



# ZODIAC

## DuoClear™

Complete Inground Pool Sanitizing System

### *Installation and Operator's Manual*



**To the Builder: LEAVE THIS MANUAL WITH POOL OWNER**  
**To the Pool Owner: SAVE THIS MANUAL**

## SAFETY INSTRUCTIONS

### Keep these instructions in a handy location

Please take a moment to read through the entire manual before installing the new chlorinator. The chlorinator must be installed and operated as specified.

# IMPORTANT SAFETY INSTRUCTIONS. READ AND FOLLOW ALL INSTRUCTIONS. SAVE 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.

## SAFETY INSTRUCTIONS

### 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, 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 bypassed the pool filter.

# Zodiac, *Mastering the Elements*

Renowned worldwide for the quality and reliability of its products in the aeronautical and marine sectors, Zodiac has now brought its expertise to swimming pools, to bring you a full range of pools, automatic pool cleaners and water treatment systems.

Backed by Nature<sup>2</sup><sup>®</sup> and Clearwater<sup>®</sup> technology, expertise and experience, Zodiac brings you the reassurance of top quality equipment in terms of both design and performance.

A real guarantee of efficiency and peace of mind!

*Dear Pool Owner,*

Congratulations on purchasing a Zodiac DuoClear™ Complete Inground Pool Sanitizing System. DuoClear will help you and your family to benefit from greater enjoyment of your pool.

There are two major advantages in owning a DuoClear system. First you will find that the pool will be easier to maintain, secondly you will notice the clarity and feel the softness of the water.

Please take the time to read through your DuoClear Owner's Manual. It is set out in such a way that you can see the simple steps to keep your pool in pristine condition.

This owner's manual will provide you with useful information on how to operate the DuoClear system most efficiently and help you to 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.

Don't forget that your DuoClear system is backed by a comprehensive warranty. The DuoClear warranty is an expression of the confidence that Zodiac Pool Care, Inc. has in its products, and is your assurance of prompt and expert after-sales service by professional technicians. If you require any additional information talk to your pool professional, or telephone Zodiac Pool Care, Inc. at 1-888-537-6657.

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



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## DUOCLEAR™ PRODUCT SPECIFICATIONS

**Salt Level:** 4000 ppm

**Maximum salt level:** 13,000 ppm

**Minimum flow rate:** 12 gallons/minute

**Plumbing:** 2" Schedule 40 PVC

**Maximum water temperature  
through the cell:** 104° F

**Maximum operating pressure:** 45 psi

**Power requirements:** 220 – 240 VAC  
2 amp draw

**Vessel dimensions:** 8 1/4" x 3" x 3 1/4"  
**Power pack dimensions:** 7 5/8" x 14 3/4" x 4 7/8"

**Electrode warranty:** 3 years limited  
**Power pack warranty:** 3 years limited

**The DuoClear system should be installed  
on residential pools only.**

**Salt level in your Duoclear pool should  
never exceed 13,000 ppm.**

# DUOCLEAR™ SYSTEM INSTALLATION

The Zodiac DuoClear Inground Pool Sanitizing System must be installed by a qualified swimming pool professional or certified electrician. If you need assistance in finding a qualified installer, please contact our technical service department at 1-888-537-6657.

## PLUMBING THE SANITIZING SYSTEM

Your DuoClear Inground Pool Sanitizing System must be plumbed level, ports down as the last piece of pool equipment on the return line and located within 6' of the power pack. There are no height restrictions or requirements.

**It can only be plumbed one way. The inlet and outlet are labeled.** (The inlet side is the side with the DuoClear Nature<sup>2</sup> cartridge, the outlet side is the side with the chlorinating electrode.)

The ports in the bottom of the sanitizing system are 2" slip ports. PVC reducing bushings may be used to reduce the port size. Any standard PVC cement may be used. Allow adequate drying time before pressurizing the system.

**DO NOT INSTALL AN ISOLATION VALVE ON THE DISCHARGE SIDE OF THE SANITIZING SYSTEM.** If a valve is required, due to a flooded plumbing situation, use a one-way check valve. If the sanitizer is plumbed on by-pass, install the isolation valve on the inlet side only.

The DuoClear Sanitizing System is available in three different sizes to sanitize pools up to 45,000 gallons. Do not use multiple units in one pool.

## INSTALLING THE POWER PACK

The power pack must be located a minimum of 10 feet from the inside wall of the pool. Use the anchors provided to mount the bracket onto the wall. If the power pack is to be mounted onto a post, a waterproof backing of at least 14" wide X 13" high must be used. Do not enclose the power pack in any box. Do not install it above any heat source. Hang the power pack on the bracket. If wiring to a controller, consult the controller manual for additional instructions.

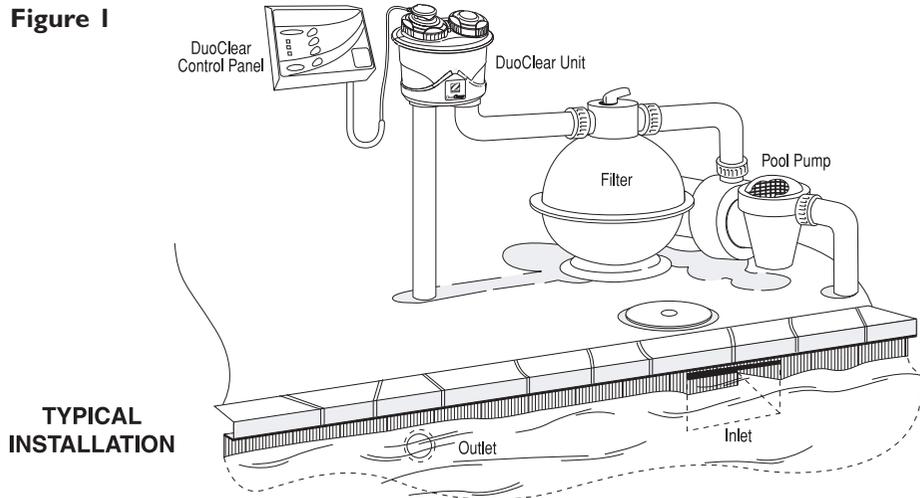
The power pack is 220-240 VAC ONLY. It wires to the load side of a pool timer or the pump circuit of a controller so that when the pool pump comes on the

# DUOCLEAR™ SYSTEM INSTALLATION

DuoClear Inground Pool Sanitizing System comes on. The green ground wire must be attached to the grounding screw or grounding bar.

Please insure the electrode cap is firmly pressed onto the electrode connectors.

**Figure 1**



When the pump and filtration system is running, water that has passed through the pool filter is then passed through the DuoClear system.

By using the DuoClear System, you only need to maintain a chlorine level of 0.5 - 1.0 parts per million (PPM) to keep your pool sanitized.

## **IMPORTANT**

To ensure your DuoClear system works at maximum efficiency, regularly check and maintain the water chemistry of your pool.

## HOW YOUR DUOCLEAR WORKS

In simple, non-technical terms, the chlorine, silver and copper combination destroys bacteria and algae, and in doing this the chlorine reverts back to the dissolved salt ion, chloride.

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

### IMPORTANT

To ensure your DuoClear system works at maximum efficiency, regularly check and maintain the water chemistry of your pool.

#### Preferred Water Chemistry Readings

Ideal Salt concentration	4,000 ppm
pH	7.4 to 7.8
Chlorine stabilizer (Cyanuric acid) (Up to 100ppm in tropical climates)	40 to 80 ppm
Total alkalinity	80 to 150 ppm
Calcium hardness	200 to 400 ppm
Free chlorine	0.5 to 1.0 ppm

## DUOCLEAR START UP PROCESS

**Before starting up the DuoClear system you must add the required amount of salt for your sized pool. (See chart on page 17).**

**NOTE:** We recommend waiting 2-4 weeks before adding salt to a newly plastered pool.

1. Install the complete DuoClear system.
2. Follow “Start-Up” instructions in your DuoClear Cartridge Owner’s Manual.
3. Set the output level to maximum.
4. Press the “**Nature<sup>2</sup> Reset**” button to activate the cartridge timer, which will let you know when to replace the DuoClear Nature<sup>2</sup> cartridge.
5. After four days of running the system 24 hours a day or fourteen days of running the system 6 hours a day, gradually reduce the system to maintain the chlorine level at about 0.5 ppm.

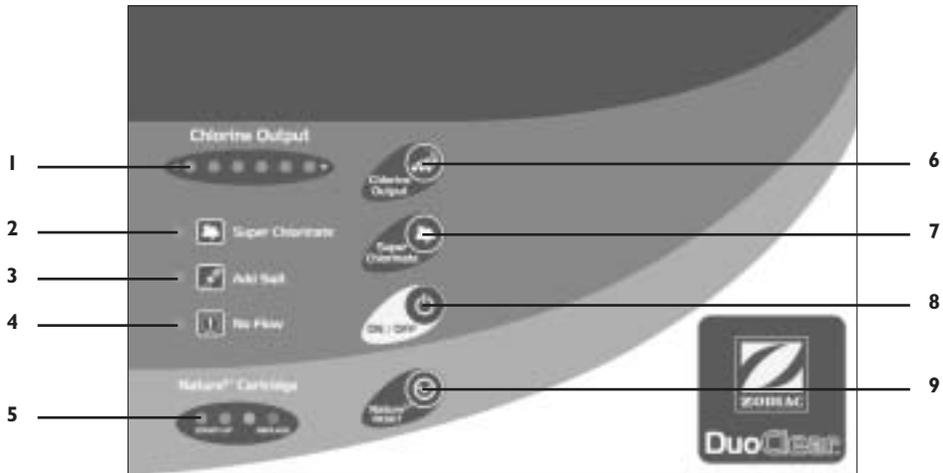
**NOTE:** Minimum run time 6 hours per day.

The system has a set of four lights which indicate the life of the DuoClear Nature<sup>2</sup> cartridge. The “Start up” lights are 2 green and 1 yellow. Over six months the 2 green lights and yellow light gradually go out, and then a red light begins to flash. When this red light flashes you must replace the DuoClear Nature<sup>2</sup> cartridge. **(If the cartridge is not replaced promptly the pool will not be sanitized properly by the chlorination alone, even at full output.)**

The daily chlorine production of the DuoClear is controlled by the number of hours the DuoClear and filtration system is ON, as well as the setting of the chlorine output control.

## CONTROL PANEL FUNCTION FEATURES

Figure 2



The “**Chlorine Output**” (6) controls the amount of chlorine generated by the electrode. Next to it are 6 indicator lights, (See power panel illustration above) 1 yellow (minimum output) and 5 green indicator lights (1). Maximum chlorine output is achieved when all lights are on.

Activating the “**Super Chlorinate**” (7) function increases the chlorine output beyond the “6 lights on” level, for the next 24 hours of active running time. This is used when the pool needs extra sanitation after heavy rain, hot weather or heavy bather loads. The adjacent green indicator light (2) will be on when this function is operating.

“**Add Salt**” (3) indicator – green or yellow light

“**No Flow**” (4) indicator – red light – chlorine production stopped until proper flow is resumed

“**ON/OFF**” (8) button switches the DuoClear system ON and OFF. Operation of the **ON/OFF** button will not change the pool timer settings.

The “**Nature<sup>2</sup> Reset**” (9) button is used only at start-up of your new system, or whenever the DuoClear Nature<sup>2</sup> cartridge is replaced.

## CONTROL PANEL FUNCTION FEATURES

DuoClear is designed to require minimum operator maintenance once it is set. The reverse polarity technology minimizes scaling of your salt water electrode.

Power to unit is controlled by your pool timer or a controller.

The chlorinator functions may only be set when the filtration system is operating.

To use the Super Chlorinate mode effectively, the full filtration system must be run continuously for 24 hours.

### **BACKUP BATTERY**

DuoClear is fitted with a long life rechargeable battery. If the power is removed, it will retain the Time-Switch settings, Output power settings, Super Chlorinate settings, and the Nature<sup>2</sup> indicator settings.

### Setting the “Chlorine Output”(1)

Chlorine production is controlled by both the number of hours your pool pump runs and by controlling the “Chlorine Output” (1). Repeated pushing of the “Chlorine Output” (6) button increases the chlorine production one step at a time and the number of “Chlorine Output” indicator lights showing, until maximum is reached (one yellow and five green lights). An extra push of the “Chlorine Output” button resets the output to minimum – one yellow light.

**NOTE:** This setting does not show the actual chlorine reading in the pool. Use of a test kit is required to confirm the Free Chlorine reading of the pool water. (Or take a water sample to your pool shop for testing.)

During polarity reversal the yellow light flashes. The yellow (minimum output) light will flash for a few minutes when the electrode polarity reverses (Self cleaning function) indicating no output during this time.

### “Super Chlorinate” (2)

The Super Chlorinate (2) function is used to rapidly add chlorine to the pool. When pressed, the chlorine output settings are temporarily over-ridden and the chlorinator is set to run for approx. 24 hours at increased chlorine production. A green light will indicate this is functioning. To disable, press the Super Chlorinate (7) button a second time and the light will go off. Normal output settings resume at the conclusion of the pre-set Super Chlorinate period. (See Troubleshooting parts B & C for details regarding when the Super Chlorinate function should be used.)

### “Add Salt” (3)

The “Add Salt” light may come on at any salt level between 3000 ppm and 4000 ppm depending on mains voltage and water temperature. This is not a fault but a precaution to ensure the salt level is never too low. (See “Salt: When And How To Add”.)

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

### **“No Flow” (4)**

The “No Flow” light will come on if there is insufficient water flow in the cell, usually caused by the pump not running or the filter needing to be cleaned. The “Chlorine Output” function will turn off at this time. (See “Troubleshooting”.) “Chlorine Output” indicator lights will also turn off at this time.

### **“DuoClear Nature<sup>2</sup> Cartridge” Indicator Lights (5)**

A series of 4 lights indicate life of the DuoClear Nature<sup>2</sup> Cartridge. When the DuoClear Nature<sup>2</sup> Cartridge is first installed and started the “Reset” (9) button should be pressed and the Nature<sup>2</sup> Cartridge (5) will display 3 indicator lights - 2 green, 1 yellow. As the timer counts down, the 2 green lights, then the yellow light will progressively go out to bring a red light on and flashing. This indicates the DuoClear Nature<sup>2</sup> cartridge needs to be replaced. The DuoClear Nature<sup>2</sup> cartridge has a six month life.

### **All Lights OFF**

If all the lights are OFF it indicates that the DuoClear system is turned off. Check to see if the pool time clock is ON or OFF, or if the mains power is disconnected.

## Replacing the DuoClear Cartridge

A DuoClear cartridge lasts six months under normal operating conditions and should be replaced as soon as the DuoClear Nature<sup>2</sup> Cartridge life indicator light turns RED and flashes.

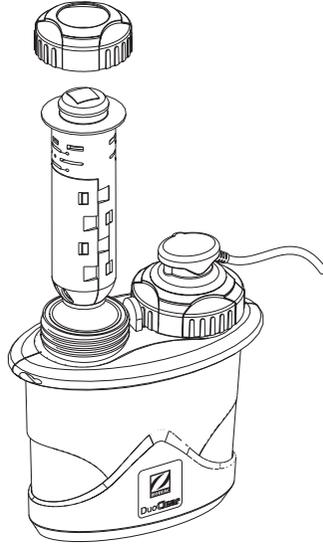
**NOTE:** Always turn pump off prior to installing or removing any DuoClear system. Your pump/filter system is operated under pressure and pressure must be released before you begin. Open the air relief valve on your pool filter to release the pressure in the system.

To replace the cartridge:

1. Turn off the pool pump and release the pressure in the system.
2. If appropriate, close any valves between the filter and pool to prevent draining the pool.
3. Unscrew the cartridge retaining ring and remove the cartridge.
4. Install the new cartridge and insure the O-ring is seated and lightly coated with silicone lubricant. Tighten the cartridge retaining ring.
5. Press the “Nature<sup>2</sup> Reset” button (9) on the power pack so that the three indicator lights (5) ( 2 green and 1 yellow) are on.
6. Open any valves that were closed to isolate the DuoClear vessel.
7. Restart your pool’s pump and filtration system. Check for leaks.
8. Follow the DuoClear cartridge start up procedures in the DuoClear Cartridge Owner’s Manual.

**NOTE:** 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 Nature<sup>2</sup> cartridge when indicated.

**Figure 3**



## How to clean your electrode cell

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

1. Switch off the filter pump and chlorinator, close necessary valves.

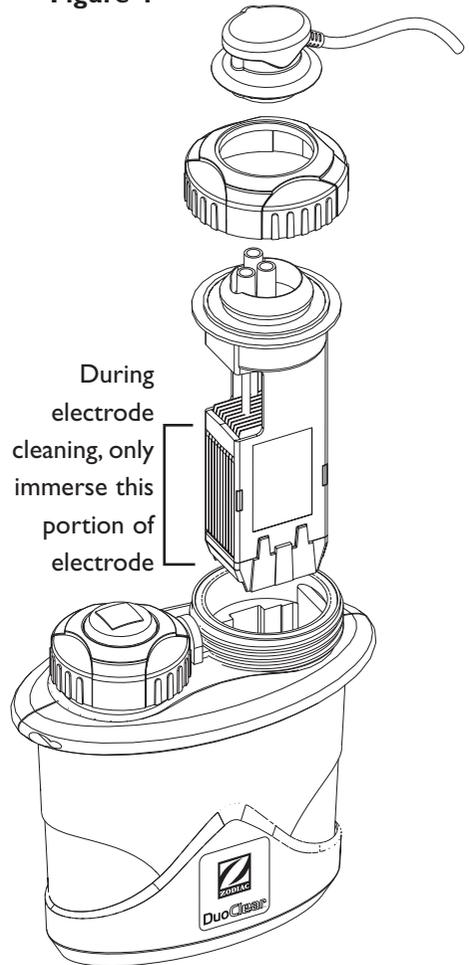
**NOTE:** Always turn pump off prior to installing or removing any DuoClear system. Your pump/filter system is operated under pressure and pressure must be released before you begin. Open the air relief valve on your pool filter to release the pressure in the system.

2. Unplug the Electrode connector from the DuoClear vessel.
3. Unscrew the Electrode retaining ring and remove the Electrode.
4. Look down into the Electrode bundle to see if there is scale on the plates.

**NOTE:** 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 into which they come in contact.

5. Mix cleaning solution in a suitable plastic vessel by adding one (1) part of Hydrochloric (muriatic) acid to ten (10) parts water. **Note: To avoid splash, always ADD MURIATIC ACID TO WATER rather than water to muriatic acid. Solutions stronger than 1:10 will damage electrode and void warranty.** Submerge only the plate of the electrode in the cleaning solution. See Figure 4. Allow the cleaning solution to dissolve the calcium deposits for approximately 5 minutes.

Figure 4



6. Repeat the procedure if necessary. Take care to avoid splashing the electrode terminals and other equipment with the acidic cleaning solution. Wash down any spills with plenty of fresh water. To neutralize acid cleaning solution, add baking soda (foaming will occur).
7. Rinse the electrode in clean water and reinstall the electrode into the vessel. Insure the O-ring is seated properly and coated lightly with silicone lubricant.
8. Replace the electrical connectors after drying and smearing lightly with silicone grease.
9. Reset valves and switches. Turn pump and chlorinator on.
10. Confirm chlorine output and settings on the power pack.

**Your DuoClear system has been designed with an electronic flow sensor. This device automatically switches the chlorinator “OFF” when water through the cell stops. To prevent cell damage and personal injury, do not in any way interfere with this system that has been designed for your protection.**

### **Damage caused by insects**

The case of the DuoClear power pack has small vents to allow internal components to remain cool in hot weather. Sometimes small insects may enter the case of the power pack, and this can cause damage to the internal electrical components. To avoid this, spray some insect repellent on surfaces around the power pack while the power is off.

### **A. Filtration and chlorination system operating periods**

Run your filtration and chlorination system for at least 6 to 8 hours per day in the swimming season.

During very hot weather it might be necessary to run the system for around 10 hours per day, but during winter if no bathing occurs, it is only necessary to run the filtration system for around 4 hours per day.

### **B. Chlorine output settings**

Commence operation of the DuoClear at maximum output. Add salt to the pool if the 'Add Salt' light is showing. Please see page 17 salt chart for proper salt addition.

### **C. Free (residual) chlorine reading**

The free chlorine residual in the pool as measured by test strips, test kits or pool shop should be around 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 system at maximum output will produce a higher chlorine reading.

### **D. Chlorine stabilizer (Cyanuric acid) level**

Make sure that the water has a satisfactory level of chlorine stabilizer (Cyanuric acid) reading between 40 – 80 ppm. (You need to take a water sample to your pool shop to measure this.) Chlorine stabilizer helps to keep a satisfactory free chlorine reading in hot sunny climates.

### E. pH readings

It is ABSOLUTELY ESSENTIAL that the pH of the pool be maintained in the range of 7.4 – 7.8. Regularly test or ask your pool shop to test the pH level. The effectiveness of chlorine as a sanitizer is significantly reduced as the pH rises. At a pH of 8.0, most all of the chlorine being added to the pool is wasted, and it will be almost impossible to maintain a satisfactory free chlorine reading.

### F. Regular maintenance checks

#### WEEKLY:

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

#### MONTHLY:

- Test the salt concentration of the pool (see “Salt: When And How To Add”).
- Test the total alkalinity. Adjust if necessary.
- Test the chlorine stabilizer reading. Adjust if necessary.
- Remove any debris that may have passed through the filter and lodged in the Electrode. Take care not to scratch or bend the Electrode (see “DuoClear Maintenance”).

### When to add salt

Add salt when indicated on the control panel. The light marked 'Add Salt' functions automatically when extra salt is needed. Note that the 'Add Salt' light may switch on at any salt level between 3000 and 4000 ppm, depending upon the water temperature and mains voltage (see note). This is not a fault but a precaution to ensure that the salt level is never too low.

The salt concentration should normally be around 4000 ppm, but should never be allowed to fall below 3000 ppm, as this can reduce the life of the cell electrodes.

Salt is not lost through evaporation. Salt is lost with the water splashed out of the pool or during backwash. Adding fresh water or rainfall to the pool dilutes the salt concentration. Adding salt may be needed from time to time to maintain an optimum salt level.

**NOTE:** Even if the salt concentration is around 4000 ppm, the 'Add Salt' light may switch ON if the water temperature drops below 65° or mains supply voltage is too low. In this situation, it may not be possible to set the Chlorine Output to maximum. Addition of more salt to the pool will allow the Chlorine Output to reach maximum settings.

### How much to add

Use a salt test strip to determine the salt level in pool water prior to adding any salt. Capture water from elbow depth in a container, then use a test strip in this water sample. Previous regular usage of sodium hypochlorite (liquid chlorine) creates residual salt within the pool and may bring your salt level close to the required 4000 ppm concentration. Only 99.5% pure refined, non-iodized salt (sodium chloride) should be used with the DuoClear system. Do not use salt containing yellow prussate as it may stain the plaster finish of the pool. Add enough salt to obtain a 4000 ppm concentration.

- 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.
- Refer to 'Salt Chart' on page 17.

**IMPORTANT: To avoid damage to your DuoClear system, never allow salt level to exceed 13,000 ppm.**

### How to add salt

Evenly disperse the proper amount of salt around the perimeter of the pool. 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 at 4000 ppm concentration. Even if the salt level is maintained at 4000 ppm, but water temperature drops below 65° F, the ADD SALT may come on. This is not cause for concern. For further assistance, consult your pool professional or call 1-888-537-6657.

Note: Do not add salt to the skimmer box.

## SALT CHART

# Adding Salt to Your Pool

**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

## STABILIZER CHART

# Adding Stabilizer to Your Pool

**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

The above chart is for general reference only. The recommended stabilizer reading is between 40-100 ppm and will vary dependent on geographic climate. Warm, sunny climates will require a stabilizer reading at the higher end of the given range. Consult your local pool professional for your optimum level. Always add stabilizer according to manufacturer's instructions.

### pH is very important

Do not confuse pH with total alkalinity. pH is a simple numerical scale which expresses the acid/alkaline balance of the water. A pH value of 7.0 denotes neutrality, i.e. neither acid nor alkaline. High pH values (i.e. above 7.0) denote alkaline conditions. Low pH values (below 7.0) denote acidic conditions.

### How to adjust pH

A pH range of 7.4 – 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 your 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 – 120 ppm. Total alkalinity is often confused with pH. They are related by distinct.

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 – 120 ppm range. 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 – 120 ppm range. When total alkalinity is correct, you may need to adjust pH.

### **Use of algaecides and phosphate removers**

Algaecides may be used in conjunction with a DuoClear system but are usually not necessary. Only use ammonia based poly-quat algaecides. Do not use copper or silver based algaecides.

Phosphate removers may also be used in conjunction with a DuoClear system and, as with other systems, may be helpful in high phosphate regions where algae growth can be a problem. Phosphates enter the water from a variety of sources such as fertilizer, soaps and run off. High phosphate levels will cause chlorine destruction. Contact your local pool professional for phosphate testing and information regarding the presence of phosphates in your local area. Always follow manufacturer's instructions for treatment.

The chlorine residual level and silver and copper level automatically contributed by a 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 pool water with either liquid or granular chlorine. A chlorine residual should be measurable within 24 hours. If not, repeat shock treatment (see pages 21 – 22 for additional water balance instructions). After shocking, check to ensure that the DuoClear system is maintaining a residual chlorine level to prevent future algae growth. With extreme algae conditions, manually shocking the pool is the best option.

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 total hardness of your source water may be unusually high. High total hardness can contribute to scale formation in the pool. Sequestering agents will help keep minerals in solution and under some conditions can prevent this from happening. Consult your pool professional about the use of a sequestering agent.

### **Problem A – Water looks clean but no chlorine residual reading**

To test for chlorine residual, switch on the filtration system and adjust the DuoClear system to maximum output. After a few hours take a water sample from the pool. Test this water with your test kit. Chlorine residual should measure between 1 and 3 ppm.

#### **REMEDY:**

- Adjust total alkalinity to 80 – 120 ppm.
- Adjust the pH within the range 7.4 – 7.8.
- Make sure your electrode is clean.
- Adjust cyanuric acid levels to 40 – 80 ppm.
- Increase the setting of the output control.
- Increase the running time of the filter and chlorinator. Make sure that the filter is clean and functioning properly.
- Add salt if indicated by 'Add Salt' light.
- Manually shock pool.

### **Use chlorine stabilizer (cyanuric acid) to protect chlorine residual.**

This chemical acts as a sun-screen for chlorine and prevents chlorine from being too quickly destroyed by the sun. Chlorine stabilizer is essential to prolong the life of chlorine in the pool water. It should be added following the manufacturer's instructions to achieve a level of 40 – 100 ppm depending on geographical climate. Refer to stabilizer chart on page 18.

### **Problem B – Pool green and no chlorine reading**

Chlorine is still considered the most effective way of destroying algae and bacteria in your pool water. A chlorine residual of 0.5 to 1.0 ppm is appropriate with the DuoClear system. Higher chlorine levels are required to destroy an algae build-up.

#### **REMEDY:**

Superchlorinate or manually shock the pool. This will raise the chlorine residual to a very high level for a short period of time, and reduce chlorine demand.

#### **Manually shock with chlorine or oxidizing agents:**

- i) Backwash the filter.
- ii) Adjust the pH to within the range 7.4 – 7.8 (See “Some Tips on Water Chemistry” on pages 19 – 20).
- iii) Add 1.0 lb. granular chlorine or 1.0 gallon liquid chlorine or 1.0 lb. non-chlorine oxidizer per 10,000 gallons of water.
- iv) After shock dosing, re-adjust the pH to within the range of 7.4 – 7.8 and check the chlorine level before using the pool. The chlorine residual should be 1 – 3 ppm.
- v) Set DuoClear to Super Chlorinate.
- vi) Run the pool pump for 24 hours.

### **Problem C – Chlorine odor**

CAUSE: Presence of excess chloramines.

Surprisingly, the problem here is not too much chlorine as many imagine. Chloramines form by the bonding of chlorine with amines from sweat and other sources. These chloramines can create a chlorine odor and can also cause eye and skin irritation. Free chlorine does not smell (up to 10 ppm concentration).

REMEDY:

Same as problem B.

### **Problem D – Slimy walls of pool or spa**

CAUSE: Combined algae and bacteria growth.

REMEDY:

Brush down the affected walls and follow remedy for problem B, manually shocking pool.

### **Problem E – Eye and/or skin irritation**

CAUSE: Incorrect pH.

REMEDY:

Adjust total alkalinity, to the proper range 80 – 120 ppm. Then adjust the pH to within the range 7.4 – 7.8 (See “Some Tips on Water Chemistry” on pages 19 – 20).

### **Problem F – Scale formation on pool equipment**

To clean the deposit (scale) from the electrode plates, see DuoClear Maintenance section.

CAUSE 1: Incorrect pH and hard water.

REMEDY:

Adjust total alkalinity, to the proper range 80 – 120 ppm. Then adjust the pH to within the range 7.4 – 7.8 (See “Some Tips on Water Chemistry” on pages 19 – 20).

CAUSE 2: High total hardness or high phosphate levels.

REMEDY:

Dilute pool with fresh water. Consult your pool professional regarding use of a phosphate remover or sequestering agent.

### **Problem G – Chlorine Output will not reach maximum - Add Salt light may also be on**

CAUSE 1: Low incoming voltage.

#### REMEDY:

Confirm DuoClear system is wired to a 220 – 240 VAC source. If incoming voltage is less than 220 VAC due to location (rural areas for example), raising the salt level will compensate.

CAUSE 2: Salt level below 4000 ppm or water temperature is below 65° F.

#### REMEDY:

Add salt. (See “Salt: When and How to Add”)

CAUSE 3: Electrode is reversing polarity (self clean).

#### REMEDY:

If the cell is reversing, the yellow light on the Chlorine Output indicator will flash. Wait approximately three minutes and the output should return to normal.

CAUSE 4: Electrodes may be damaged.

#### REMEDY:

Replace electrode. The electrode must be replaced with the same model or the chlorinator will not function correctly. Call Zodiac Pool Care, Inc. for further instructions (see page 27).

CAUSE 5: Electronics malfunctioning.

#### REMEDY:

Call Zodiac Pool Care, Inc. for further instructions.

### **Problem H – No Flow light on**

CAUSE 1: Insufficient water flow through the cell.

#### REMEDY:

Ensure sufficient water flow through chlorinator cell. Verify that the filter pump is on. Flow may be restricted if the filter needs backwashing.

CAUSE 2: Sensor disconnected. Sensor cap loose.

#### REMEDY:

Insure that electrode cap is tightly connected. Call Zodiac Pool Care, Inc. if problem continues.

### **Problem I – Chlorinator stops working, all lights OFF**

CAUSE 1: Unit turned off.

REMEDY:

Push ON/OFF button. A yellow light in the Chlorine Output indicator window is present when the unit is “ON”.

CAUSE 2: Mains power removed or blown fuse.

REMEDY:

Check mains power source and fuse.

CAUSE 3: Component failure within power pack.

REMEDY:

Call Zodiac Pool Care, Inc. 1-888-537-6657.

### **Resetting the Fuse**

Turn off all power to the DuoClear power pack. The resettable fuse is located above the powercord in the middle of the DuoClear power pack unit. If the fuse is blown (popped with white area exposed), push to reset. Restore power to unit. If fuse continues to trip contact Zodiac Pool Care, Inc.

### **Mains power supply**

Your DuoClear system must be connected and properly grounded to the electrical power source.

### **Problem J – Chlorine level is too high**

CAUSE 1: Chlorinator is manufacturing too much chlorine.

REMEDY 1:

Use the output button to reduce setting. Retest chlorine daily until proper level is attained.

REMEDY 2:

Manually turn chlorinator off. The DuoClear uses a smart switch that turns the chlorinator on automatically with each pump cycle.

REMEDY 3:

If chlorine output at lowest setting consistently provides for excessive chlorine levels, decrease pump operation to 6 hours daily. If chlorine output at lowest setting is still excessive the DuoClear unit is oversized for the pool.

**Any type of electrical troubleshooting should be handled by a qualified pool professional or certified electrician.**

## CAUTION

### **Failure to adhere to the following could invalidate your warranty and damage pool equipment:**

1. DuoClear must be installed and operated as specified.
2. Your DuoClear has been fitted with an electronic flow sensor. This device automatically switches the chlorinator 'OFF' when the water through the DuoClear housing stops. Do not in any way interfere with this system which has been fitted for your protection.
3. Do not scratch or bend the electrode in the housing.
4. Power to the DuoClear should be turned off before unplugging the electrode connectors.
5. Keep the electrode terminals protected with a light smear of silicone grease. Use of other than silicone 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.
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 (DuoClear Vessel Housing)
8. Check the electrode housing frequently to prevent the accumulation of pool debris that for any reason may have by-passed the pool filter.
9. Power pack must not be installed directly above any other heat source such as filter pump or heater. It must be at least 1 foot from the ground to allow free circulation of air around it. It must not be enclosed in a closed box. As for all electronic equipment the power pack life will be increased if it is mounted in a shady spot and not in direct sunlight.

## 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 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 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 inground 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 1-888-537-6657. 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 1-888-537-6657.

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

**ZODIAC POOL CARE, INC.**

2028 NW 25th Avenue  
Pompano Beach, Florida 33069  
1-888-537-6657  
[www.zodiacpoolcare.com](http://www.zodiacpoolcare.com)



# ZODIAC

## DuoClear™

Complete Inground Pool Sanitizing System

### RECORD YOUR ZODIAC DUOCLEAR SYSTEM PURCHASE DETAILS HERE:

Model No.:  DuoClear 25  DuoClear 35  DuoClear 45

Date of Purchase \_\_\_\_\_

Purchased From \_\_\_\_\_

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

Warranty No: **DCL** Please quote this number when you contact us.

### IMPORTANT – MAIL THE WARRANTY REGISTRATION TODAY

### IMPORTANT - MAIL TODAY

This certificate must be completed and returned within 14 days of date of purchase.

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

and that I have read and understand the terms of the Zodiac DuoClear limited warranty provided by Zodiac Pool Care, Inc.

Serial No. **W** \_\_\_\_\_ Customer Signature \_\_\_\_\_ Date \_\_\_\_\_

Consumer Name: \_\_\_\_\_  
First Middle Last

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

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

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

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

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

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

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

Shape of Pool  Rectangle  Kidney  Other Pool Size \_\_\_\_\_ My pool is \_\_\_\_\_ years old

Type of Pool  Vinyl  Fiberglass  Plaster  Paint  Other \_\_\_\_\_

ZODIAC DuoClear is  my first sanitation system  replaces a \_\_\_\_\_

I have an automatic pool cleaner  yes  No  Brand/Model \_\_\_\_\_

I heard about DuoClear from  Pool Supply Store  Pool Builder  Advertisements  Friend



# ZODIAC

## DuoClear™

Complete Inground Pool Sanitizing System

### WARRANTY CERTIFICATE



**RETURN  
TODAY**  
TO SECURE YOUR  
LIMITED WARRANTY

Zodiac Pool Care, Inc.  
1-888-537-6657



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**  
FIRST CLASS MAIL PERMIT NO. 36 POMPANO BEACH, FL

POSTAGE WILL BE PAID BY ADDRESSEE



**DUOCLEAR WARRANTY  
ZODIAC POOL CARE INC  
2028 NW 25TH AVE  
POMPANO BEACH FL 33069-9906**

