valve to adjust flow. Proper flow is achieved when the red NO FLOW light goes out.
- The DuoClear is available in three different sizes to sanitize pools up to 45,000 gallons. If conditions require multiple installations, plumb the units in parallel, providing equal flow to each unit.



## Installing the Vessel

Use the female unions and o-rings supplied to install the vessel. Reducer bushings may be used to reduce the port size.

1. Cut pipe to inlet and outlet ports to equal heights and as square as possible.
2. For both inlet and outlet, push union nut onto pipe with threads facing up.
3. Cement female union onto the pipe. Any standard PVC cement may be used.
4. Seat the o-ring into the channel on the female union.
5. Position vessel with Nature2 cartridge on the inlet port and chlorinating electrode on the outlet port.  
**Hand tighten** the unions to seal.



## Installing the Power Pack

Use the anchors provided to mount the bracket to the wall. Hang the power pack on the bracket. If the power pack will be mounted on a post, a waterproof backing of at least 14" W x 13" H must be used.

- Install power pack a minimum of 10 feet (3 m) from the inside wall of the pool. Refer to local building codes for requirements.
- Do not enclose the power pack in a box.
- Do not install it above any heat source.
- **The power pack is 220-240 VAC ONLY. Wire it to the LOAD side of a pool timer, or the pump circuit of the controller, so that when the pool pump comes on the DuoClear comes on.**
- Attach the green ground wire to the grounding screw or grounding bar to inhibit electrical shock.
- Ensure the electrode cap is firmly pressed onto the electrode connectors.

## Linking DuoClear to a Pool Automation System

The DuoClear can run independently or be connected to a Pool Automation System. Two connection methods are available.

### Via an Auxiliary Relay at the Controller

(For installations using non-compatible controllers.)

Using this method the DuoClear main power is connected to an auxiliary relay in the pool automation system controller. The DuoClear unit is switched on and off as determined by the controller.

The “Output Setting” and the selection of “Super Chlorinate” must be selected at the DuoClear control panel. The DuoClear will retain these settings when switched on by the controller until they are manually changed. **The Super Chlorinate function will remain active for a total of 24 operating hours after being selected.**

**IMPORTANT: The DuoClear should only have power when there is water flow and actuator valves should never block the flow when power is on. Refer to the controller’s installation guide for additional information.**

### Via a Communications Link

The DuoClear has the capability of being interfaced with a number of controller units:

- Polaris Eos
- Jandy Aqualink RS\* (REV K and L)
- Pentair IntelliTouch\*\*

Using this method, main power is supplied to the DuoClear via the controller’s ‘PUMP’ output and a communications link is made between the DuoClear and the pool automation controller.

**Hardwire the DuoClear power pack to the LOAD side of the pool pump relay.** While wiring to the pump relay is the preferred method, the DuoClear main power can be wired to an auxiliary relay.

When the communication link is connected, the pool automation system becomes the master control for the DuoClear enabling the pool owner to control all settings of the DuoClear via the controller panel. Warning messages for check salt and no flow will be displayed at the controller panel. The lights on the DuoClear will illuminate but the buttons will not function.

When the communication link is removed, control of DuoClear settings returns to the DuoClear control panel.

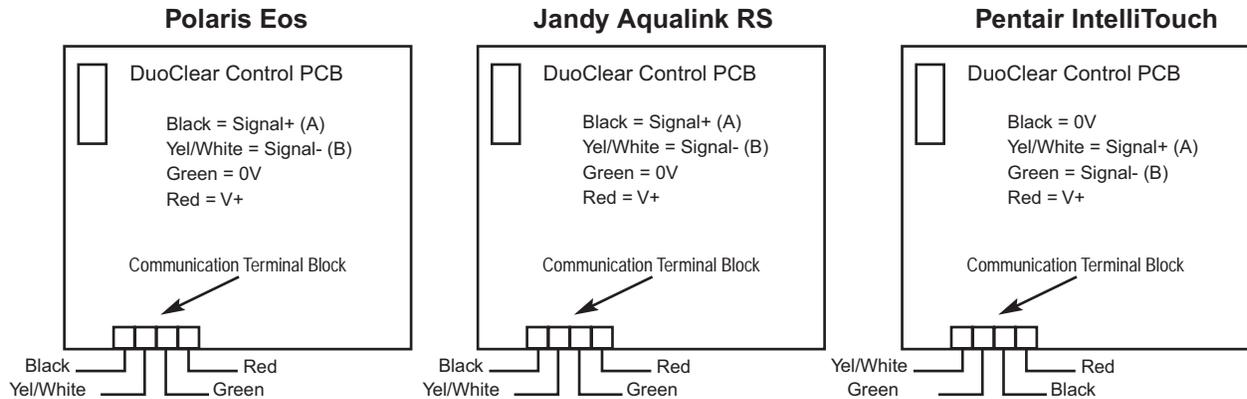
**NOTE: After a change is made at the controller, it may take several seconds for the change to be reflected on the DuoClear front panel, this delay depends on the controller being used.**

\*Jandy Aqualink RS is a Registered Trademark of Water Pik Technologies, Inc.

\*\*Pentair IntelliTouch is a Registered Trademark of Pentair Pool Products.

## Connecting the Communication Cable

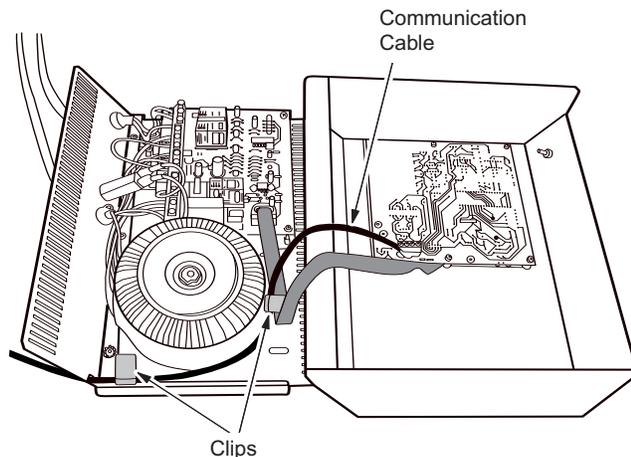
1. Remove the DuoClear power pack cover and connect the 4-conductor communication cable to the "eos com" terminal block on the DuoClear control PCB, mounted in the DuoClear cover. The wiring configurations for the various controllers are shown below:



**Note:** The wiring configurations are the same for Jandy Rev K and Rev L controllers.

**Note:** When connecting to the Jandy Aqualink RS controller with Rev L, the DuoClear will appear in the settings menu as an "AquaPure" chlorinator.

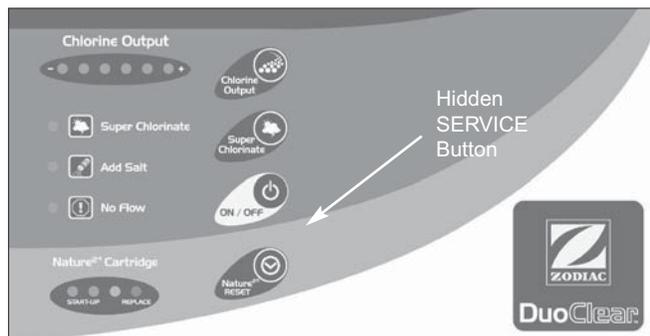
2. Fit the communication wire into the slot on the transformer side of the main panel.
3. Route the cable around the transformer as shown and secure it in two places with clips.



## Interface for Automation System Controllers

Since the DuoClear can be connected to several different controllers, it is necessary to select and setup an interface for the specific unit controlling the unit.

1. Turn on power to the DuoClear and pump via the controller.
2. Press the SERVICE button (hidden to the right of the ON/OFF button) down for at least 20 seconds while observing the green SUPER CHLORINATE light. The LED will flash momentarily, either 1, 2 or 3 times, then go out for approximately 5 seconds.



- Continue to hold down the SERVICE button until the correct number of flashes for the controller being used is observed. Then release the button.

<b>Controller:</b>	<b># of Flashes:</b>	<b>Off Time:</b>
POLARIS Eos	1	Approximately 5 seconds
PENTAIR IntelliTouch	1	Approximately 5 seconds
JANDY AquaLink RS (rev K)	2	Approximately 5 seconds
JANDY AquaLink RS (rev L)	3	Approximately 5 seconds

A software connection should have been made. To verify a valid connection, observe the menu screen of the controller being used. If the chlorinator does not appear to have made a connection, try resetting both the DuoClear and the controller.

When connected to one of these controllers the DuoClear behaves as a “drone”, responding only to the controller, so none of the buttons on the DuoClear will function.

If the communication link between the controller and the DuoClear is lost, it will continue operation as it was before the controller lost connection. It will behave as a “stand alone” unit until the controller is reconnected or the user changes the settings.

### Check Salt / No Flow Warnings to Controllers

When a low salt or no flow condition occurs, the DuoClear sends a message to the controller and the controller signals the user to check for the condition as indicated below.

#### Low Salt

The ADD SALT indicator light on the DuoClear power pack is illuminated:

**Polaris Eos:** flashes the error code “Check Chlorinator” on the screen, and displays a salt level of 2900 ppm.

**Jandy Aqualink RS (REV K):** displays a salt level of 2900 ppm.

**Jandy Aqualink RS (REV L):** displays a salt level of 2900 ppm as well as a LOW SALT warning message.

**Pentair IntelliTouch:** displays a salt level of 2900 ppm and a LOW SALT warning message.

Always test the salt level in the pool before adding salt as water temperature or scaling of the cell can cause the ADD SALT light to illuminate.

#### No Flow

The red NO FLOW indicator light on the DuoClear will illuminate:

**Polaris Eos:** flashes “Check Chlorinator” and displays a 0 ppm salt level.

**Jandy Aqualink RS (REV K):** displays a salt level of 0 ppm.

**Jandy Aqualink RS (REV L):** displays “No Flow.”

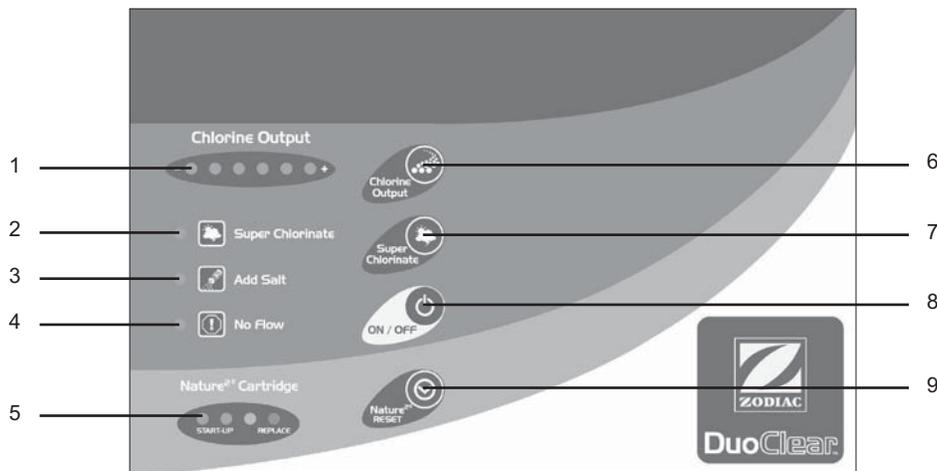
**Pentair IntelliTouch:** displays “Check Flow/PCB.”

For more information on controller warning messages, consult the controller owner’s manual.

# Operation

The daily chlorine production of the DuoClear is controlled by the number of hours the DuoClear and filtration system are on ON, and the setting of the chlorine output control. Power to the unit is controlled by the pool timer or controller. **The DuoClear functions can only be set when the filtration system is operating.**

The DuoClear uses reverse polarity technology to minimize scaling of the salt water electrode. The system also includes an electronic flow sensor that automatically switches the unit OFF when water through the unit stops. **To prevent cell damage and personal injury, do not in any way interfere with this system as it has been designed for your protection.**



## Control Panel Functions

### Chlorine Output

The **CHLORINE OUTPUT** button (6) controls the amount of chlorine generated by the DuoClear. To set the desired output, press repeatedly until maximum output is reached.

The **Chlorine Output** indicator (1) shows the chlorine output setting - more lights equals greater chlorine production. It consists of one yellow and five green indicator lights. Maximum output is achieved when all lights are on.

Note: This indicator does not show the actual chlorine reading in the pool. Use a test kit or take a water sample to a pool shop to confirm the Free Chlorine reading of the pool water.

During polarity reversal (self cleaning function) the yellow light will flash for a few minutes indicating no chlorine output during this time.

### Super Chlorinate

The **SUPER CHLORINATE** button (7) is used to rapidly add chlorine to the pool. When pressed, the chlorine output settings are temporarily overridden and the system runs for approximately 24 hours with increased chlorine production.

The green **Super Chlorinate** indicator (2) lights when the super chlorinate function is active. Normal output settings resume when the super chlorinate period ends. To disable the function, press the SUPER CHLORINATE button a second time.

## Add Salt Indicator

The **Add Salt** light (3) may come on at any salt level between 3000 ppm and 4000 ppm depending on water temperature. This is not a fault but a precaution to ensure the salt level is never too low. Scale build-up on the electrodes can also cause the light to come on, indicating manual cleaning is required. When the light is on the chlorine output may not reach maximum. Once the Add Salt condition is resolved, the output will function properly again.

**Note:** Operating the DuoClear system at reduced salt levels may shorten the life of the cell.

## No Flow Indicator

The red **No Flow Indicator** (4) signals insufficient flow through the unit. Chlorine production stops until proper flow is restored.

## ON/OFF Button

The **ON/OFF** button (8) manually switches the DuoClear system ON and OFF. Operation of the ON/OFF button does not change the pool timer settings.

## Nature2 Cartridge

The DuoClear Nature2 cartridge lasts six months from the date of installation. The **Nature2 Cartridge Indicator** (5) reflects the life of the cartridge. When the cartridge is installed and started, press the **NATURE<sup>2</sup> RESET** button (9) to start the Nature<sup>2</sup> Timer. The indicator, which consists of four lights, displays three lights - two green, one yellow. As the timer counts down, these lights progressively go out and the fourth, a red light comes on and flashes indicating the the cartridge needs to be replaced.

**IMPORTANT: If the cartridge is not replaced promptly the pool will not be sanitized properly by the chlorination alone, even at full output.**

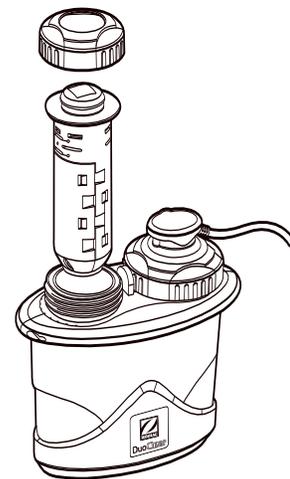
The **NATURE<sup>2</sup> RESET** button is used only at startup and whenever the Nature2 cartridge is replaced.

## Startup Procedures

Before starting the DuoClear system the required amount of salt (based on pool size) must be added to the pool. (See Salt Requirements chart in **Maintenance**).

**Note:** On new plaster pools, wait 4 weeks before adding salt. During this time, unplug the DuoClear output cable and manually chlorinate the pool.

1. Make sure pool is clean and pool water is properly balanced.
2. Install the DuoClear cartridge.
3. Manually shock the pool water with chlorine (sodium hypochlorite) to activate the cartridge.
4. Set the CHLORINE OUTPUT to maximum.
5. Press the NATURE<sup>2</sup> RESET button to activate the cartridge timer.
6. Run the system for either 4 days, 24 hours a day or 14 days, 6 hours a day, maintaining a chlorine level of 1-3 ppm throughout. An initial 24-hour runtime is needed to fully charge the Nature<sup>2</sup> Timer battery.
7. Gradually reduce the chlorine output setting the until free chlorine level is 0.5 - 1.0 ppm. **Note:** Minimum run time is 6 hours per day.



When switched on for the first time, the DuoClear will go through an initialization sequence, indicated by the yellow light being illuminated. After a short period the light will switch off and the system will begin normal operation.

The chlorinator defaults to the 'zero output' state. The user can then select the desired output level. **Start the operation of the DuoClear at maximum output.**

After initial startup, the micro-processor in the DuoClear retains the chlorine output and super chlorinate settings, and the polarity reversal time in memory when the unit is turned off, unless the setting was changed less than one minute before turning off.

## Operating Tips

- **Run the filtration and chlorination system for at least 6 to 8 hrs per day.**

During very hot weather it may be necessary to run the system for additional hours. In winter, where pools remain open, run the filtration system for about 4 hours per day. Shorter periods will help lengthen the life of the cell electrodes.

- **Maintain the free chlorine residual in the pool at 0.5 - 1.0 ppm.**

Increasing the daily operating period of the system increases the free chlorine reading, and a shorter operating period reduces the chlorine reading. Likewise, operating the chlorinator at maximum output will produce a higher chlorine reading than operating the chlorinator at a lower setting.

- **Maintain chlorine stabilizer (cyanuric acid) level between 40-100 ppm.**

Specific requirements will vary depending on the regional climate. Chlorine stabilizer helps to keep a satisfactory free chlorine reading in hot sunny climates. Extremely hot and sunny climates will require readings at the higher end of the range. Refer to Stabilizer Requirements chart in **Maintenance**.

- **It is absolutely essential that the pH of the pool be maintained in the range of 7.2 - 7.8.**

Regularly test or have a pool professional test the pH level in the pool. The effectiveness of chlorine as a sanitizer is significantly reduced as the pH rises. At a pH of 8.0, nearly all of the chlorine being added to the pool is wasted, and it is almost impossible to maintain a satisfactory free chlorine reading. Additionally, pH readings at 8.0 and higher increase scale formation which may require manual cleaning of the cell.

- **Perform regular maintenance checks as outlined in the *Maintenance* section.**

# Maintenance

## Regular Maintenance Checks

### Weekly:

- Test the free chlorine.
- Test the pH of the water. Adjust if necessary.
- Check the pressure gauge on the pool filter to see if backwashing is necessary.

### Monthly:

- Check the salt concentration of the pool and adjust if necessary.
- Test for total alkalinity. Adjust if necessary.
- Test for chlorine stabilizer reading. Adjust if necessary.
- Visually inspect the DuoClear unit and remove any debris that may have passed through the filter and lodged in the vessel. Check the electrode for calcium build-up and manually clean as needed. Take care not to scratch or bend the electrode.

## Tips On Water Chemistry

### How to Adjust pH

A pH range of 7.2 – 7.8 is ideal for maximum comfort and chlorine efficacy. **Always adjust total alkalinity before adjusting pH.**

Low pH (acidic water) leads to stinging eyes and corrosion of open metal fittings. Raise the pH by adding sodium bicarbonate or soda ash. Consult your pool professional regarding which chemical is best for your situation and the proper amount to use. Check the pH after 4 hours of circulation, adjusting as necessary to achieve the proper range.

High pH (alkaline water) leads to clouding of the water and reduces the amount of active chlorine. This means algae and germs can grow. Lower the pH by adding muriatic acid to the pool water. The acid demand indicated by your 4-in-1 test kit will show the amount of acid to use.

If the pH remains inconsistent, check your total alkalinity.

### Total alkalinity affects pH

Total alkalinity is a measure of the alkaline chemicals in your pool water (e.g. bicarbonates, carbonates, and hydroxides). It can be thought of as the buffering system necessary to control pH. Low alkalinity can allow pH to fluctuate or drift rapidly in one direction. The pH will be difficult to maintain and staining of pool surfaces may occur when total alkalinity is too low.

Total alkalinity should be in the range of 80 – 150 ppm.

To raise total alkalinity, add pH buffer (sodium bicarbonate) at the rate shown in the manufacturer's instructions to achieve a reading in the 80 – 150 ppm range. Generally, 1.5 lbs. of sodium bicarbonate raises 10,000 gallons of pool water by 10 ppm.

To lower the total alkalinity, use muriatic acid. The acid demand chart in your 4-in-1 test kit will indicate the necessary amount to add. Adjust as needed until the reading (taken at least 24 hours later) is in the 80 – 150 ppm range.

## Use of Algaecides and Phosphate Removers

Algaecides may be used in conjunction with a DuoClear system but are usually not necessary. Use only ammonia based or poly-quat algaecides. **Do not use copper or silver-based algaecides as it will void the Nature<sup>2</sup> non-stain guarantee.**

Phosphate removers can also be used with a DuoClear system and may be helpful in high phosphate regions where algae growth is a problem. High phosphate levels will cause chlorine destruction. Contact a local pool professional for phosphate testing and removal.

The chlorine residual level, and silver and copper level delivered by the DuoClear system is the best defense against algae and is usually all that is necessary. If algae is observed, however, brush spot thoroughly, adjust pH, super-chlorinate with your DuoClear system or manually shock the pool water with either liquid or granular chlorine. **With extreme algae conditions, manually shocking the pool is the best option.** A chlorine residual should be measurable within 24 hours. If not, repeat shock treatment. After shocking, check to ensure that the DuoClear system is maintaining a residual chlorine level to prevent future algae growth.

**Note:** Overuse of algaecides can lead to a reduction in chlorine residual because algaecides can negatively react with the chlorine produced by the DuoClear system. When using algaecides, always follow manufacturer's instructions and adjust the output of the DuoClear system to maintain a residual chlorine level.

## Use of Sequestering Agents

In some areas the calcium hardness of the source water may be unusually high. High calcium hardness can contribute to scale formation in the pool. Sequestering agents may help to prevent this by keeping minerals in solution. Consult a pool professional about the use of sequestering agents.

## Adding Salt to the Pool

Salt is lost when water is splashed out of the pool and during backwash, not through evaporation. Adding fresh water to the pool and rainfall can also dilute the salt concentration. To maintain an optimum concentration, salt may need to be added from time to time. Always test the salt level before adding salt.

**Test the salt level at start-up or whenever the ADD SALT light comes on. The light may switch on if the salt level is low, the water temperature is below 65° or if the cell is badly scaled.**

The salt concentration should normally be around 4000 ppm. Never allow it to fall below 3000 ppm, as this can reduce the life of the electrode.

**IMPORTANT: To avoid damage to your Clearwater chlorinator, never allow salt level to exceed 13,000 ppm. Other components of your pool equipment may be damaged if the salt level is kept above 6000 ppm. Refer to the manufacturer's operation manual for warranty exclusions.**

To determine the salt level in the pool water.

- Capture water from elbow depth in a container.
- Use a salt test strip or test meter to test the sample, or have it tested by a pool professional.

## How Much Salt to Add

Regular use of sodium hypochlorite (liquid chlorine) creates residual salt within the pool and may bring the salt level close to the required 4000 ppm concentration.

Generally, in a pool of approximately 13,200 gallons, one (1) 50 lb. bag of salt will increase the salt concentration by 500 ppm. In a new pool (where there is no salt residual) of approximately 13,200 gallons, eight (8) 50 lb bags of salt are required to reach a 4000 ppm concentration. For exact requirements, refer to the chart below.

### Salt Requirements

Pounds and (KG) of salt needed to raise level to 4000 PPM

Current Salt Level ppm	Gallons and (Liters) of Pool/Spa Water							
	10,000 (37854)	15,000 (56781)	20,000 (75708)	25,000 (94635)	30,000 (113562)	35,000 (132489)	40,000 (151416)	45,000 (170344)
0	334 (151)	501 (227)	668 (303)	835 (379)	1001 (454)	1168 (530)	1335 (606)	1502 (681)
250	313 (142)	469 (213)	626 (284)	782 (355)	939 (426)	1095 (497)	1252 (568)	1408 (639)
500	292 (132)	438 (199)	584 (265)	730 (331)	876 (397)	1022 (464)	1168 (530)	1314 (596)
750	271 (123)	407 (185)	542 (246)	678 (308)	814 (369)	949 (431)	1085 (492)	1221 (554)
1000	250 (114)	376 (170)	501 (227)	626 (284)	751 (341)	876 (397)	1001 (454)	1127 (511)
1250	229 (104)	344 (156)	459 (208)	574 (260)	688 (312)	803 (364)	918 (416)	1033 (468)
1500	209 (95)	313 (142)	417 (189)	522 (237)	626 (284)	730 (331)	835 (379)	939 (426)
1750	188 (85)	282 (128)	376 (170)	469 (213)	563 (256)	657 (298)	751 (341)	845 (383)
2000	167 (76)	250 (114)	334 (151)	417 (189)	501 (227)	584 (265)	668 (303)	751 (341)
2250	146 (66)	219 (99)	292 (132)	365 (166)	438 (199)	511 (232)	584 (265)	657 (298)
2500	125 (57)	188 (85)	250 (114)	313 (142)	376 (170)	438 (199)	501 (227)	563 (256)
2750	104 (47)	156 (71)	209 (95)	261 (118)	313 (142)	365 (166)	417 (189)	469 (213)
3000	83 (38)	125 (57)	167 (76)	209 (95)	250 (114)	292 (132)	334 (151)	376 (170)
3250	63 (28)	94 (43)	125 (57)	156 (71)	188 (85)	219 (99)	250 (114)	282 (128)
3500	42 (19)	63 (28)	83 (38)	104 (47)	125 (57)	146 (66)	167 (76)	188 (85)
3750	21 (9)	31 (14)	42 (19)	52 (24)	63 (28)	73 (33)	83 (38)	94 (43)
4000	Optimum	Optimum	Optimum	Optimum	Optimum	Optimum	Optimum	Optimum

## How to Add Salt

Only 99.5% pure refined, non-iodized salt (sodium chloride) should be used with the DuoClear system. Do not use salt containing YPS (yellow prussate of soda) as it may stain the plaster finish.

- Disperse salt evenly around the perimeter of the pool, brushing it until it dissolves. **Do not add salt to skimmer.**
- Run filter for 4-6 hours.
- Allow 24 hours for salt to fully dissolve. If the ADD SALT light is on after 24 hours, test salt level and add necessary salt to obtain a 4000 ppm concentration.

## Adding Stabilizer (Cyanuric Acid) to the Pool

The recommended stabilizer level is between 40-100 ppm and will vary dependent on geographic climate. This chart is for general reference only. Consult a local pool professional for the optimum level and always add stabilizer according to manufacturer's instructions.

### Stabilizer Requirements

Pounds and (KG) of stabilizer (Cyanuric Acid)  
needed to raise level to 80 PPM

Current CYA Level ppm	Gallons and (Liters) of Pool/Spa Water							
	10,000 (37854)	15,000 (56781)	20,000 (75708)	25,000 (94635)	30,000 (113562)	35,000 (132489)	40,000 (151416)	45,000 (170344)
0	6.7 (3.0)	10.0 (4.5)	13.4 (6.1)	16.7 (7.6)	20.0 (9.1)	23.4 (10.6)	26.7 (12.1)	30.0 (13.6)
10	5.8 (2.6)	8.8 (4.0)	11.7 (5.3)	14.6 (6.6)	17.5 (7.9)	20.4 (9.3)	23.4 (10.6)	26.3 (11.9)
20	5.0 (2.3)	7.5 (3.4)	10.0 (4.5)	12.5 (5.7)	15.0 (6.8)	17.5 (7.9)	20.0 (9.1)	22.5 (10.2)
30	4.2 (1.9)	6.3 (2.8)	8.3 (3.8)	10.4 (4.7)	12.5 (5.7)	14.6 (6.6)	16.7 (7.6)	18.8 (8.5)
40	3.3 (1.5)	5.0 (2.3)	6.7 (3.0)	8.3 (3.8)	10.0 (4.5)	11.7 (5.3)	13.4 (6.1)	15.0 (6.8)
50	2.5 (1.1)	3.8 (1.7)	5.0 (2.3)	6.3 (2.8)	7.5 (3.4)	8.8 (4.0)	10.0 (4.5)	11.3 (5.1)
60	1.7 (0.8)	2.5 (1.1)	3.3 (1.5)	4.2 (1.9)	5.0 (2.3)	5.8 (2.6)	6.7 (3.0)	7.5 (3.4)
70	0.8 (0.4)	1.3 (0.6)	1.7 (0.8)	2.1 (0.9)	2.5 (1.1)	2.9 (1.3)	3.3 (1.5)	3.8 (1.7)
80	Optimum	Optimum	Optimum	Optimum	Optimum	Optimum	Optimum	Optimum

## Replacing the DuoClear Cartridge

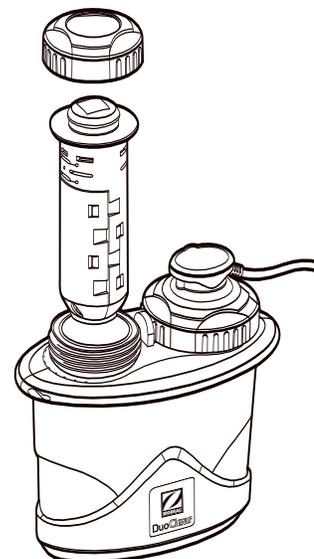
A DuoClear cartridge lasts six months. Replace the cartridge as soon as the DuoClear Nature2 Cartridge life indicator light turns red and flashes.

**WARNING: As the DuoClear system requires sufficient residual silver in the system to sanitize effectively with the low chlorine levels, the pool will not be sanitized sufficiently if the DuoClear system is operated without replacing the DuoClear Nature2 cartridge when indicated.**

**Always turn pump off prior to removing any part of the DuoClear system. The pump/filter system is operated under pressure and pressure must be released before you begin. Open the air relief valve on the pool filter to release the pressure in the system.**

To replace the cartridge:

1. Turn off the pool pump and release pressure.
2. If appropriate, close valves between the filter and pool to prevent draining the pool.
3. Unscrew cartridge retaining ring and remove cartridge.
4. Install the new cartridge.
5. Lightly coat o-ring with silicone lubricant and ensure it is seated.
6. Tighten the cartridge retaining ring.
7. Open any valves that were closed to isolate the DuoClear vessel.
8. Restart your pool's pump and filtration system. Check for leaks.
9. Follow the start up procedures under **Operation**.



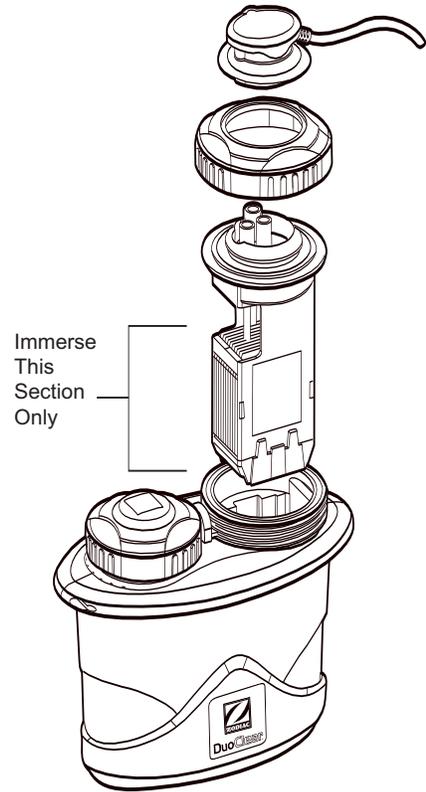
## Cleaning the Electrode

Depending upon water chemistry, occasional manual electrode cleaning may be necessary.

1. Turn off the filter pump and DuoClear, and open the air relief valve to release the pressure in the system. Close necessary valves.
2. Unplug the electrode connector from the vessel.
3. Unscrew the retaining ring and remove the electrode.
4. Mix a cleaning solution [one (1) part hydrochloric (muriatic) acid to ten (10) parts water] in a suitable plastic container. To avoid splash, always add muriatic acid to water rather than water to acid. **Solutions stronger than 1:10 will damage electrode and void warranty.**
5. Immerse electrode only until plates are covered. **Do not submerge the entire electrode.**
6. Allow the cleaning solution to sizzle for approximately 5 minutes. If scrapping is necessary, use a soft object - never metal.

When the electrode is clean, pour cleaning solution into a bucket of water. Solution can then be disposed of down a drain. Never mix chemicals together. Always rinse bucket and drain area with plenty of fresh water.

7. Rinse electrode plates and o-ring with clean water. Coat o-ring lightly with silicone lubricant (just enough to make it shiny).
9. Fit electrode into vessel, ensure o-ring is seated properly and tighten the locking ring.
10. Reset valves. Turn pump and DuoClear on, and confirm chlorine output and settings.



## Resetting the Fuse

A resettable fuse is located above the power cord in the middle of the DuoClear power pack. If the fuse is blown (popped, with white area exposed):

- Turn off all power to power pack.
- Locate fuse and push to reset.
- Restore power to unit.

## Preventing Damage Caused by Insects

The case of the power pack has small vents to allow internal components to remain cool in hot weather. Sometimes small insects enter the case of the power pack causing damage to the internal electrical components. To avoid this, spray insect repellent on surfaces around the power pack.

# Troubleshooting

If you experience a problem with your DuoClear, please follow the troubleshooting steps below to restore performance. Any type of electrical troubleshooting should be performed by a qualified pool professional or certified electrician. If further assistance is required, contact Zodiac Customer Service at 800-822-7933. Please have your serial number and date of purchase available when you call.

<b>Problem</b>	<b>Solution</b>
Water looks clean but there is no chlorine residual reading.	<ul style="list-style-type: none"><li>• Confirm that pool water is balanced, total alkalinity is 80 - 150 ppm and pH within 7.2 - 7.8 range.</li><li>• Inspect cell for calcium build-up, manually clean if necessary.</li><li>• Check stabilizer (cyanuric acid) levels, 40-100 ppm.</li><li>• Increase chlorine output setting.</li><li>• Increase DuoClear run time.</li><li>• Verify the pump/filtration system are clean and operating properly.</li><li>• Test for salt concentration and add as needed.</li><li>• Manually shock the pool.</li></ul>
Pool is green, walls are slimy or a chlorine odor is evident.	Backwash the filter, then manually shock the pool to destroy algae, bacteria and other contaminants. After shock treatment, adjust pH to 7.2 - 7.8 ppm and check for 1 - 3 ppm chlorine level. Push SUPER CHLORINATE on DuoClear and run pool pump for 24 hours.
Water causing eye and/or skin irritation.	Adjust water to proper alkalinity 80-150 ppm. Then adjust pH to 7.2 - 7.8 ppm.
Scale formation on pool equipment.	<ul style="list-style-type: none"><li>• Adjust water to proper pH, 7.2 - 7.8 ppm.</li><li>• Check calcium hardness. Dilute pool with fresh water. Consult pool professional about sequestering agent.</li></ul>
CHLORINE OUTPUT will not reach maximum.	<ul style="list-style-type: none"><li>• If yellow light in Chlorine Output indicator is flashing, the unit is reversing polarity to clean electrodes. Wait approximately 5 min. and output should return to normal.</li><li>• If ADD SALT light is also on, test water for salt concentration and add salt if necessary. (Water temperature below 65° may cause light to illuminate.)</li><li>• Inspect electrode for scale build-up, manually clean if necessary.</li><li>• Installers only: Verify that chlorinator is connected to 220V and incoming voltage is not low. Raising salt level can compensate for low voltage.</li></ul>
No Flow indicator is illuminated.	<ul style="list-style-type: none"><li>• Ensure pool pump is on and valves are open.</li><li>• Make sure pool pump and filter are clean.</li><li>• Verify that electrode cap is connected securely.</li></ul>

<b>Problem</b>	<b>Solution</b>
Chlorinator stops working, all lights off.	<ul style="list-style-type: none"> <li>• Confirm that pool pump is on.</li> <li>• Push the ON/OFF button. A yellow light in the Chlorine Output indicator window lights when the unit is ON.</li> <li>• Check fuse and reset if necessary.</li> </ul>
Chlorine level is too high	<ul style="list-style-type: none"> <li>• Use the CHLORINE OUTPUT button to reduce output setting. Retest chlorine daily until proper level is reached.</li> </ul> <p>If lowest setting continues to over chlorinate, reduce pump run time to 6 hrs daily. If excessive chlorine continues, the DuoClear is oversized for the pool.</p> <ul style="list-style-type: none"> <li>• Manually turn off unit.</li> </ul>

# DuoClear Limited Warranty

The limited warranties contained within this document are the only warranties given with your DuoClear system and supersede any prior warranties. All other warranties, expressed or implied, including the implied warranty of merchantability or the implied warranty of fitness for a particular purpose are hereby disclaimed. Our sole obligation under this warranty, and the purchaser's sole remedy, is limited to the repair or replacement of the DuoClear, or one of its parts. This DuoClear Limited Warranty applies to the original owner only.

## VESSEL AND ELECTRODE LIMITED WARRANTY

- The manufacturer warrants this DuoClear system to be free of defects in materials and workmanship for a period of one (1) year from the date of purchase\*.
- In addition to the one (1) year warranty, the manufacturer further warrants the power pack for an additional two (2) year period (parts only) \*\*.
- In addition to the one (1) year warranty, the manufacturer further warrants on a pro-rated basis the electrode (parts only)\*\*. (In the second year the electrode will be replaced for a payment of 33% of current list price; in the third year the cell electrode will be replaced for a payment of 66% of the current list price.)

\* If no proof of purchase date is supplied, the warranty period begins on the date of manufacturer as encoded on the product. \*\* The cost of field service calls and/or freight cost to return goods for repair are not covered by this warranty after the one (1) year unconditional period has expired.

## EXCLUSIONS FROM LIMITED WARRANTY

The DuoClear system is designed for residential use only and any commercial application voids all warranty. If the unit is used in any application other than as an in-ground swimming pool sanitizing system, the purchaser and/or end-user releases the manufacturer from any and all claims related to the use of the DuoClear system and agrees to indemnify the manufacturer from any claims related to improper or non-authorized use.

This warranty does not cover problems arising from whole or in part from purchaser's or user's negligence, misuse or abuse, improper maintenance or installation, accident, improper application, failure to follow all safety instructions or precautions, Acts of God, abnormal weather conditions, damage from plants or animals, and improper use of chemicals.

This warranty specifically excludes all incidental or consequential damages, except where state law requires them to be paid. This warranty gives you specific rights. You may have other rights that vary from state to state.

## TO SUBMIT A CLAIM

Report claims to Zodiac Pool Care, Inc. by calling 1-800-822-7933. Only the original purchaser may submit a claim under this limited warranty. All claims must be accompanied by an original purchase receipt.

For more information consult your pool care professional or call 1-800-822-7933.

Due to constant developments and improvements, specifications may change without notice.

## DISCLAIMER OF LIABILITY: SALT AND MATERIALS IN A POOL AND SPA

It is important to note that certain materials used in and around swimming pools and spas may not be compatible with chemicals commonly used to purify pool and spa water (e.g. acids, chlorine, salt, stabilizers, etc.).

Zodiac Pool Care, Inc. does not warrant or guarantee that the chlorinated water generated by the DuoClear will not damage or destroy certain types of plants, decking, coping and other materials in and around your pool and/or spa. Before selecting materials to be used around the pool and/or spa, evaluate all options to assess the compatibility of such materials with chemicals.

Some recommendations:

- Choose plants that can withstand splash out of pool water containing chlorine and/or salt, and other water purification chemicals.
- Use only high-grade, quality stainless steel metal components in and around the pool area.
- Select masonry products carefully. Porosity and hardness of natural stones varies greatly. Consult your builder/stone contractor for the best choice of stone materials around your pool or spa.
- Seal all masonry products. Even natural stone, especially when used outdoors, should be sealed to prevent weathering, staining, and premature degradation. Consult with your stone/deck contractor about the proper sealant for the masonry products selected. For the optimal results, sealers should be reapplied on a regular basis. Reapply the protective sealer on a schedule per the manufacturer's instructions.

# DuoClear Lifetime Electrode Service Plan Program

Sign up for the Lifetime Electrode Service Plan and have the peace of mind of ongoing maintenance of your Zodiac DuoClear electrode.

## To enjoy the benefits of this program:

Complete and mail the Plan Registration Form below within 30 days of the date of purchase to receive your Lifetime Electrode Service Plan Program booklet.

Then follow the requirements of the plan:

- Replace your DuoClear Cartridge every six months and reset the reminder button on the controller.
- Complete a remittance slip from the Plan booklet and send it to Zodiac along with the cartridge box UPC code and a copy of your DuoClear Cartridge proof-of-purchase receipt (keep original receipts with your service plan booklet).

Zodiac will replace defective or malfunctioning electrodes for as long as you own your unit.

The Zodiac DuoClear Lifetime Electrode Service Plan replacement policy applies strictly to the DuoClear electrode. The plan is not transferable and applies to the original purchaser only. If the Plan requirements are not met by participant, enrollment in the Plan will be cancelled automatically.

## To make a claim:

- Call Customer Service at 1-800-822-7933 to get an RMA authorization.
- Zodiac will replace defective or malfunctioning electrodes once the old electrode is received and verified. The faulty electrode must be returned to Zodiac. Consumer is responsible for postage cost to Zodiac; Zodiac pays return postage.

Cut out and mail the registration form to:

**DuoClear Lifetime Service Plan Remittance  
Zodiac Pool Care, Inc.  
2620 Commerce Way  
Vista, CA 92081**



# ZODIAC

## DUOCLEAR LIFETIME ELECTRODE SERVICE PLAN

This certificate must be completed and returned within 30 days of date of purchase.

I certify that my Zodiac DuoClear (Model Number) \_\_\_\_\_ was purchased on:

\_\_\_\_\_ and that I have read and understand the terms of the

Day Month Year

Zodiac DuoClear Lifetime Electrode Service Plan provided by Zodiac Pool Care, Inc.

YES, sign me up for the DuoClear Lifetime Electrode Service Plan.

I will follow the terms as described in the program terms in the Owner's Manual. \_\_\_\_\_

Customer Signature

Date

Consumer Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone Number: H (\_\_\_\_) \_\_\_\_\_ Email: \_\_\_\_\_

W (\_\_\_\_) \_\_\_\_\_ Mobile: \_\_\_\_\_

Purchased From: Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Serial No. of DuoClear Unit



**ZODIAC POOL CARE, INC.**  
2620 Commerce Way  
Vista, CA 92081  
Tel: 800-822-7933  
Fax: 877-327-1403  
[www.zodiacpoolcare.com](http://www.zodiacpoolcare.com)