

# **MPULSE 3000®**

## **POOL WATER TREATMENT SYSTEM**



## **Instruction & Owner's Manual**

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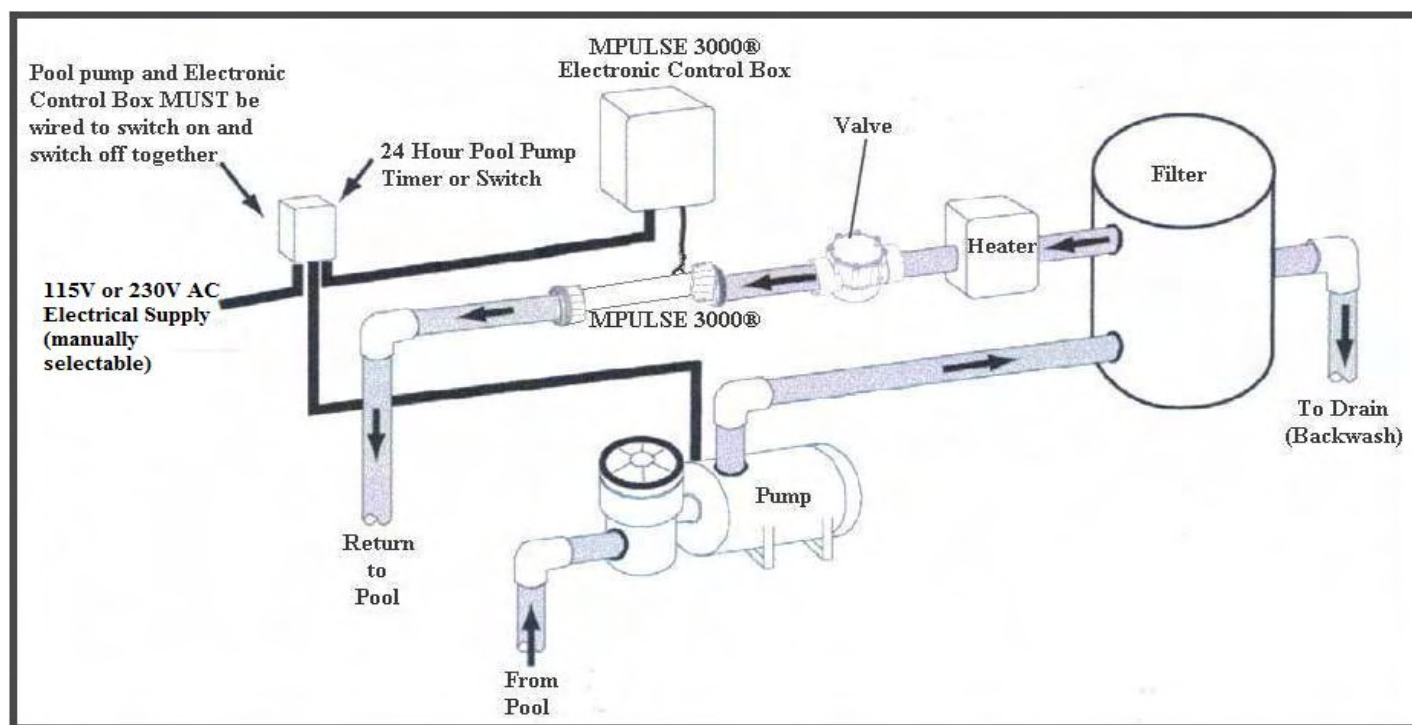
# Installation Instructions

**(PLEASE READ CAREFULLY AND THOROUGHLY BEFORE INSTALLING)**

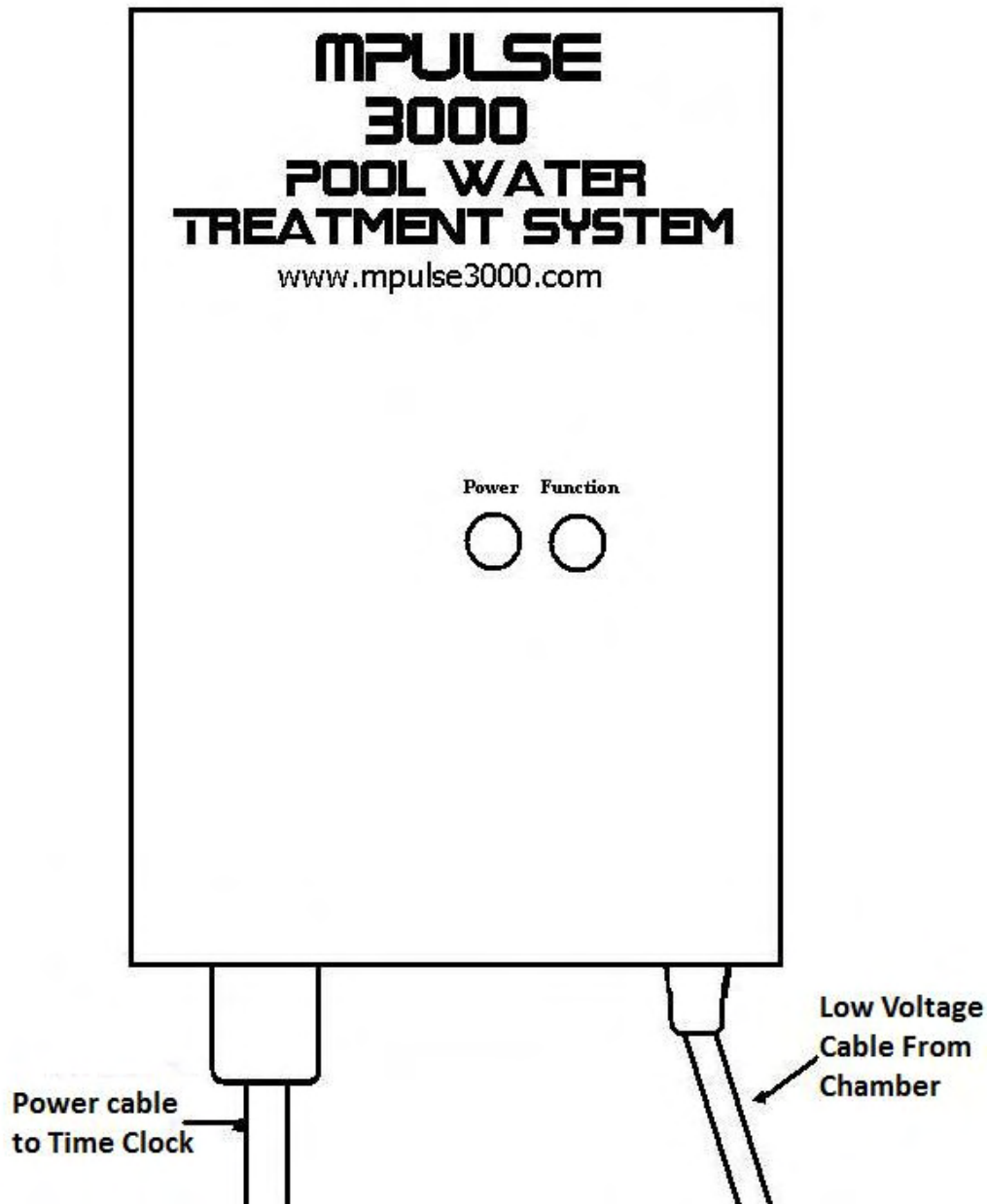
**INSTALLATION SHOULD ONLY BE PERFORMED BY AN AUTHORIZED PROFESSIONAL**

1. The **Chamber** must be installed in line on the return side (after the filter) to the pool:
  - a. Primary position: after the heater, before any salt/chlorination system.
  - b. Secondary position: after the filter, before the heater.
- This unit may be installed vertically or horizontally and has no required flow direction.
- Each of the unions on the chamber contains an o-ring. Ensure that these o-rings are lubed and in the proper position prior to tightening the unions.
2. The **Electronic Control Box** must be installed no further than **6 (six) feet** from the chamber. It must be connected to the load side of the timer **only** to run with the circulation pump.
  - a. The length of the cable from the chamber to the Electronic Control Box **CANNOT** be lengthened or shortened – it is a specific length to ensure that the impedance of the chamber is matched properly with the control head to maximize calcium scaling prevention.
  - b. The AC power connection means from the electronic control head to the timer can be lengthened or shortened as needed, as long as acceptable wiring conventions are employed in accordance with all local ordinances and practices, and the National Electric Code (NEC) NFPA 70.
3. Connect the plug on the low-voltage cable from the chamber to the appropriate male ended plug at the bottom of the Electronic Control Box (see following page for further instruction).

**CAUTION:** The low-voltage cord is a set length for proper operation, if the length is modified, the warranty will be void. The power cord length may be altered.



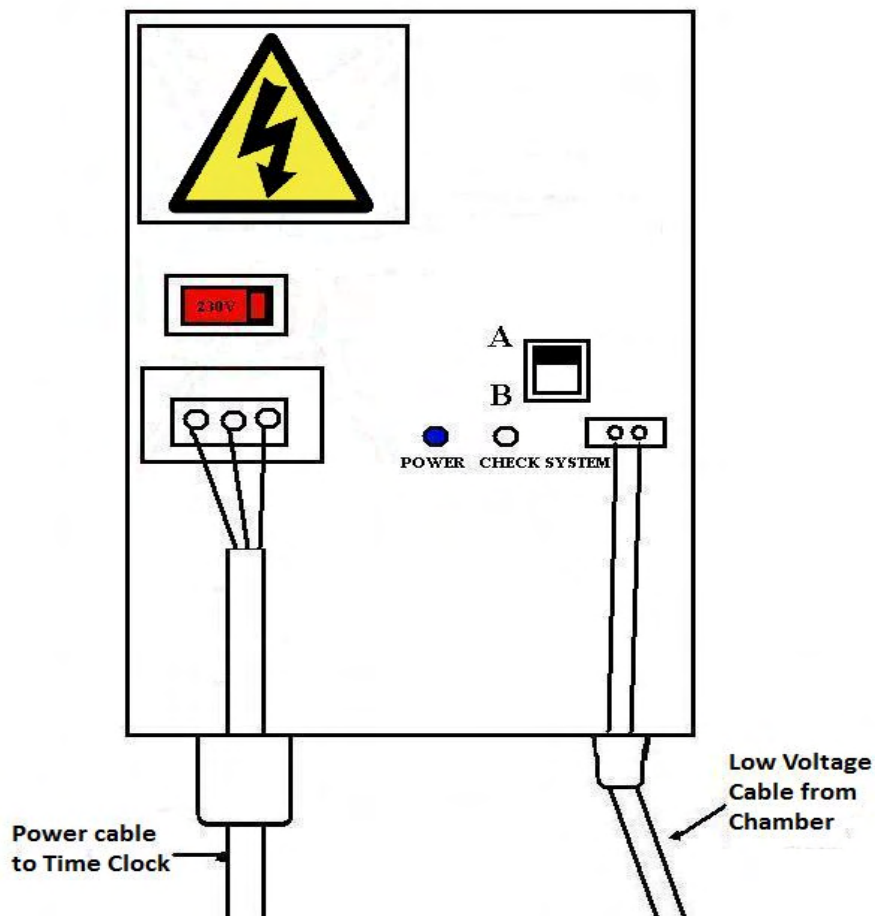
## LOW VOLTAGE CONNECTION INSTRUCTIONS



**SIMPLY FIT THE FEMALE END OF THE PLUG ON THE LOW-VOLTAGE CABLE THAT CONNECTS TO THE CHAMBER ONTO THE MALE END ON THE ELECTRONIC CONTROL BOX, WHICH IS LOCATED ON THE UNDERSIDE OF THE BOX.**

**IF YOU ARE IN NEED OF AN 115V UNIT, PLEASE CONTACT TECHNICAL SUPPORT FOR INFORMATION: 877-887-2997.**

## USING THE **MPULSE 3000®** WITH A SALT WATER CHLORINE GENERATOR OR AN OVER-CHLORINATED SWIMMING POOL



### **CAUTION: THIS OPERATION SHOULD ONLY BE COMPLETED BY A PROFESSIONAL**

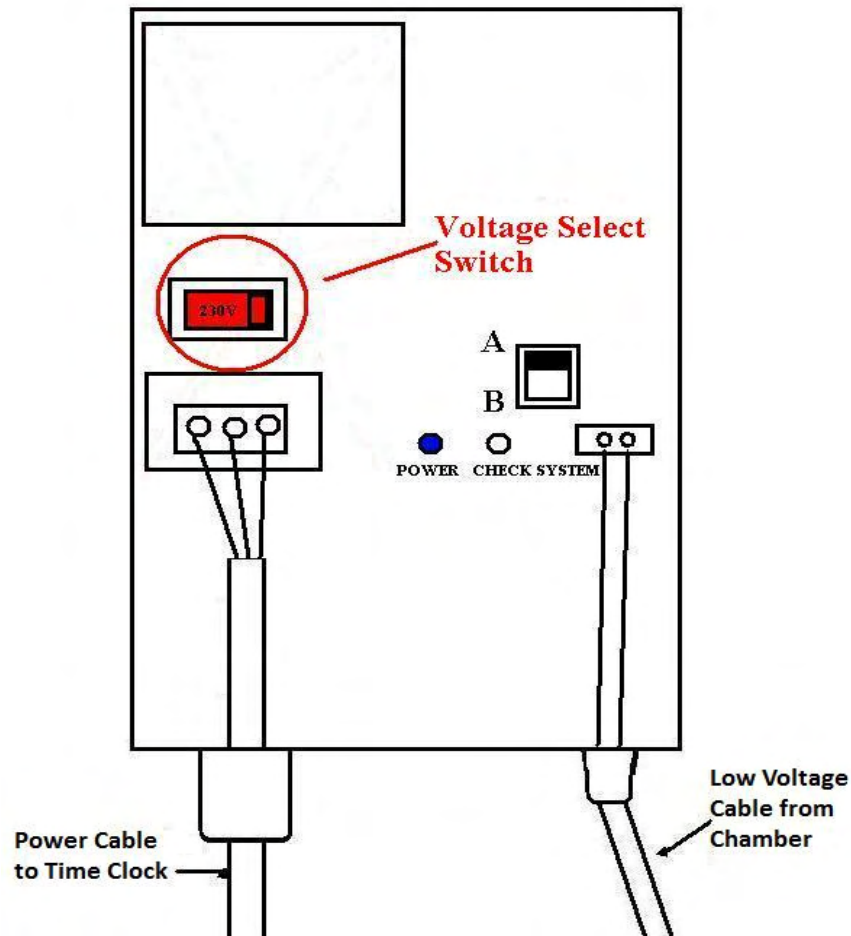
After completely removing power from the input power source using a suitable disconnect or by unplugging the product, remove the protective plate by removing the three screws holding it on. You will see the equivalent of the above diagram. Note the switch labeled "A" and "B".

- Standard position is "A". This will be used for swimming pools with standard sanitization (chlorine, etc.).
- For use with a Salt Water Chlorine Generator, change the switch to the "B" position.

Replace the protective plate (screw torque: 25-in lbs) and continue with use of the **MPULSE 3000®**.

# FOR SWIMMING POOL PROFESSIONALS ONLY

TO SWITCH FROM A 220/230V UNIT TO 110/115V UNIT



After turning off the power to your unit, remove the protective plate by removing the three screws holding it on. You will see the equivalent of the above diagram. Note the circled Voltage Select Switch. Default position of this unit is 220/230V.

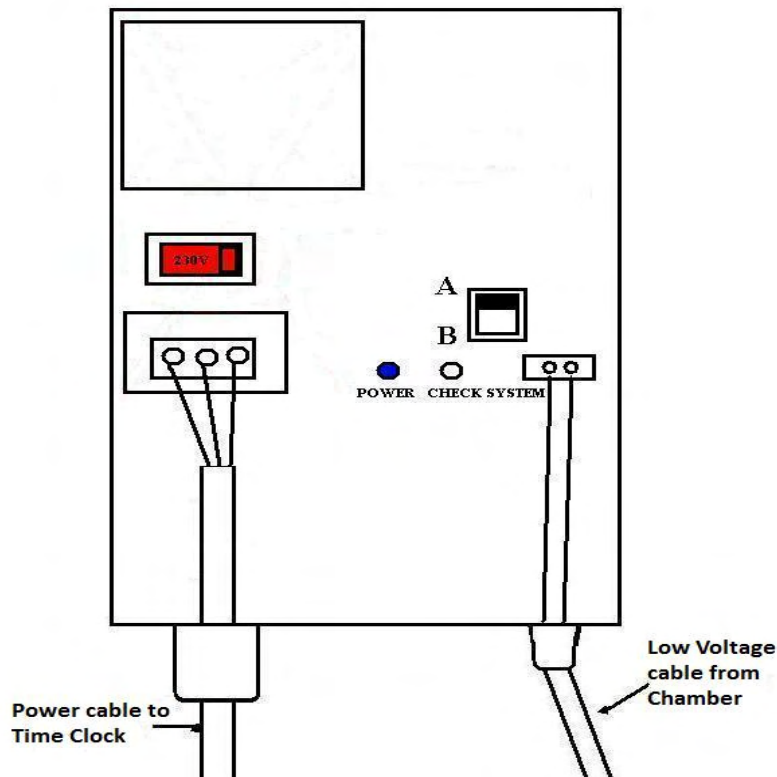
- The majority of swimming pool equipment sets are provided with 220-240V electrical power. If you come across a swimming pool that instead utilizes 100-120V power, please use the following instructions:

1. Using a flat-head screwdriver, place it in the slot in the Voltage Select Switch currently labeled 230V.
2. Move the Voltage Select Switch to the left carefully, until it reaches the far left side and reads 115V.

Replace the protective plate (screw torque: 25-in lbs) and continue with use of the **MPULSE 3000®**.

# FOR SWIMMING POOL PROFESSIONALS ONLY

## Field Installation



If existing AC cabling is not long enough for installation, external wiring and conduit can be installed to the box. When installed with conduit, the unit should be connected to an AC branch circuit with a maximum 20 A circuit breaker or fuse which meets the requirements for branch circuit protection. A suitable disconnect device must be provided in the branch, either a circuit breaker or switch, that can be employed to disconnect power to the system during servicing.

- 1) Remove the safety cover, loosen factory installed power cord from the AC INPUT terminal and remove strain relief bushing from the opening in the enclosure.
- 2) Install new ½" trade size, UL Listed conduit fitting into 7/8" diameter opening and tighten/install in accordance with the fitting's instructions. Fitting and conduit should be suitable for the installation environment, such as liquid tight conduit, and installed in compliance with all applicable local ordinances and the NEC.
  - a. The AC INPUT terminal can handle COPPER wire 8 to 18 AWG solid or stranded.
- 3) Pull new copper wiring thru conduit into the box, provide service loop and strip ends of wire insulation 5/16".
- 4) Connect new wiring to the AC INPUT terminal as follows:

115V Configuration:	230V Configuration:
L1 – 115V (often black)	L1 – 230V Phase A (black)
L2 – Neutral (often white)	L2 – 230V Phase B (black)
GND – Ground (green)	GND – Ground (green)
- 5) Torque terminal screws to 16 in-lbs (1.8Nm) tight.
- 6) Set AC VOLTAGE SELECTION SWITCH to the appropriate input voltage [115 / 230].
- 7) Select fresh water [A] or sodium chlorinated [B] pool.
- 8) Install safety cover.

# **TROUBLESHOOTING**

## **WHAT TO DO WHEN THE "FUNCTION" LED LIGHT COMES ON**

During normal operation of your **MPULSE 3000®**, the Power LED will be illuminated blue and the Function LED red light will be extinguished.

Whenever power is applied to the Electronic Control Box, the Function LED will briefly illuminate and then turn off if the Electronic Control Box does not detect any Fault Conditions. If the Function LED remains illuminated, see below for trouble shooting options:

### Troubleshooting Options:

1. Check to ensure that the Chamber is plugged into the Electronic Control Box.
2. Ensure that there is water flowing through the chamber. Lack of proper water flow will lead to a Red Function light.
3. Ensure that there are no "Shorts" or "opens" in the Chamber cord.
4. Ensure that the A/B switch is in the proper position (see previous page for details).
5. Have you recently treated the pool with muriatic acid or chlorine? This could change the conductivity of the water leading to a red light. Wait for 48 hours and check again.

If none of the above options lead to proper unit function, turn off the power to the unit (switch the timer off) for 10 seconds to reset the electronics and test again.

If the Function light continues to glow red, please contact Technical Support.

**TECHNICAL SUPPORT: 877-887-2997**



# **The BENEFITS of the MPULSE 3000® Pool Water Treatment System**

Alternative forms of water treatment used to be the exception. They now have become the rule for swimming pool water treatment and maintenance. With the inception of salt-water chlorine generators and other non-chemical forms of water treatment, many pool builders and service providers have found these alternative forms as the best way to maintain pools, and to treat water for the destructive effects of "hard water" without using expensive and noxious maintenance procedures. By treating the water in this manner, a conditioning effect occurs that can be felt on the skin and in the hair, and seen in the overall clarity of the water. Impulse Technology is moving to the forefront of alternative water treatment for swimming pool applications.

# **How The MPULSE 3000® Pool Water Treatment System Works Utilizing Impulse Technology**

*Impulse Technology...* sends 3000 to 5000 low voltage (positive and negative), high frequency impulses per second, between an anode and a cathode, to physically change the form of the calcium. At the molecular level, these impulses apply energy to the calcium molecules to release hydrogen from the calcium bicarbonate in your swimming pool water. This action changes the calcium bicarbonate to the aragonite form of the carbonate molecule. This aragonite form of calcium is a soluble, non-adherent form of calcium which does not adhere to surfaces in a scaling manner. The aragonite crystals are also a natural pH balancer.

Please refer to:

IAPMO R&T Lab test Documentation on pages 14-15 of this manual.

# CONDITIONS IN REGARDS TO USE OF THE **MPULSE 3000®** POOL WATER TREATMENT SYSTEM

Results of use with the **MPULSE 3000®** Pool Water Treatment System may vary. As with any swimming pool product of this nature, overall success depends on many factors which include but are not limited to:

- Amount of calcium hardness contained in the water (Recommended levels are 200-400 PPM)
- Source of water (private well, municipality, etc.)
- Age and wear of the swimming pool surfaces
- Chemical maintenance and pH balance
- Seasonal temperatures and duration of filtering cycle
- Porous surfaces (i.e. rock features) around spill-ways and at pool water level

*Pool owners and service personnel must remember that regular maintenance and scheduled service must be followed in order for the **MPULSE 3000®** to provide the highest level of performance. This includes a regular weekly maintenance schedule consisting of (but not limited to): maintaining a pH level between 7.2 and 7.6, maintaining an Alkalinity level between 80 to 120 PPM. Maintenance should also include regularly brushing the water line, spillways, tile, and water features, as well as any other calcium plagued areas of the swimming pool.*

# WHAT TO KNOW ABOUT THE **MPULSE 3000®** POOL WATER TREATMENT SYSTEM and MURIATIC ACID

Generally, Muriatic Acid is used in swimming pools to lower the pH level, and to aid in balancing Alkalinity.

Maintaining a pH level between 7.2 and 7.6 in swimming pool water, helps to ensure other pool chemicals work properly. It also helps prevent damage to pool surfaces and equipment, and it also helps prevent eye irritation.

While controlling the form of calcium in the swimming pool, the **MPULSE 3000®** also aids in the process of balancing the pH levels by releasing the positive hydrogen ions from the calcium bicarbonate. In high concentrations, acid can also free these positive ions from calcium bicarbonate.

*Adding unnecessary Muriatic Acid will change the conductivity of the water and could effect the operation of the **MPULSE 3000®** and negate the scale reduction.* When the acid dissipates, the conductivity will return to normal and the **MPULSE 3000®** will perform correctly again. Always check pH levels prior to adding Muriatic Acid.

## Frequently Asked Questions about The **MPULSE 3000**<sup>®</sup> Pool Water Treatment System

1. *Does the **MPULSE 3000**<sup>®</sup> remove calcium from the water?*

No. The **MPULSE 3000**<sup>®</sup> changes the form of the calcium so it does not adhere to surfaces in a scale form. Pool owners and service personnel may still see some calcium on the tile or in rock pores. This is calcium carbonate aragonite (the non-scaling calcium), which is settling in the pores and crevasse, and is easily removable with a steel brush or diluted cleaning solution and applicator.

2. *Does the **MPULSE 3000**<sup>®</sup> remove previous calcium scaling from pool surfaces?*

Well, it depends. If the current scaling is a result of years of neglect, it would take a long time to remove such calcification with the **MPULSE 3000**<sup>®</sup>. However, if the scaling is fairly recent (30-60 days), we have seen instances where the water level was raised above the scaling and the calcium was eventually removed. The time and success rate of this can vary from pool to pool.

3. *Does a white line on my pool automatically mean there is calcium scaling?*

Not necessarily. Remember, there are also irons and other minerals in the water, along with other outside substances such as suntan oils, lotions, etc., that can cause “staining”. This is another reason why brushing your waterline is an important step in pool/spa maintenance. Water treatment and balancing water chemistry is a process that requires attention to all aspects of pool maintenance as well as a balanced approach.

4. *What is the down side of the **MPULSE 3000**<sup>®</sup>?*

When dealing with water chemistry and water treatment, pool owners and service providers are often looking for a “quick fix.” That said, there are also many factors that must be observed, especially with regard to water chemistry and water treatment. As with the introduction of the salt-water chlorinators, pool service providers and owners are slow to adapt to new technology that requires observance of water chemistry. Overall, this process gets easier, but it does require some adaptation of water chemistry.

# **SPECIFICATIONS**

## **Chamber:**

- **Interconnect Method: 2" Slip Connection with Union**
- **Flow Rate: 65 GPM or 250 LPM**
- **Max Temperature 200° F (93° C)**
- **Weight: 8 Lbs or 3.65 kg**
- **Size: 24" x 5" x 5"**
- **Maximum pressure: 100 PSI**

## **Electronic Control Box:**

- **Input Voltage: 115/230 VAC (selectable)**
- **Input Current: 0.16/0.08 Amps**
- **Max Output Voltage: 50Vpp**
- **Max Output Current: 350mA RMS**
- **Output Frequency: 4.1 KHz  $\pm$  0.1 KHz**
- **Max Temperature: 140° F (60° C)**
- **Weight: 6 Lbs or 2.72 kg**
- **Size: 9" x 5" x 4"**

## **Mechanical**

- **Torque - 16 in-lbs.**
- **Wire Range: 8 ~ 18 AWG**
- **Insulation Strip length - 5/16"**

# **MPULSE 3000® Pool Water Treatment System**

## **Limited Residential Guarantee**

**Deep Blue Water Technologies, LLC**

### **Warranty Certificate**

To the Original Consumer of the **MPULSE 3000® Pool Water Treatment System**

The **MPULSE 3000® Pool Water Treatment System** is comprised of two basic components:

1. The Electronic Control Box
2. The Chamber

The **Electronic Control Box** and the **Chamber** are fully warranted for a period of **five (5) years**. Should either of these components fail for any reason other than abuse (to include vandalism), modification of low-voltage wire length, act of God, or act of War, the part/parts will be replaced or repaired at no charge.

Follow all manufacturer recommended schedules for usage and settings for maintenance of your pool, spa, and/or water feature, along with your regular weekly chemical and maintenance service.

-----  
Detach Here

## **MPULSE 3000® Pool Water Treatment System WARRANTY REGISTRATION CARD**

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

Serial Numbers: Control Box \_\_\_\_\_ Chamber \_\_\_\_\_

Customer Name \_\_\_\_\_

Installation Address \_\_\_\_\_

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

I purchased my **MPULSE 3000®** from:

\_\_\_ Pool Supply Store      \_\_\_ Pool Service Company      \_\_\_ Pool Builder

\_\_\_ Other (please describe) \_\_\_\_\_

Name of Company: \_\_\_\_\_

Please mail to: Deep Blue Water Technologies  
3849 N. Oracle Rd.  
Tucson, AZ 85705  
Tel: 877-882-4695

# TEST REPORT

Telephone: 909.472.4100 • Fax: 909.472.4243 • Web: www.iapmo.org  
5001 East Philadelphia Street • Ontario, California 91761-2816 - USA



**Report Number:** 976-07001

**Report Issued:** May 15, 2007

**IAPMI R&T Lab Project No.:** 13670

**Client:** Deep Blue Water Technology  
890 W. Grant Rd.  
Tucson, AZ 85705

**Source of Samples:** The samples were sent to IAPMO Testing and Services, LLC by [REDACTED]  
[REDACTED] The sample was received on January 29, 2007 in good condition.

**Date of Testing:** March 28 to April 9, 2007

**Sample Description:** Deep Blue Water Technologies, MPULSE 3000 pool water treatment system

**Scope of Testing:** The purpose of testing was to determine if the samples tested of the Deep Blue Water Technologies, MPLUSE 3000 pool water treatment system, representing the MPULSE 3000 and MPULSE ABODE de-scaling systems, complied with IGC 91 - 2006 section 6.5.

**Conclusion:** The sample tested of the Deep Blue Water Technologies, MPULSE 3000 pool water treatment system **COMPLIED** with IGC 91 - 2006, section 6.5.

By our signatures below we certify that all the testing and sample preparation for this report was performed under continuous, direct supervision of IAPMO Testing and Services, LLC.

Tested by,

Reviewed by,

A handwritten signature in black ink, consisting of several loops and a trailing flourish.

David Williams, Technician

A handwritten signature in black ink, featuring a stylized "M" and "B" with a trailing flourish.

Michael N. Briggs, Manager, Analytical Lab



**Primary Standards:** IGC 91-2004, sections 6.5.

**Findings:**

Section 6.5 Recirculation test.

**Complied.** Water with a hardness of at least 130 ppm was recirculated through the through 2 individual systems for 10 days. System 1 contained the Deep Blue Water Technologies MPULSE 3000 pool water treatment, system 2 contained a section of pipe in place of the water conditioner. After 10 days the system was disassembled and the filter allowed to dry. The filter in system 2 contained no sediment. The pipe system of system 2 showed no sign of deposits. The filter in system 1 contained sediment. The residue was exposed to dilute muratic acid. Considerable effervescence was observed in the muratic acid solution which indicated the presence of  $\text{CaCO}_3$ .

## **IAPMO R&T Lab**

**The MPULSE 3000® Pool Water Treatment System manufactured by Deep Blue Water Technologies has been tested by IAPMO R&T Lab and proven effective for scale prevention and/or reduction according to paragraph 6.5 of IGC 91.**

### **Who is IAPMO R&T?**

IAPMO R&T Lab is a major source for Independent testing, research and technical services. The organization specializes in plumbing and mechanical products. The goal of the organization is to provide quality testing services at a reasonable price and in a timely manner. *One-Step-Testing* is available for manufacturers, distributors and importers to conduct testing and receive product listing/certification in the **United States and Canada.**

### **What is paragraph 6.5 of the IGC 91?**

*Paragraph 6.5 of the IGC 91*

#### **6.5 Recirculation Test**

##### **6.5.1**

Fill a clean holding tank with 100 gallons of potable water containing at least 15 grains of  $\text{CaCO}_3$  per gallon. Using a pump with a flow capacity of at least 4 gallons per minute, pump such water through the operating appliance followed by a 10 micron pleated sediment filter and return such water to the holding tank. Continue re-circulating such water through the appliance and filter for 10 days.

##### **6.5.2**

Performance Requirements: Following 10 days of continuous re-circulation, turn off the pump, remove the sediment filter and allow it to air dry. Once the sediment filter is dry, collect the sediment which has been collected from the filter, place a sample of the sediment in a glass dish and apply a solution of Muriatic acid. The sample of the sediment shall react to the Muriatic acid, indicating the presence of  $\text{CO}_3$  in the sample.

6.5.3 Concurrent with the test described in Section 7.5.1 in this standard, duplicate the test without the appliance in the recirculation loop. Test any sediment, which may have been collected in the filter. There shall be no reaction to the Muriatic acid, indicating an absence of filterable  $\text{CaCO}_3$ .

# **DEEP BLUE WATER TECHNOLOGIES**

3849 N. Oracle Rd.  
Tucson, AZ 85705

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877-887-2997