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SPARR-O-TECH  
traitement physique de l'eau

CHALLENGER 6000

Ionisateur au cuivre

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FOR THE 21ST CENTURY POOL

THE ULTIMATE IN POOL WATER PURIFICATION

PURE & SIMPLE

The CHALLENGER 6000 ionic water purification system provides a pure and simple solution to swimming pool water sanitation. Under "normal" conditions large doses of stabilized chlorine are required to maintain safe swimming conditions. The CHALLENGER 6000 is an electrochemical ionizer that reduces the need for chlorine and other chemicals required to maintain safe swimming conditions. The use of this supplemental disinfection system may add up to 50-80% savings in chemical costs alone.

A microprocessor and an electrode chamber, installed before the filter, subjects the water to several electrochemical reactions. The most important of these electrochemical reactions are coagulation and ionization. Coagulation and plating of excess minerals attach to the electrode or coagulate and are filtered out. Ionization of copper compounds are lethal to bacteria and algae, yet safe to larger multi-celled plants and animals. Each of these electrochemical reactions reduce the need to add toxic chemicals like excess chlorine, muriatic acid and caustic soda to the aquatic environment. The result is clean, fresh, soft water that leaves eyes, skin, hair, swimwear and the pool itself free from the effects of excess chemicals and mineral deposits.

The reduction of chemicals needed to safely operate an aquatic environment adds up to increased savings. Time required to

monitor and apply chemicals is reduced. Time of exposure to dangerous chemicals is reduced. BTUs required to heat softer water reduces energy costs. Frequency of backwashes required are reduced which saves water, filter aid and time. Reduced chemical corrosion of pool surfaces and machinery prolongs their effective life. The reduced cost of chemicals alone may add up to a 50-80% savings.

(diagram in pamphlet)

#### ADVANTAGES & FEATURES

- Multi-function electrochemical ionizer. (coagulation, ionization, oxidation)
- Helps kill algae & destroy bacteria.
- Reduces dissolved minerals.
- Enhances filtration.
- Minimizes use of toxic chemicals.
- Up to 80% savings in chemical costs & usage.
- Saves time, money and water.
- Provides softer, cleaner, healthier water.
- Easier on hair, eyes, skin, swimwear and pool equipment.
- Patented, proven, thoroughly tested.
- Self monitoring, self adjusting microprocessor adjusts to pool water conditions.
- Two year warranty on electronics

#### ELECTRICAL & PLUMBING

- The system should be designed such that the Electrode Chamber is two inches larger than the required plumbing. (Available in 8", 10", 12" and custom diameters.)
- The Electrode Chamber is installed between the pump and the filter in a pressure system and before the filter in a gravity system.
- Standard Chamber length 36". (Custom lengths available.)
- Six Electrodes per chamber. (100% Copper anode. Stainless steel cathode)
- The Control Center is in a NEMA 4 enclosure, 22" x 15" x 8".

- Voltage Required 220 AC 50/60 HZ 20W.
- Fuse AGC 5AMP slow blow.
- Electrode cable length 20'.

## INSTALLATION AND MAINTENANCE MANUAL

### CHALLENGER 6000

The CHALLENGER 6000 is designed for pools from 100,000 to 150,000 gallons capacity with heavy swimmer loads. Global ionization products (GIP) manufactures systems for larger and smaller aquatic environments.

1. ABOUT THE UNIT
2. PARTS LIST
3. PLUMBING INSTRUCTIONS
4. ELECTRICAL HOOK UP INSTRUCTIONS
5. ADJUSTING THE DRIVE PORTION OF THE UNIT
6. PROPER WATER BALANCE
7. MAINTENANCE OF THE CHALLENGER 6000
8. TROUBLE SHOOTING GUIDE

If you should have any questions regarding the installation or maintenance of the CHALLENGER 6000 please contact GIP Customer Service at 1-800-962-3445 USA or your local distributor.

### SECTION 1

#### ABOUT THE UNIT

The CHALLENGER 6000 is a patented electro-chemical ionization unit manufactured in Scottsdale, Arizona since 1983. The unit works in conjunction with the circulation system and is designed to work with all types of filtration systems (cartridge, sand, and DE; gravity feed or pressure).

The CHALLENGER systems, acting in conjunction with the circulation system and small amounts of chlorine, have proven to be an effective bactericide and algaecide. Independent microbiologists have found that copper ions, working with chlorine, interact and kill bacteria significantly faster and more efficiently than if the bacteria are being attacked by chlorine alone.

### SECTION 2

## PARTS LIST

- A. CHALLENGER 6000 CONTROL CENTER
- B. SIX LOW VOLTAGE ELECTRODE CORDS
- C. 3 FOOT ELECTRODE CHAMBER
- D. WARRANTY CARD
- E. BALANCED WATER LAMINATED CARD
- F. SIX COMMERCIAL ELECTRODES

## SECTION 3

### PLUMBING INSTRUCTIONS

For proper operation, the electrode chamber should be placed before the filter so the electrodes can be easily taken out when they need replacing. After the chamber is in place, install the six electrodes using either teflon tape, a teflon base stick, or 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 each electrode.

NOTE: If painting the plumbing and chamber, make sure all connectors are covered to ensure paint does not enter the connector pins.

## SECTION 4

### ELECTRICAL HOOK UP INSTRUCTIONS

The low voltage electrode cords are twenty (20) feet long. Therefore, the control center must be mounted within reach of these electrode cords. The CHALLENGER 6000 is designed for 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 a pump switch.

To mount the control center, remove the clear face plate by removing the four screws. Mount the control center using screws or bolts to a rigid support utilizing 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 cables connectors only fit 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 be capable of helping disinfect a minimum of 100,000 gallons to a maximum of 250,000 gallons of water. The circulation system should be operated to turn the water over six times in a twenty-four hour period when the water temperature is above 70 degrees. When the water temperature is below 70 degrees the turn over rate should be not less then three times in a twenty-four period.

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.

## SECTION 6

### PROPER WATER BALANCE FOR THE CHALLENGER 6000

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 maintaining the pool properly. To adjust and maintain the total alkalinity see the charts on page 8. To reduce the alkalinity pour the recommended amount of muriatic acid in a column into the pool at the opposite end from the main drain, brush to spread around. NOTE: You cannot lower the total alkalinity if the ph is on the low side. Alkalinity, working in conjunction 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. This is relative to swimmer load. Remember, proper water balance is influenced by foliage, excessive use, and/or addition of replacement water.

The CHALLENGER 6000 cannot completely eliminate 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.

#### CONTROLLING pH

Normally, under the above ideal conditions the pH stabilizes between 7.6 and 8.2 depending on whether the water had to be built and to what extent. It has been our experience that the closer the pH is to 7.2 the better the water clarity and easier it is to disinfect with this equipment. To decrease the pH without changing the alkalinity the muriatic acid should be broadcast throughout the pool, approximately one pint per 5000 gallons. Whereas in the case of reducing the alkalinity, the muriatic acid is poured in a column into the pool at the opposite end of the main drain, and the pool brushed to remove the salts from the wall.

### SECTION 7

#### MAINTENANCE OF THE CHALLENGER 6000

The CHALLENGER 6000 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 application. 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

FOLLOW ALL THE INSTRUCTIONS ON PROPERLY BALANCED WATER BEFORE IMPLEMENTING THE CHALLENGER 6000.

Typically, there is a six week break in period required to make the transition from chlorine to an ionization system. These figures are based on a heavy swimmer load. The following parameters must be implemented while the entire circulation system is in operation.

The first three weeks use a minimum of 1.0 free chlorine in the pool, preferably 1.5 ppm free chlorine.

During the next three weeks start moving the chlorine level down a little at a time to determine what is going to be the optimum level for your pool. The level of chlorine should never be put below .4 ppm free chlorine, even if your pool can be controlled with less than .4 ppm chlorine.

#### NORMAL OPERATIONS OF THE CHALLENGER 6000

After the completion of the break in period it is necessary to maintain your pool with at least .4 ppm free chlorine. According to climate, use and foliage in the area, the pool may require more than the above mentioned. Since each aquatic environment is different, the required chlorine consumption will be different.

The CHALLENGER 6000 provides six constant water temperature displays while operating. Should a failure occur, the system will sound an alert much like a smoke alarm. Turn the unit off and contact your service representative or refer to the trouble shooting portion of this manual.

#### CLEANING THE ELECTRODES

Upon initial installation the water in the pool will contain minerals and debris which will be removed by the filter and the CHALLENGER electrodes will collect excess debris until the water has been cleaned, this may take a few months. During this period we recommend your inspect and clean the electrode every two months. After the water is clean you should check the electrodes 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, taking care not to disturb the center blue coating or bend the cage. Replace the electrodes into the chamber using teflon tape as described in section 3 of this manual.

Chemical consumption will remain high if the system is operating 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 has small changes there is no reason to be concerned.

1. The Control Center: On a 6000 series system there are six microprocessors, one processor for each electrode.
2. Display Lights Are Not Powered On:

1. Verify proper voltage of 220/240 VAC. The power supply is active whether or not any of the individual on/off switches is on or not. This switch only removes power from the electrode and display and does not turn off the power supply.
  2. Verify the on/off switches are 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 5 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.
3. 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 plug if available.
  3. After these checks are completed suspect a computer problem inside the box.
4. 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.
5. 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 very hard to make a good connection.
6. 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.

7. Testing The Entire System For Proper Functionality: A dummy electrode 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 90 plus or minus ten percent.
  - d. If any failure occurs the most likely cause is some type of connection problem in the system.
8. Removing The Entire Front Face Plate: The power must be removed from the system before attempting to remove the front plate. Remove the clear plastic face plate. Remove the eighteen screws holding the front panel and let the top of the panel come towards you, resting the bottom inside the box. Replace the suspected defective electrode cable with a new one and replace the panel before reconnecting the power supply.

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