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SPARR-O-TECH

CHALLENGER 3000

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CHALLENGER 3000(TM)
FOR THE 21ST CENTURY POOL

THE ULTIMATE IN POOL WATER PURIFICATION

PURE AND SIMPLE

Nothing beats a refreshing dip in the pool on a hot day. But if you are like most pool owners, that cool, clear water you're diving into isn't as fresh and inviting as it could be. Chances are, it's filled with toxic chemicals like excess chlorine and cyanuric acid (stabilizer). Costly chemicals that render no return on your investment. Chemicals that, until now, you've had to rely upon to keep your pool free from algae and bacteria. Aside from being irritating and unhealthy, these chemicals, combined with extraneous elements in the water, create their own resistance, requiring increased dosage.

Patent #4,525,272

NOW THERE'S A BETTER WAY

The CHALLENGER 3000(TM) is a revolutionary, yet thoroughly tested and patented electrochemical ionization process. The result is clean, fresh, soft water that leaves your eyes, skin, hair, swimwear and the pool itself free from the effects of chemicals and mineral deposits. THE CHALLENGER 3000(TM) is sensitive to the range of elements that govern water purity and adjusts itself automatically to provide pristine water.

A PROVEN WAY

Ionization was developed for NASA to overcome the discomforts and disadvantages of chlorine and to minimize the space required for drinking water. We didn't invent ionization...we just perfect it!!!!.

WHAT THIS MEANS TO YOUR POOL OR SPA

- DESTROYS BACTERIA--KILLS ALGAE
- INDUCES VITAL OXYGEN
- REMOVES & REDUCES CALCIUM AND MINERALS, DRASTICALLY REDUCING TIME SCALE
- ENHANCES FILTRATION FOR BETTER WATER CLARITY
- SIGNIFICANTLY PROLONGS NEED TO DRAIN POOL DUE TO HARDESS
- PROVIDES SOFTER, CLEANER, HEALTHIER WATER
- TOTALLY AUTOMATIC--SELF MONITORING, SELF ADJUSTING, SELF CLEANING
- UP TO 80% SAVINGS IN CHEMICAL COSTS & USAGE
- PATENTED, PROVEN, THOROUGHLY TESTED
- SAVES TIME, MONEY AND WATER
- EASIER ON HAIR, EYES, SKIN, AND SWIMWEAR
- 100% SOLID STATE
- 2 YEAR WARRANTY ON ELECTRONICS

HERE'S HOW IT WORKS!

The CHALLENGER 3000(TM) employs an electrode sensing device, installed between the pump and filter, in a specially designed chamber. This electrode monitors varying water conditions and responds through an electronic control center. The water is subjected to several electrochemical reactions which remove unwanted matter like excessive minerals, bacteria and algae, via the filter. In addition, oxygen, vital to pure water, is

maximized through the breakdown of the water molecule. Ions, electrically charged particles, are dispersed into the pool to be absorbed by the algae and bacteria. Copper ions are deadly to these lower organisms, yet essential nutrients for plants, animals and humans. The CHALLENGER 3000(TM) harmonizes proven principles of physics and chemistry to provide you with better water and more time to enjoy it.

INSTALLATION AND MAINTENANCE MANUAL

CHALLENGER 3000

The CHALLENGER 3000 is designed for residential, commercial, and municipal aquatic environments from 7,500 to 35,000 gallons of water. Global Ionization Products Corporation (GIP) also manufactures systems for large and smaller environments.

1. ABOUT THE UNIT
2. PARTS LIST
3. PLUMBING INSTRUCTIONS
4. ELECTRICAL HOOK UP INSTRUCTIONS
5. ADJUSTING THE DRIVE PORTION
6. PROPER WATER BALANCE
7. MAINTENANCE OF THE CHALLENGER 3000
8. TROUBLE SHOOTING GUIDE

If you have any questions regarding the installation or maintenance of the CHALLENGER 3000 please contact GIP Customer Service at 1-800-962-3445 USA or your local distributor.

SECTION 1

ABOUT THE UNIT

The CHALLENGER 3000 is a patented electro-chemical ionization unit manufactured in Scottsdale, Arizona since 1983. The unit works with the circulation system and is designed to work with all types of filtration systems (cartridge, sand, and DE).

CHALLENGER systems, acting with the circulation system and small amounts of chlorine, have proven to be an effective bactericide and algaecide. Independent microbiologists prove copper ions, reacting with chlorine, kill bacteria significantly faster and more efficiently than bacteria attacked by chlorine alone.

SECTION 2

PARTS LIST

- A. CHALLENGER 3000 CONTROL CENTER
- B. LOW VOLTAGE POWER SUPPLY CORD
- C. 3" x 3" x 2" ELECTRODE CHAMBER
- D. 3" X 2" REDUCER BUSHING
- E. 3" X 3"" SLIP/TREAD ADAPTER
- F. WARRANTY CARD
- G. BALANCED WATER LAMINATED CARD

SECTION 3

PLUMBING INSTRUCTIONS

For proper operation, the chamber should be placed on the pressure side of the pump, between the pump and the filter. Special care must be taken when installing the chamber. Be sure the water flow is first forced into the sweep portion of the tee assembly, thus forcing the water into the electrode. (Illustrated on page 2, figure 2). After the chamber is in place, install the electrode using either teflon tape, a teflon base stick, or plumber's paste on the threads of the electrode to ensure a water tight seal. A light film of lubricant (i.e. MAGIC LUBE(TM)) may be used on the threads over the teflon, to ease in the removal and reinstallation of the electrode.

NOTE: If painting the plumbing and chamber, do not paint the electrical connectors.

SECTION 4

ELECTRICAL HOOK UP INSTRUCTIONS

The control center must be mounted within reach of the electrode. The low voltage power supply cord is eight (8) feet long. The CHALLENGER 3000 is designed for 110/220 VAC and 50/60 Hz. The unit must operate only when the circulation pump is in operation. Wire the unit into the load side of the time clock or the circulation pump switch (see page 2, figure 1 for proper wire hook-up).

To mount the control center, remove the black face plate by removing the single screw at the top of the box. Mount the control center to a rigid support with bolts and screws through both upper and lower mounting holes in the back of the box.

Minimum #14 THHN or SWG wires with weatherproof conduit and connectors must be used for proper electrical hook-up of the control center to a power source. The green ground wire in the control center must be connected to equipment ground using #12 THHN or SWG green wire.

The electrode cable only fits one way and must be twisted approximately one eighth turn after insertion. This will ensure proper connection.

SECTION 5

ADJUSTING THE DRIVE OUTPUT

The CHALLENGER system is factory calibrated at the twenty mark on each dial. This should disinfect between 7,500 to 35,000 gallons of water. The circulation system should be operated to turn the water over two and one half times in a twenty-four hour period when the water temperature is above 70 degrees. When the water temperature is below 70 degrees the circulation systems should be operated to turn the water over not less than one and one half times in a twenty-four hour period.

NOTE: How to calculate turn over.

3/4 HP pump approximately 3300 gallons per hour
1.0 HP pump approximately 4000 gallons per hour
1.5 HP pump approximately 5100 gallons per hour
2.0 HP pump approximately 6400 gallons per hour

NOTE: How to calculate pool volume.

avg depth x water surface area x 7.5 = volume in gallons

The initial adjustment should be made to the drive unit by depressing, simultaneously, the two left hand toggle switches marked 90 degrees and the other marked ma. The L.E.D. will display the drive output to the electrode. Adjust the dial on the interior of the unit, left or right to increase or decrease the setting for your particular area or circumstance. The proper way to adjust the amount of disinfection from the unit is to increase or decrease the run time of the pump, not by adjusting the drive output setting.

SECTION 6

PROPER WATER BALANCE FOR THE CHALLENGER 3000

This is the most critical portion of the entire manual. Proper water balance must be maintained or excessive chemical use, scaling, staining, corrosion, or a combination of the aforementioned may result.

Balanced water is the relationship between total alkalinity and calcium hardness. This balance provides protection of the pool surfaces, ease of disinfection, and enhanced water clarity.

ADJUSTING THE ALKALINITY

Alkalinity is the most important part in proper pool maintenance. To adjust and maintain the total alkalinity see the charts on page 8. Alkalinity, working with calcium hardness, provides a buffer or regulator to control drastic changes in ph. (Alkaline or acid content of the water).

If calcium hardness is too low, add calcium chloride in accordance with the charts on page 8. It may be necessary to drain the pool if the calcium gets too high. (See the Ionization Index on page 8 for recommended levels.)

Test the pool daily until the water is in proper balance, then inspect once a week to maintain correct water balance. Remember, proper water balance is influenced by swimmer load, foliage, and/or addition of replacement water.

The CHALLENGER 3000 cannot completely eliminate the need for chemical disinfection, but it does provide extended periods between treatment and substantial chemical reduction.

Supplemental disinfection is based on contaminating factors such

as use and exposure to natural elements like hot or windy weather, dirt and debris.

SECTION 7

MAINTENANCE OF THE CHALLENGER 3000

The CHALLENGER 3000 is self monitoring, self adjusting and factory calibrated. Each aquatic environment is different and therefore requires different maintenance programs. Here are some general rules which may or may not apply to your situation. It will take time to discover which of the following procedures are necessary for your system to operate at an optimum level.

BREAK IN PERIOD

Typically, there is a six week break in period required to transition from a chlorine to an ionization system. These figures are based on a twenty thousand gallon pool and average usage of the pool. The entire circulation system should be operating during the following instructions.

During the first three weeks, pour four ounces of granular tri-chlor down the skimmer throat every third day. After the second week use one gallon of liquid chlorine directly into the pool in addition to the four ounces of tri-chlor.

During the next three weeks, pour three ounces of granular tri-chlor down the skimmer throat twice a week. At the end of the sixth week, add one gallon of liquid chlorine directly into the pool.

NORMAL OPERATIONS OF THE CHALLENGER 3000

After the completion of the break in period, maintain your pool with at least two ounces of granular tri-chlor twice a week as described above, adjusting for climate, swimmer load and foliage in the area. Since each aquatic environment is different, the required chlorine consumption will vary.

The CHALLENGER provides a constant water temperature display while operating. In the event of an electronic failure or circulation system failure, the system will sound an alert much like a smoke alarm. Turn the unit off and contact your service representative.

CLEANING THE ELECTRODE

Pool water contains minerals and debris to be removed by the filter, the CHALLENGER electrode will collect excess debris the filter misses until the water has been cleaned, this may take a few months. During this period we recommend you inspect and clean the electrode every two months. After the water is clean, check the electrode every six months for build up. A heavy swimmer load may require more frequent inspection. When cleaning the electrode only clean the stainless steel cage surrounding the copper anode by tapping the build up with a screwdriver, be sure not to disturb the center blue coating or bend the cage. Replace the electrode using teflon tape as described in section 3 of this manual.

Chemical consumption will remain high if the CHALLENGER drive setting is too low. If the system is operating too high, blue coloring will appear on the "cage" of the electrode. Adjust accordingly, see "checking and adjusting the drive portion of the unit" for instructions.

SECTION 8

TROUBLE SHOOTING GUIDE

The drive output of this system is designed to adjust to changes in water conditions. Therefore, if the drive out put displays small changes there is no reason to be concerned.

1. Display Lights Are Not Powered On:
 1. Verify proper voltage of 110 or 220 VAC. The power supply is active whether or not the individual on/off toggle switch is "on". This switch only removes power from the electrode and display and does not turn off the power supply.
 2. Verify that the on/off switch is in the "on" position.
 3. Check fuse for possible opening. Use an ohmmeter, as a visual inspection of the slo-blow fuse can be deceptive. Use a 1/4 AMP slo-blow fuse 3AG type for replacement. At this point if every item has checked "ok" then the display should be luminous. If not the system has an interior malfunction and should be returned to the factory.
2. Computer Is Reading The Temperature Or The Drive Incorrectly:

1. Check the electrode cable by substituting a known good cable. This will require opening the box.
 2. Temporarily substitute a new electrode or use a dummy test plug if available.
 3. After these checks are completed suspect a computer problem inside the box.
3. A Buzzer Will Not Stop Sounding: This indicates an open circuit in the electrode. This happens when:
1. No water is passing through the chamber,
 2. An electrode has been exhausted and needs replacing, or
 3. A bad connection between the computer and an electrode exists.
 4. The electrode has been fouled and needs cleaning.
4. Checking An Electrode For Proper Functionality: Connect the suspect electrode to a known good computer assembly. The electrode should read the electrode ambient temperature and the buzzer will sound. Short the cage to the center post with a screwdriver and the drive should read between 30 and 180 depending on the temperature. NOTE: To short the electrode it often requires scraping the cage and copper center hard to make a good connection.
5. Understanding Miscellaneous Display Readings:
- a. When any display reads 0 to 10 temperature in normal operating mode, the most probable reason is a defective electrode cable or a poor connection on the electrode connector pins. A defective electrode may also cause this.
 - b. When the system reads 200 degrees or more a defective cable or electrode sensor is indicated. This causes excessive drive output and a rapid depletion of the electrode. Check the cable and then the electrode for proper functionality.
 - c. The drive may go to "08" or less if the temperature is indicating below 40°F. This indicates a possible faulty sensor in the electrode and not a computer problem. Check the electrode first then the computer.
6. Testing The Entire System For Proper Functionality: A dummy test plug or a shorted (out of the water) new electrode is required to conduct the following tests:

- a. Place the test switch in the "50" position and hold it. The display should read "50".
 - b. Place the test switch in the "90" position. The display should read "90".
 - c. Hold the test switch in the "90" position and the "temp/drive" switch in the drive position at the same time. The drive limiter should be in the center position. The display should read the drive output plus or minus ten percent.
 - d. If any failure occurs the most likely cause is some type of connection problem in the system.
7. Removing The Entire Front Face Plate: The power must be removed from the system before attempting to remove the front plate. Remove the black front face plate by removing the one screw at the top of the inner panel. Replace the suspected defective electrode cable with a new one and replace the panel before reconnecting the power supply.

(diagram in pamphlet)

9 digit temperature/mlll-amp LED display

1. White toggle switch for test set-up UP--50 deg winter checkout DOWN--90 deg summer checkout
2. White toggle switch UP--water temperature display DOWN--mlll-amp output
3. Red toggle switch (on/off) for electrode power

Adjust dial, to set mlll-amp output (refer to insert)

green ground

chassle ground

115/280 load voltage from switch or time clock

1/4 amp slow-blow fuse

voltage input selector 115/230 vao factory set to 230 vao

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