09-JUL-2007

05-JAN-2009 2009-0003 Notification: Change in Registrant Address

ENGLISH - LABEL FOR THE TRIOPURE-50

Notification Change

TRIOPURE-50 CHLORINE GENERATOR CONTROLS BACTERIA AND ALGAE IN DOMESTIC SWIMMING POOLS (SPA) WATERS
A MAXIMUM OF 114,000 L OF WATER CAN BE TREATED WITH ONE TRIOPURE-50.
MAXIMUM OUTPUT OF HYPOCHLOROUS ACID EQUIVALENT TO 0.46 Kg OF FREE AVAILABLE CHLORINE PER DAY
FOR SWIMMING POOLS, A MINIMUM OF 1 ppm OF FREE AVAILABLE CHLORINE MUST BE MAINTAINED AND FOR SPAS A MINIMUM OF 3 ppm OF FREE AVAILABLE CHLORINE MUST BE MAINTAINED

READ THE LABEL AND OPERATING MANUAL BEFORE USING
KEEP OUT OF REACH OF CHILDREN

REGISTRATION NUMBER 28567 *PEST CONTROL PRODUCTS ACT*

3580 Sueldo Street

DEL OZONE, ~~3428 BULLOCK LANE,~~ SAN LUIS OBISPO, CA 93403

1-800-676-1335

WARNING: OPERATING THE TRIOPURE-50 WITHOUT WATER FLOW THROUGH THE CELL CAN CAUSE A BUILD UP OF FLAMMABLE GASES WHICH CAN RESULT IN FIRE OR EXPLOSION

ENGLISH - LABEL FOR THE TRIOPURE-50

Notification Change

TRIOPURE-50 REPLACEMENT CELL

REPLACEMENT CELL FOR THE CHLORINE GENERATING DEVICE TRIOPURE-50

REGISTRATION NUMBER 28567, *PEST CONTROL PRODUCTS ACT*. THIS CELL MUST BE USED ON THIS MODEL OF CHLORINE GENERATING DEVICE

READ THE LABEL, THE INSTALLATION MANUAL AND OPERATION MANUAL OF THE CHLORINE GENERATING DEVICE TRIOPURE-50 BEFORE USING

3580 Sueldo Street

DEL OZONE, ~~3428 BULLOCK LANE~~, SAN LUIS OBISPO, CA 93401

1-800-676-1335

AUTOMATIC

09-JUL-2007

TrioPure 50™ Soft Water Sanitation System

Installation and Operation Manual

DEL Ozone · San Luis Obispo, CA 93401 · USA · 800-676-1335 · Fax: 805-541-8459

110105 / 4-0777 Rev E.

DEL OZONE Depuis 1975 www.delozone.com

IMPORTANT SAFETY INSTRUCTIONS

Read and Follow All Safety Instructions

- Read and be familiar with this manual before installing, operating, or performing maintenance on the TrioPure™.
- The TrioPure™ must be installed and operated as specified.
- When installing and using this electrical equipment, basic safety precautions must always be followed.
- To reduce risk of electrical shock, turn off main pool pump and disconnect power to pool equipment prior to any installation or removal of TrioPure™ components.
- All permanent electrical connections should be made using liquid tight fittings and conduit and be made by a certified electrician.
- A ground terminal marked:  is located inside the compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electrical supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment.
- A bonding lug is provided on the external surface of the TrioPure™. To reduce the risk of electric shock, connect the local common bonding grid in the area of the swimming pool, spa, or hot tub to these terminals with a copper conductor not smaller than 8 AG for US and 6 AWG for Canadian installations.
- This product manufactures chlorine. Individuals with any type of chlorine sensitivity should take the appropriate precautions to avoid injury or illness.
- A Ground Fault Circuit Interrupter (GFCI) must be installed between the TrioPure™ and the electrical supply.
- 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 TrioPure™ must not be installed directly above any heat source (e.g., heater). It must be at least 600 mm (2 ft.) above the ground to allow free circulation of air around it. It must not be installed in a closed box.
- Level and mount the TrioPure™ on a wall or a post. If mounting the TrioPure™ on a post, it must be centered on a flat panel of water-proof material at least 457mmx610mm (18”x24”). Do not enclose the TrioPure™ in any box. Do not install it above any heat source. Install the TrioPure™ a minimum of 3 m (10 ft.) from the pool edge. See your local building codes for any additional requirements.
- The TrioPure™ must be installed in an outdoor location, or indoors in a well-ventilated room, due to potential health concerns related to inhalation of ozone. It must be installed so that it is level and with the orientation shown in Figures 1-9.
- Mount the TrioPure™ so that it is inaccessible to anyone in the pool. Never attempt any servicing while unit is wet.
- To avoid chlorinator cell damage, water pressure in the cell must not exceed 200 kPa (30 psi).
- For your safety, do not store or use gasoline, chemicals or other flammable liquids or vapors near this or any other appliance.
- Do not let anyone, especially small children, sit, step, lean, or climb on any equipment installed as part of your pool’s operational system.
- **WARNING:** Always dilute acid in a bucket of pool water before adding to the pool. Never add water to acid. Always add chemicals to water. Carefully follow acid manufacturer’s safety precautions. DO NOT MIX DIFFERENT CHEMICALS TOGETHER.
- **WARNING:** Short-term inhalation of high concentrations of ozone and long-term inhalation of low concentrations of ozone can cause serious harmful physiological effects. DO NOT inhale ozone gas produced by this device.
- **WARNING:** Excessive chlorine levels can cause corrosion damage to swimming pool rails, ladders, heaters, heat exchangers, light faceplates and other metallic equipment. Avoid over saturation of chlorine levels by checking chlorine often using a suitable chlorine test device. Chlorine levels should not exceed 3 ppm. Always check chlorine levels before entering pool.
- **WARNING:** To reduce the risk of injury, do not permit children to use this product. This device must not be used with any bromine-based pool or spa sanitizing products due to potential formation of by-products that may be of health concern.

SAVE THESE INSTRUCTIONS!

ADDENDUM FOR CANADIAN TRIOPURE INSTALLATIONS

The following information is for Canadian installations of the TrioPure and takes precedence over other information in the manual.

1. WARNING: Heavy pool (or spa) usage and higher temperatures may require higher chlorine output to maintain proper free available chlorine residuals.
2. When replacing the cell, only use replacement cells having a label that clearly states that it is a replacement cell for the chlorine generating device TrioPure-50, REGISTRATION NUMBER 28567, *PEST CONTROL PRODUCTS ACT*.
3. DO NOT add pool/spa chemicals directly to the skimmer. This may damage the chlorinator cell.
4. Maintaining high salt and chlorine levels above recommended range can contribute to corrosion of pool and spa equipment.
5. Check the expiry date of the test kit. Test results may be inaccurate if used after expiry date.
6. WARNING: To reduce the risk of injury, do not permit children to operate this device.
7. Follow all aspects of the local and National Electrical Code(s) when installing the TrioPure-50.
8. With high bather loads or high temperatures, the pool owner may add “liquid chlorine” with the active ingredient of Sodium Hypochlorite to supplement the Chlorine production in the TrioPure-50.
9. When properly maintained and cleaned and under normal use conditions, the life expectancy of the chlorinator cell and electrodes is three years minimum - approximately 15, 000 hours of operation.
10. NOTE: For outdoor pools, chlorine residual can be protected from destruction by sun’s rays by addition of cyanuric acid stabilizer. See Section 5 of the manual for recommended cyanuric acid levels.
11. When the TrioPure is used to sanitize a pool and spa combination, the spa must be completely drained periodically. The number of days between COMPLETE SPA DRAINAGE is equal to the volume of spa water in liters, divided by 10 times the maximum number of daily spa users. Refill spa with water. Repeat DIRECTIONS FOR USE of the device.
12. Pool Capacity:
    - TrioPure-50: Up to 114,000 liters (30,000 gallons)

Maintain daily levels as determined by testing kit.

	Swimming pool
Free available Chlorine	1.0 - 3.0 ppm
pH	7.2 - 7.8
Total alkalinity	100 - 120 ppm
Calcium hardness	200 - 300 ppm
Salt	3000-5000 ppm

Health and Hyperthermia warnings for spa devices:

- People with a medical condition should consult a physician before entering pool or spa water.
- Maximum spa water usage temperature is 40°C. Bathing in spa water at 40°C should not exceed 15 minutes.

Table of Contents

The TrioPure™ is ETL Certified.

SECTION 1 **General Information**

1A Description

How Your TrioPure™ Sanitation System Works

Your TrioPure™ produces both ozone and chlorine. Ozone is made by drawing air through Corona Discharge (CD) cells that break down oxygen molecules, which then recombine into ozone molecules. The TrioPure's internal pump provides sufficient water flow through the TrioPure™ to draw this ozonated air into the water stream. Chlorine is made by electrolyzing low concentrations of salt water in the pool, freeing the chlorine from the sodium chloride molecules in the salty water.

The TrioPure™ salt chlorination sub-system routinely shuts down during cleaning mode and allows any scale that has developed to slough off. This cleaning step dramatically lowers the amount of scale that can attach to the salt chlorinator plates over time and also greatly reduces the need for periodic cleaning.

The amount of chlorine produced by the TrioPure™ can be adjusted by using the **Chlorine Control** knob in order to compensate for higher chlorine demand during hot days or increased bather load.

1B Specifications

Power Requirements:
Rating: 120V, 3.0 A fuse, 60Hz, or
240V, 1.5 A fuse, 60Hz

Operating Temperature:
Air: 4°-49° C (40°-I20° F)
Water: 15° - 40° C (59°-104°)

Specifications:
Dimensions: 38 x 48 x 18 cm (15" x 19.5" x 7.5")
Weight: TrioPure-50: approx 17Kg (36lb)

Pool Capacity:
TrioPure-50: Up to 95,000 L (25,000 Gallons)

Chlorinator Production:
TrioPure-50: 15.8 g/h (348 g per day)
@ 3400 PPM salinity and 22° C (71.6° F)
water temperature at maximum setting

Water Flow Rate: 19 LPM
Salinity: 3,000-5,000 ppm (3,500 Nominal)

Illustration 1

SECTION 2 **Installation**

The most common pool and pool/spa configurations are discussed in this manual. For questions on your specific installation, please contact DEL Ozone at 800-676-1335, extension 293.

2A Verify Contents

Inspect your TrioPure™ shipping box for the following items:

(1) TrioPure-50 with salt chlorinator cell attached

(1) Molded plastic bypass installation manifold

(1) 3.0 A fuse for 120 V & 1.5 A fuse for 240 V (in bag near TB1 Terminal Block)

(1) Manual

(1) Quick Reference Guide

2B Installation Tips

CAUTION: The bypass manifold must be correctly installed or your **TrioPure™** system will not work properly and the warranty will be voided. The bypass manifold contains two check valves that are matched to create the correct backpressure and anti-siphon protection for optimum performance of your **TrioPure™**.

- The TrioPure™ sanitation system should be installed on residential pools only. The salt level in your TrioPure™ pool should be between 3,000 and 5,000 ppm (3,500 recommended).
- If you use solar panels for pool heating, your TrioPure™ must be plumbed with the manifold before the solar heater, and the water return from the TrioPure™ after solar heater. The bubbles that can be created through your solar heater can inadvertently shut off the TrioPure-50. See Figures 1, 2, 3, 7, 8 and 9.
- The TrioPure™ must be installed no more than 2.4 m (8 ft.) above water level or no more than 1 m (3 ft.) (measured from the top of the enclosure) below water level to maintain the correct pressure and flow characteristics for optimum operation of the unit.
- **DO NOT USE** copper or iron piping for the TrioPure™ installation as chlorine and ozone have corrosive effects. Consult your pool professional for appropriate pool equipment piping materials.
- Even though the TrioPure™ is designed for outdoor use, care should be taken when choosing a mounting location. To protect your investment, mount the TrioPure™ where it is protected from the elements (i.e., direct sun, rain, dirt, sprinklers) and completely sheltered if possible while providing adequate ventilation.
- If ozone bubbles are not desirable (for indoor pools, vinyl-lined pools, pools with covers, negative edge pools, etc.), the addition of a DEL Ozone Mixing-Degas Vessel (MDV-30) is recommended. Contact your local pool equipment dealer or visit DEL Ozone's website at www.delozone.com to find one near you.
- "Salt & Pepper" fittings, eyeball fittings, or the use of a gravity drains as return lines are recommended since they can better mix and disperse treated pool water.
- Plumb the TrioPure™ to the bypass manifold using a minimum amount of plumbing fittings. This minimizes backpressure.
- The TrioPure™ has been designed with an electronic water flow switch. This device automatically shuts down both the salt chlorinator and ozone subsystems when the water flow through the TrioPure™ is interrupted. To prevent personal injury and damage to the TrioPure™ salt chlorinator cell, do not interfere with this system in any way. It is designed for your protection and the protection of the TrioPure™.
- Always check the salt chlorinator cell frequently for the accumulation of pool debris that may have bypassed the pool filter. This can affect the operation of the flow switch, ozone injector, pump, and salt chlorinator plates.
- Salt is not lost through evaporation, but is lost when water is splashed out of the pool or during backwashing. Rainfall or adding fresh water dilutes the salt concentration and you will need to occasionally add more salt to the swimming pool. Check salinity level before and after adding additional salt.
- If the TrioPure™ is being installed on a new pool, do not add salt for 2 weeks after the pool has been filled. This protects plaster from staining and allows the finish to cure.
- **Pool water with high calcium levels, or hard water, can cause excessive calcification [scale] in the Chlorinator Cell. Installation of a T-filter or Y-filter trap with a 60-mesh screen near the Water Out line of the TrioPure, along with frequent acid cleaning of the cell plates [reference Section 5d-2: Chlorinator Cell Plate Cleaning] will reduce water hardness over time. The monthly addition of a non-chlorine shock (Potassium Monopersulfate or equivalent) to the pool will keep the scale soft, preventing the filter trap from clogging. Remove and clean the filter trap as necessay.**

2-C Recommended Installation Materials

- Liquid tight conduit, connectors & junction box, and appropriately sized and rated wire per local electrical codes.

  Note: The TrioPure is designed for 1.5 cm (1/2") NPT liquid tight fittings
- Two 5 cm (2") unions for manifold installation to pool return line (use reducer bushings for 3 cm (1½")).
- 2 cm (3/4") unions, ball-valves, and rigid PVC or Spa-Flex tubing for installation from manifold to TrioPure™.
- Mounting hardware for securing TrioPure™ to a stable surface (wall, fence, post with backboard) sufficient to support the unit.

  Note: If you are mounting the TrioPure™to the side of house wall that is located near a bedroom, consider using a vibration dampening material to reduce vibration noise.

SECTION 2 **Installation (Continued)**

2D Mounting the TrioPure™

IMPORTANT: A qualified swimming pool professional and certified electrician must install the TrioPure™ Sanitation System. Refer to local building codes for any additional requirements. If you need assistance in finding a qualified installer, please contact our customer service department at 1-800-676-1335, ext. 293, or visit www.delozone.com.

Step 1 - Before starting, pick a mounting location that:

- Is 3 m (10 ft.) ft. minimum from the edge of pool
- Allows space for ease of plumbing and electrical installation. Review **Sections 2E & 2F**.
- The bottom of the **TrioPure™** has a minimum clearance of 0.6 m (2 ft.) from all obstacles for ease of visibility and maintenance. Space must be allowed on all sides of the enclosure for adequate ventilation and to allow the clear cover to open completely.
- Sufficient clearance on top and both sides for your **TrioPure™** for plumbing and electrical hardware access.
- The top of the **TrioPure™** is no higher than 2.4 m (8 ft.) above or lower than 1 m (3 ft.) below the water surface.
- Avoid installing your **TrioPure™** above any heat generating source such as a heater or pump.
- Meets the guidelines in **Section 2E** (Plumbing) and **Section 2F** (Electrical) in this manual
- It is recommended that the TrioPure is mounted with ¼-20 galvanized hex bolts. The bolt mounting pattern is 254 mm (10 in.) wide by 375 mm (14.75 ft.) high. Screw in bottom bolts so that the head is 6.3 mm (¼ in.) from the mounting surface. Slide the TrioPure onto these bolts and screw the upper bolts through the top mounting holes on the enclosure.

Note: If installing your TrioPure™ below water level, an additional light-duty check valve is required after the chlorinator cell to prevent backwash in the unlikely event of ozone check valve failure while the unit has been powered down.

Step 2 - Level and mount the TrioPure™ on a wall or a post. If mounting the TrioPure™ on a post, it must be centered on a flat panel of waterproof material at least 457 mm x 610 mm (18" in. x 24"). Do not enclose the TrioPure™ in any box. Do not install it above any heat source. Install the TrioPure™ a minimum of 3m (10' ft.) from the pool edge. Do not install the TrioPure in direct sunlight. In locations where the daytime temperatures regularly exceed 37°C (100° F), the internal thermal protection switch may shut down the TrioPure. When the temperature drops the TrioPure power will be restored.

2E Plumbing

2e-1 Installing the TrioPure™ Manifold

Note: Turn off main pool pump and disconnect power before installing the bypass manifold.

There are many different types of pool construction and pool equipment configurations. The following pool configuration list will help you determine which way to plumb your TrioPure™ for optimal performance. Each configuration has an easy to plumb illustration for installing the bypass manifold.

NOTE: The bypass manifold must be mounted horizontally to prevent bubbles from returning to the TrioPure™ pump and tripping the flow switch.

Before installing the TrioPure™ bypass manifold, determine whether your pool is a:

- New Pool (can I plumb a dedicated 2 cm (¾") return)
- Existing Pool (returns already in place)
- Pool Only
- Pool/Spa combination

Also, determine whether your have an **In-Floor Cleaning System** (ICS) or **Solar Heater** installed in your existing pool (or plan to install one on your new pool).

The plumbing diagrams shown on the following pages are schematic representations of the various pool configurations and plumbing lengths are for reference only.

2e-2 Plumbing Configuration Chart

<u>If your pool is:</u> New Pool Pool Only No ICS No Solar / Solar - **See Figure 1**
If your pool is: Existing Pool Pool Only No ICS No Solar / Solar - **See Figure 2**
If your pool is: Existing Pool Pool Only ICS No Solar / Solar - **See Figure 3**
If your pool is: New Pool Pool Spa Combo No ICS No Solar - **See Figure 4**
If your pool is: Existing Pool Pool Spa Combo No ICS No Solar - **See Figure 5**
If your pool is: Existing Pool Pool Spa Combo ICS No Solar - **See Figure 6**
If your pool is: New Pool Pool Spa Combo No ICS Solar - **See Figure 7**
If your pool is: Existing Pool Pool Spa Combo No ICS Solar - **See Figure 8**
If your pool is: Existing Pool Pool Spa Combo ICS Solar - **See Figure 9**

2e-3 Plumbing Configurations Figures 1-9

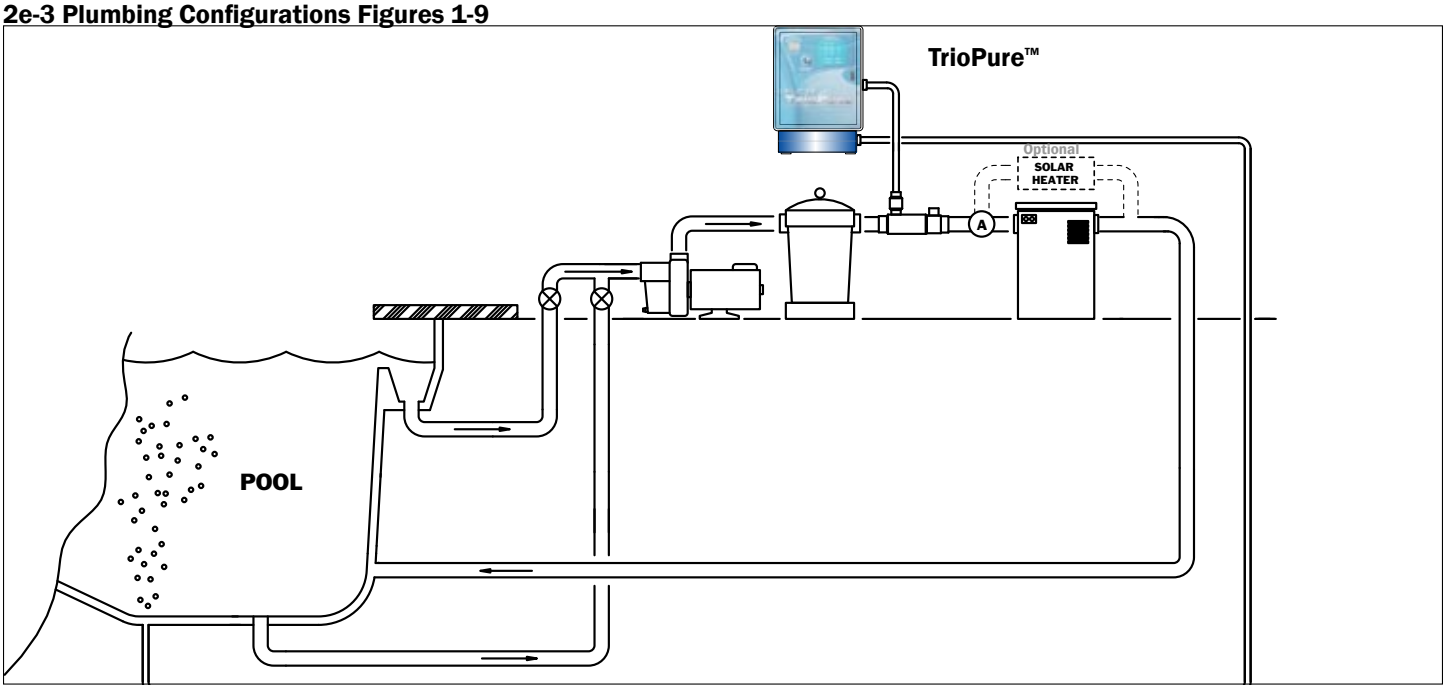

Figure 1 - (New Pool, Pool Only, No ICS, No Solar, Solar):

- Manifold to be plumbed between the filter and heater. In the case of Solar, the manifold is to be installed before the diverter valve that serves both the solar and non-solar heaters.
- TrioPure™ return port of the bypass manifold capped off.
- Return from TrioPure plumbed to a dedicated 2 cm (¾") return to the lowest point of the pool.
- To minimize the size of ozone bubbles, use a dispersion cap or main drain cover. This may require a stub-up to the appropriate size for the fitting.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

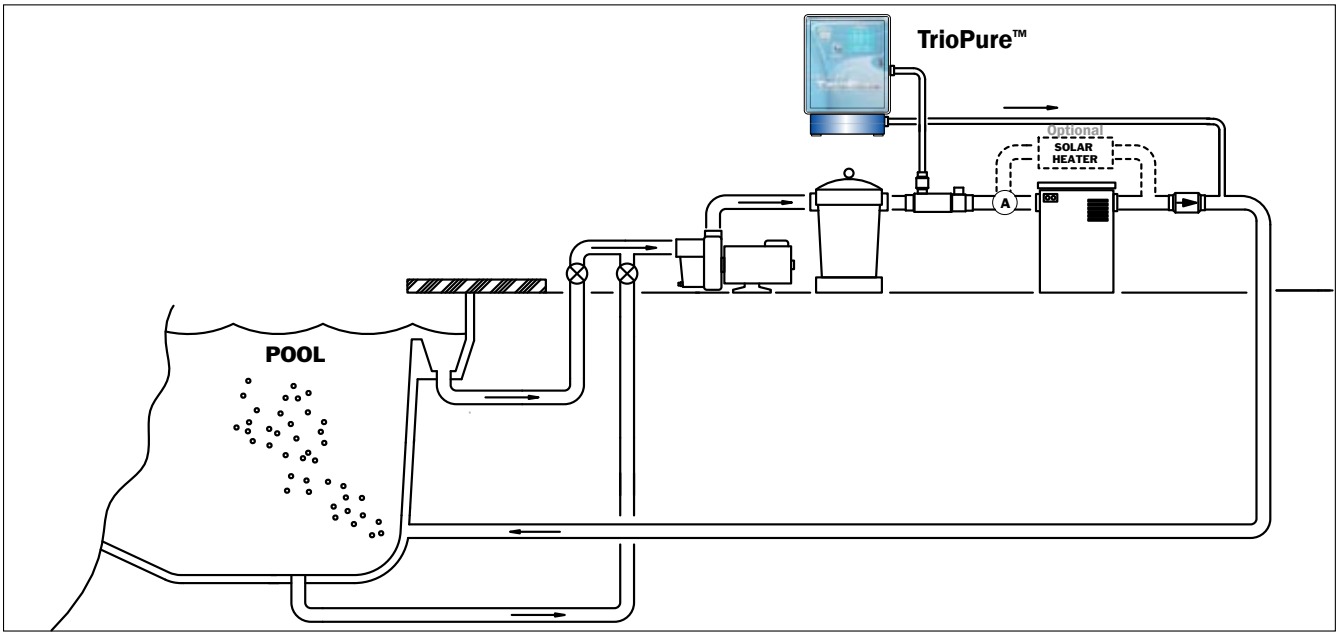

Figure 2 - (Existing Pool, Pool Only, No ICS, Solar, No Solar):

- Bypass Manifold plumbed between the filter and heater.
  Note-In the case of Solar, the manifold is to be before the diverter valve that serves both the solar and non-solar heaters.
- TrioPure™ return port of the bypass manifold capped off.
- Return from TrioPure™ plumbed into tee after the heater(s).
  Note-In the case of Solar the TrioPure return is to be after the tee where the solar heater joins the main return.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

2e-3 Plumbing Configurations (Continued)

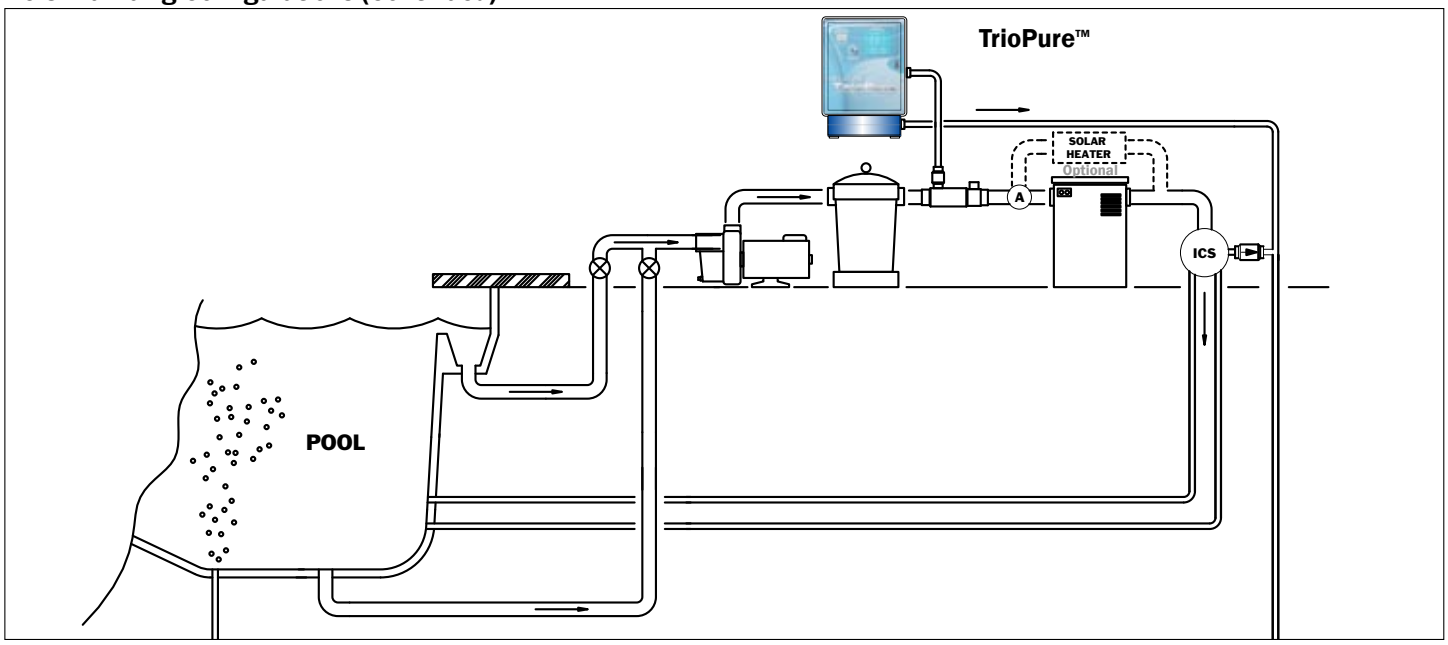

Figure 3 - (Existing Pool, Pool Only, ICS, Solar, No solar):

- Manifold to be plumbed between the filter and heater.
- TrioPure™ return port of the bypass manifold capped off.
- Return from TrioPure™ plumbed to the line of the ICS that goes to the lowest point of the pool.
  - This is after the ICS diverter valve.
  - A light duty check valve must be placed between the diverter valve and point where the TrioPure™ enters the ICS line.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

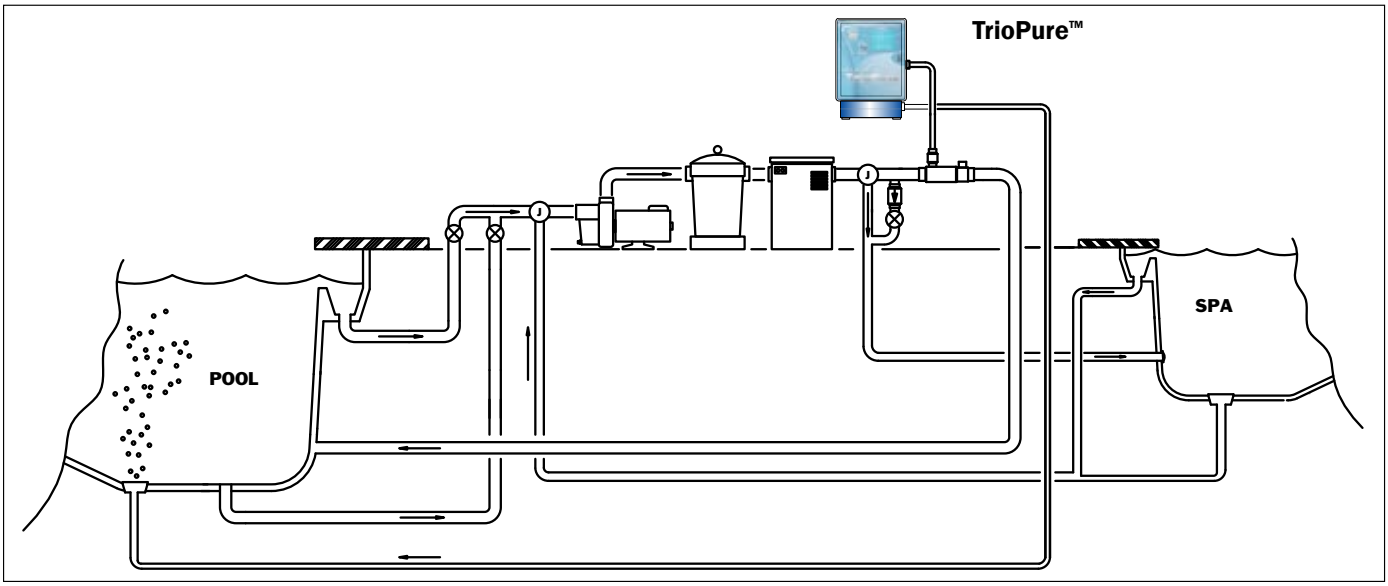

Figure 4 - (New Pool, Pool Spa Combination, No ICS, No solar):

- Manifold to be plumbed in the pool return after the 3-way valve that diverts water between the pool and spa.
- TrioPure™ return port of the bypass manifold capped off.
- Return from TrioPure™ plumbed to a dedicated 2 cm (¾") return to the lowest point of the pool.
- To minimize the size of ozone bubbles, use a dispersion cap or main drain cover. This may require a stub-up to the appropriate size for the fitting.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

2e-3 Plumbing Configurations (Continued)

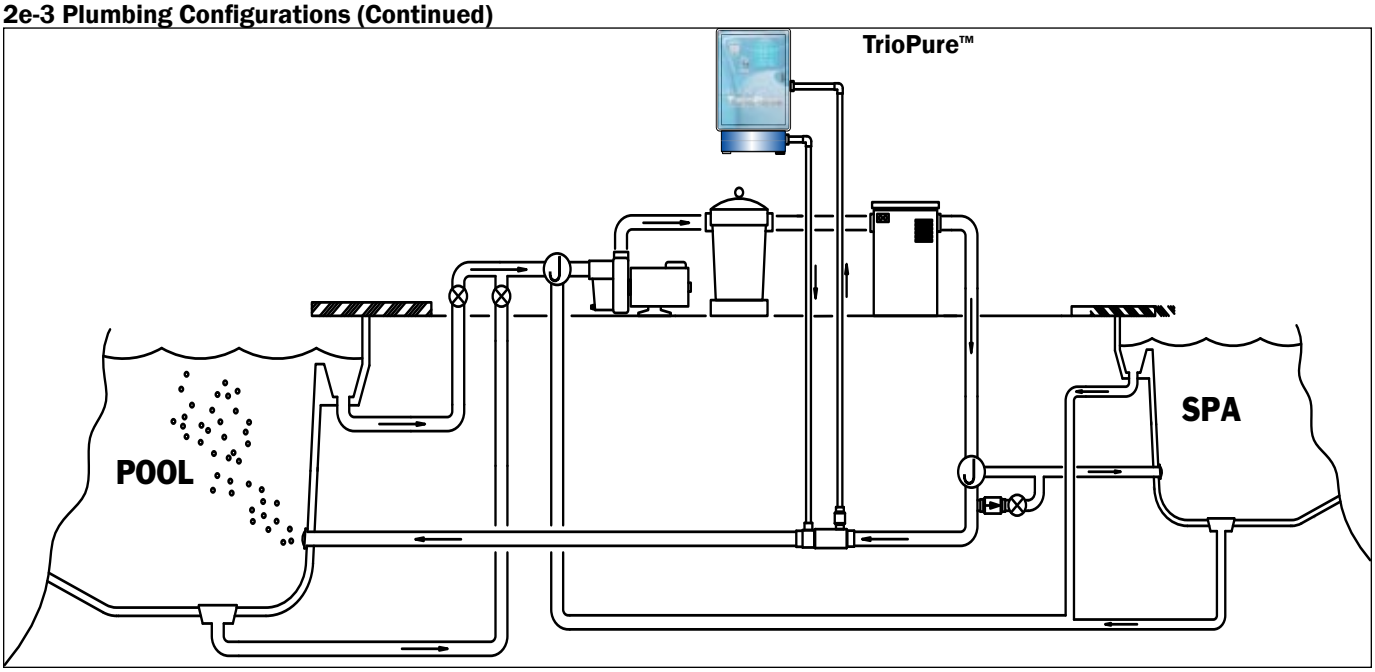

Figure 5 - (Existing Pool, Pool Spa Combination, No ICS, No solar):

- Manifold to be plumbed in the pool return after the 3 way valve that diverts water between the pool and spa.
- Return from TrioPure™ plumbed back into the bypass manifold.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

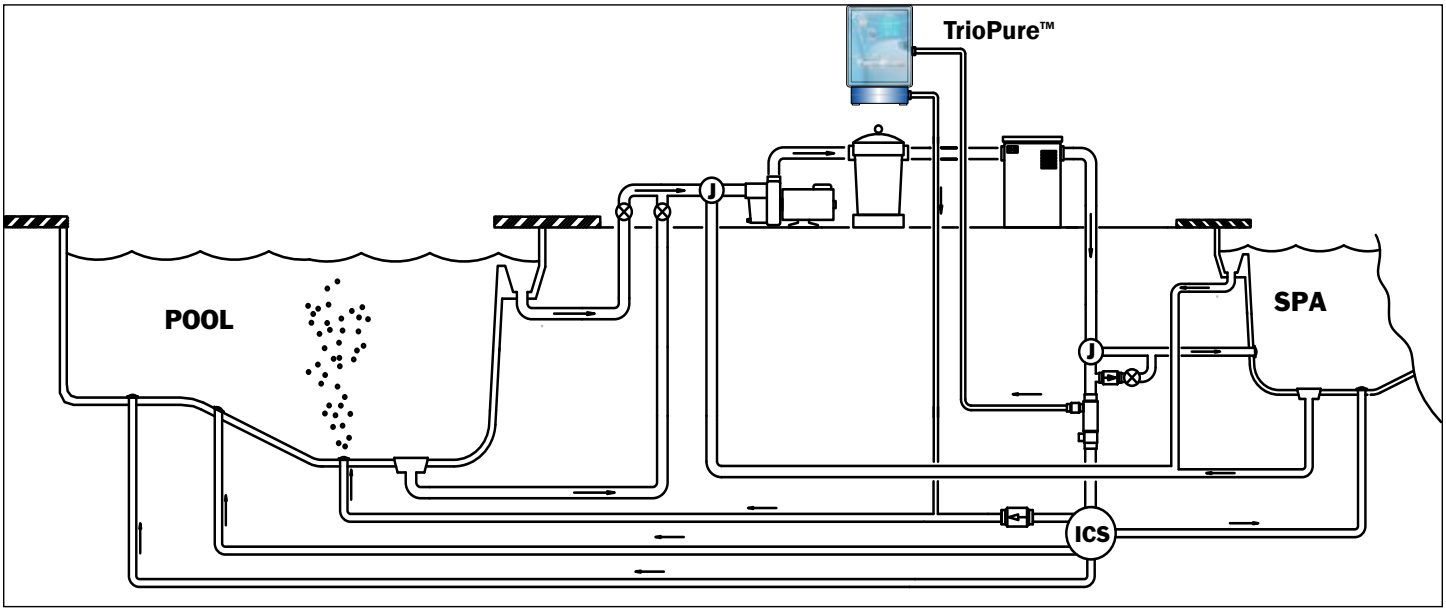

Figure 6 - (Existing Pool, Pool Spa Combination, ICS, No solar):

- Manifold to be plumbed in the pool return after the 3 way valve that diverts water between the pool and spa.
- Return from TrioPure™ plumbed to the line of the ICS that goes to the lowest point of the pool.
  - This is after the ICS diverter valve.
  - A light duty check valve must be placed between the diverter valve and the point where the TrioPure™ enters the ICS line.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

2e-3 Plumbing Configurations (Continued)

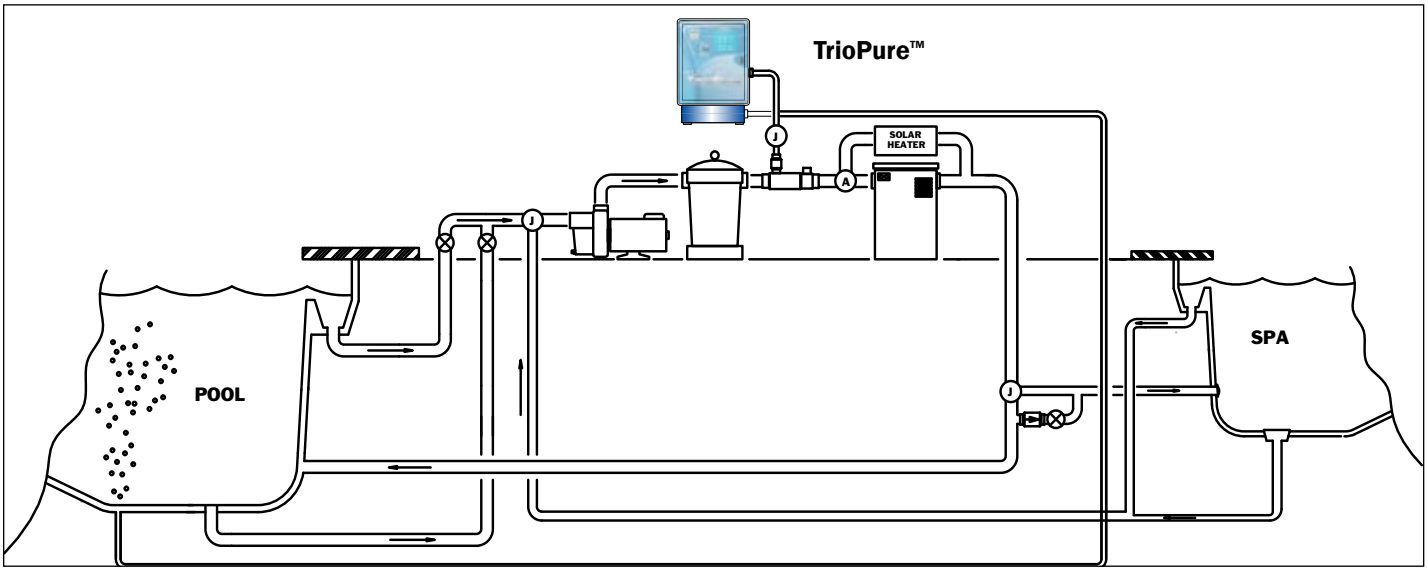

Figure 7 - (New Pool, Pool Spa Combination, No ICS, Solar):

- Manifold to be plumbed between the filter and heater.
- TrioPure™ return port of the bypass manifold capped off.
- Return from TrioPure™ plumbed to a dedicated 2 cm (¾") return to the lowest point of the pool.
- An automated shut-off valve needs to be put in the line between the bypass manifold and the TrioPure™, which is tied into the Pool/Spa control system, and shuts off water to the TrioPure when in spa mode
  - If this is overlooked, the TrioPure will pump water from the spa into the pool, when in spa mode.
  - To minimize the size of ozone bubbles, use a dispersion cap or main drain cover. This may require a stub-up to the appropriate size for the fitting.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

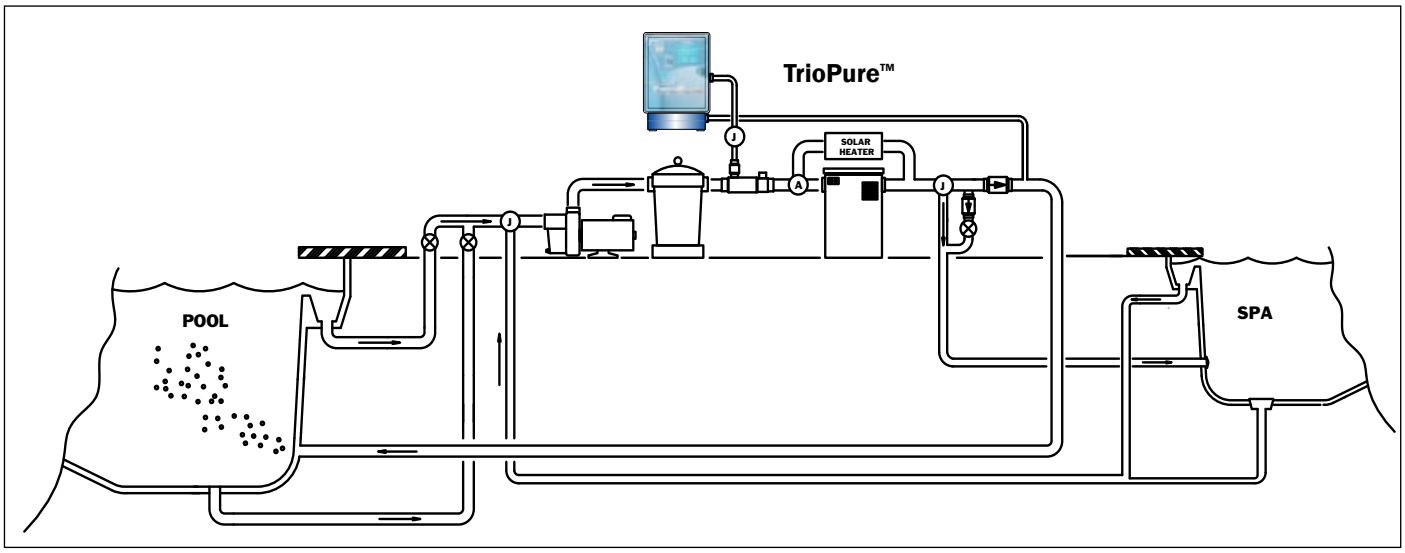

Figure 8 - (Existing Pool, Pool Spa Combination, No ICS, Solar):

- Manifold to be plumbed between the filter and heater.
- TrioPure™ return port of the bypass manifold capped of.f
- Return from TrioPure™ plumbed into a tee in the main pool return after the 3 way valve that diverts water between the pool and spa.
- An automated shut-off valve needs to be put in the line between the bypass manifold and the TrioPure™, which is tied into the Pool/Spa control system, and shuts off water to the TrioPure™ when in spa mode.
  - If this is overlooked, the TrioPure will pump water from the spa into the pool, when in spa mode.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

2e-3 Plumbing Configurations (Continued)

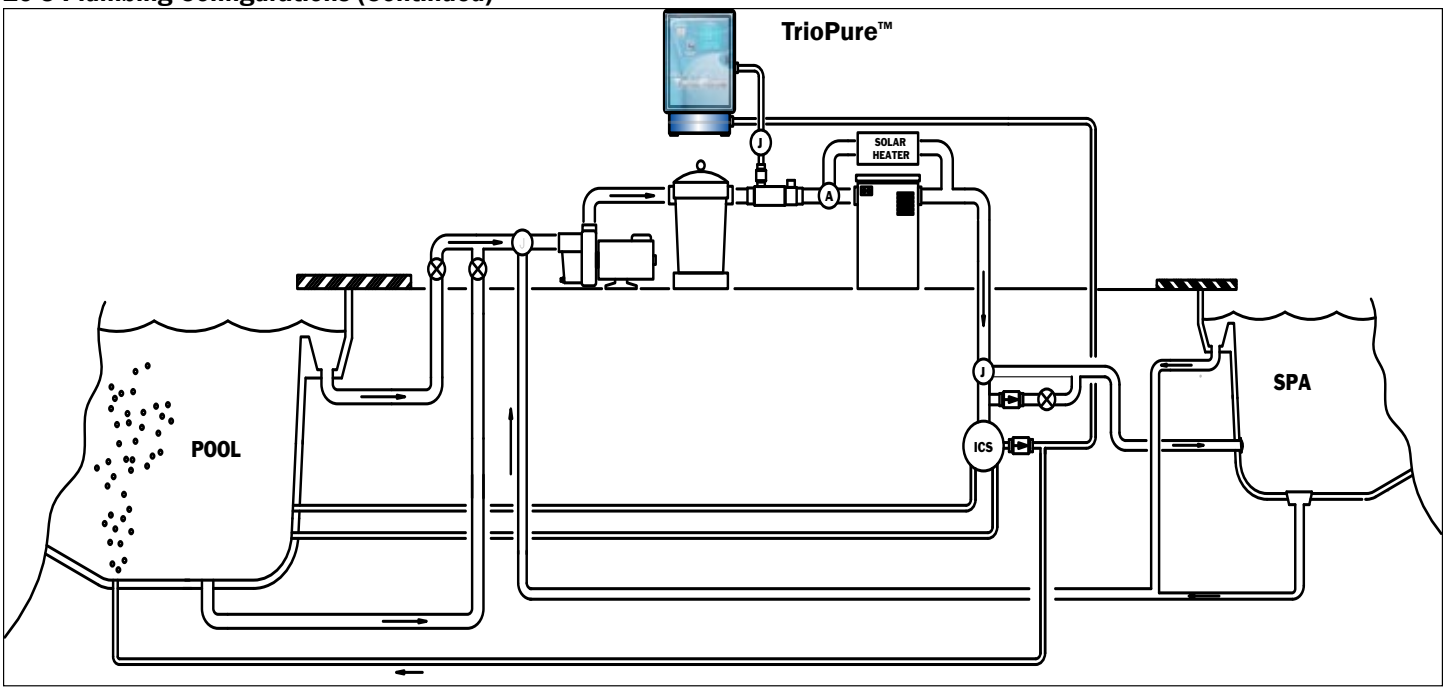

Figure 9 - (Existing Pool, Pool Spa Combination, ICS, Solar):

- Manifold to be plumbed between the filter and heater.
- TrioPure™ return port of the bypass manifold capped off.
- Return from TrioPure™ plumbed to the line of the ICS that goes to the lowest point of the pool.
  - This is after the ICS diverter valve.
  - A light duty check valve must be placed between the diverter valve and the point where TrioPure™ enters the ICS line.
- An automated shut-off valve needs to be put in the line between the bypass manifold and the TrioPure™, which is tied into the Pool/Spa control system, and shuts off water to the TrioPure when in spa mode.
  - If this is overlooked, the TrioPure™ will pump water from the spa into the pool, when in spa mode.
- Del recommends installing 2 cm (¾") ball valves on the inlet and outlet of the Triopure to facilitate Salt Cell removal for cleaning and a ball valve after the Bypass Manifold to control water flow through the Salt Cell.

Special Note about Spillway Valves on Pool/Spa Combinations without Solar. If a spillway valve is used, the line which takes water from the pool into the spa creating the overflow effect, it must be equipped with a light duty check valve to prevent water from being diverted back into the pool, when in spa mode, and any lines to or from the TrioPure must be plumbed after it.

2F Electrical

IMPORTANT: Electrical connections must be made by a certified electrician. Use copper conductors only. Follow local and NEC codes. Connect only to a circuit protected by a Class A GFCI.

Step 1 - Determine the voltage required for your installation. Your TrioPure™ is configurable for either 120 V or 240 V AC.

Step 2 - For 120 V installations, install the 3.0 A fuse (3AG type) into the fuse holder. For 240 V installations, install the 1.5 A fuse (3AG type) into the fuse holder. The fuses are in a bag attached inside the enclosure near the terminal block.

Warning: Failure to install the correct fuse voids the warranty and can present a potential fire and/or electrical hazard.

Step 3 - Open the front clear cover by opening the latch on the right side of the enclosure.

Step 4 - Remove the front panel by pulling off the **Chlorine Control Knob** and unscrewing four (4) Phillips head 6-32 screws. Locate the terminal block (TB-1).

Step 5 - The main power wiring should be routed through 1.5 cm (½") hole on the left side of the enclosure using appropriate liquid tight strain relief or conduit (not supplied).

Step 6 - Connect the main wires to TB-1 as show in **Figure 10** for 120 V installations or **Figure 11** for 240 V installations.

Step 7 - Connect the local common bonding grid in the area of the swimming pool, spa or hot tub to the bonding lug (on the left exterior of the unit) with an insulated or bare solid copper conductor not smaller than 8 AWG (US) or 6 AWG (Canada).

Step 8 - Attach the cover plate with the four (4) Phillips head 6-32 screws. Replace the **Chlorine Control Knob** onto the extended "D" control shaft. Ensure that the ON/OFF switch is in the "OFF" position. Close and latch the clear cover.

Note: The TrioPure™ must be hard-wired to the AC line side for 24 hour operation to 120 V/60 Hz or 240 V/60 Hz ONLY using liquid tight fittings/conduit and wire gauges meeting local codes for the voltage required. Use a permanent marker to indicate either 120 V or 240 V configuration on the side label found on the left side of the TrioPure™.

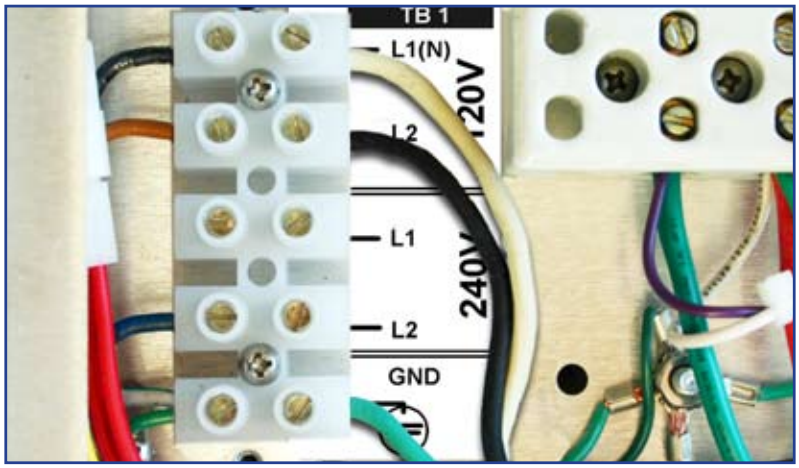

Figure - 10 Terminal Block 120 V Configurations

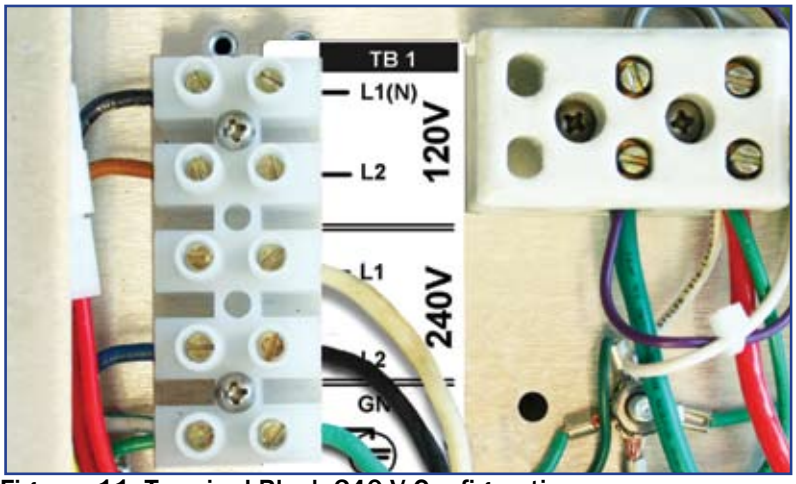

Figure - 11 Terminal Block 240 V Configurations

SECTION 3 **Pool Preparation**

3A Important Information

If the TrioPure™ is being installed on a new pool, do not add salt for 2 weeks after pool has been filled to help protect plaster from staining.

Pool water must be at the proper salinity level, temperature, and chemically balanced before operating the TrioPure™.

3B What Kind of Salt to Use

Use 99.6% pure or better sodium chloride water softening or feed salt work best with your TrioPure™. The finer the grain, the easier it will be to dissolve the salt quickly and completely (pellets are much harder to dissolve than fine grain salt). Common brand names of salt to use are Cargil and Morton.

Note: Salt with anti-caking agents (yellow prussiate of soda, or "YPS") may cause staining of pool linings and fixtures and should not be used.

3C Where to Get Salt

Salt can be purchased at a pool supply, building supply, feed supply, or major home and garden department store.

3D How Much Salt to Use

Always use a salinity test strip (such as Aquacheck White for salt or LaMotte Tracer Meter- found through local pool supply dealer) or digital salinity meter to determine salt level in pool water prior to adding any salt. Capture water from about 457mm (18" in.) deep in a container, and then test this water sample. Add enough salt to obtain a salinity of approximately 3,500 ppm - Refer to **'Salt Sizing Table'** (Figure 14) on pages 11-12.

3E How to Add Salt

Step 1 - Evenly disperse the proper amount of salt around the perimeter of the pool. Run the main pool circulation pump for 24 hours and agitate any undissolved salt deposited at the bottom of the pool with a pool brush. Allow 24 hours or longer for salt to fully dissolve.

IMPORTANT: To avoid damage to your TrioPure™ chlorinator, never operate the TrioPure™ if the salinity level is under 3,000 ppm.

It is easy to add more salt to your pool but difficult to remove excess salt through draining.

CAUTION: Do not add salt to the skimmer box.

3F Pool Sizing Chart

If you don't know the size of your swimming pool, you must first determine the volume before adding large quantities of salt.

For rectangular pools, simply calculate:
length (m) x width (m) x average depth (m) =
cubic meters (m^3)

For oval pools, simply calculate:
length (m) x width (m) x average depth (m) x 1.1 =
cubic meters (m^3)

For round pools, simply calculate:
$(\text{diameter(m)})^2$ x average depth (m) x 1.3 =
cubic meters (m^3)

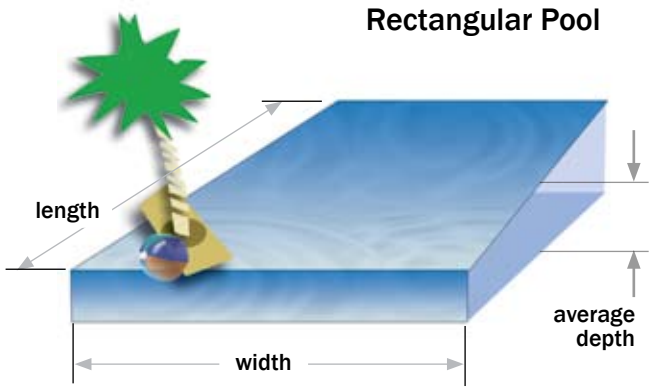

Figure 12

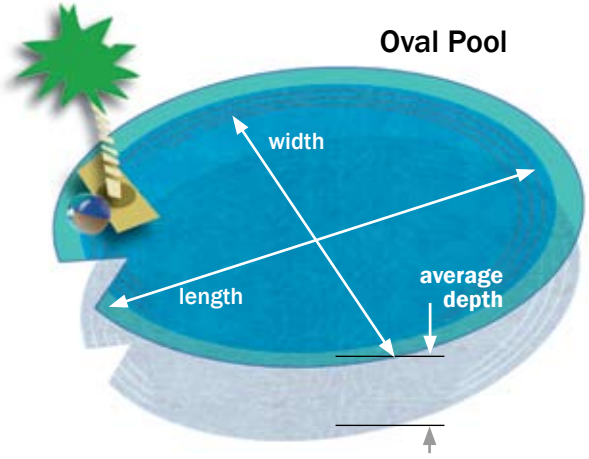

Figure 13

3G Salt Sizing Table

See Figure 14 below for complete salt sizing information on pools up to 187,500 L (50,000 gallons).

Volume in Cubic Meters from 19 to 95 (5,000 to 25,000 gal)

Kilograms of Salt (99.6% pure Sodium Chloride) Needed for 3500 PPM Salt Residual									
Current Salt	Pool Volume in Litres (Gallons)								
Residual Level	18,750	28,125	37,500	46,875	56,250	65,625	75,000	84,375	93,750
in PPM (mg/l)	(5,000)	(7,500)	(10,000)	(12,500)	(15,000)	(17,500)	(20,000)	(22,500)	(25,000)
0	66	100	133	166	199	232	266	299	332
250	62	92	123	154	185	216	247	277	308
500	57	85	114	142	171	199	228	256	285
750	52	78	104	130	156	183	209	235	261
1000	47	71	95	119	142	166	190	213	237
1250	43	64	85	107	128	149	171	192	213
1500	38	57	76	95	114	133	152	171	190
1750	33	50	66	83	100	116	133	149	166
2000	28	43	57	71	85	100	114	128	142
2250	24	36	47	59	71	83	95	107	119
2500	19	28	38	47	57	66	76	85	95
2750	14	21	28	36	43	50	57	64	71
3000	9	14	19	24	28	33	38	43	47
3250	5	7	9	12	14	17	19	21	24
3500	0	0	0	0	0	0	0	0	0

Volume in Cubic Meters from 96.5 to 112 (25,000 to 29,500 gal)

Kilograms of Salt (99.6% pure Sodium Chloride) Needed for 3500 PPM Salt Residual									
Current Salt	Pool Volume in Litres (Gallons)								
Residual Level	95,625	97,500	99,375	101,250	103,125	105,000	106,875	108,750	110,625
in PPM (mg/l)	(25,500)	(26,000)	(26,500)	(27,000)	(27,500)	(28,000)	(28,500)	(29,000)	(29,500)
0	339	345	352	358	365	372	378	385	392
250	314	321	327	333	339	345	351	358	364
500	290	296	302	307	313	319	324	330	336
750	266	271	276	282	287	292	297	303	308
1000	242	247	251	256	261	266	270	275	280
1250	218	222	226	230	235	239	243	248	252
1500	193	197	201	205	209	212	216	220	224
1750	169	173	176	179	183	186	189	193	196
2000	145	148	151	154	156	159	162	165	168
2250	121	123	126	128	130	133	135	138	140
2500	97	99	101	102	104	106	108	110	112
2750	73	74	75	77	78	80	81	83	84
3000	48	49	50	51	52	53	54	55	56
3250	24	25	25	26	26	27	27	28	28
3500	0	0	0	0	0	0	0	0	0

Figure 14 continued on next page

3G Salt Sizing Table (Continued)

Volume in Cubic Meters from 113 to 189 (30,000 to 50,000 gal)

Kilograms of Salt (99.6% pure Sodium Chloride) Needed for 3500 PPM Salt Residual									
Current Salt	Pool Volume in Litres (Gallons)								
Residual Level	112,500	121,875	131,250	140,625	150,000	159,375	168,750	178,125	187,500
in PPM (mg/l)	(30,000)	(32,500)	(35,000)	(37,500)	(40,000)	(42,500)	(45,000)	(47,500)	(50,000)
0	398	432	465	498	531	564	597	631	664
250	370	401	432	462	493	524	555	586	616
500	341	370	398	427	455	484	512	541	569
750	313	339	365	391	417	443	469	496	522
1000	285	308	332	356	379	403	427	450	474
1250	256	277	299	320	341	363	384	405	427
1500	228	247	266	285	303	322	341	360	379
1750	199	216	232	249	266	282	299	315	332
2000	171	185	199	213	228	242	256	270	285
2250	142	154	166	178	190	202	213	225	237
2500	114	123	133	142	152	161	171	180	190
2750	85	92	100	107	114	121	128	135	142
3000	57	62	66	71	76	81	85	90	95
3250	28	31	33	36	38	40	43	45	47
3500	0	0	0	0	0	0	0	0	0

Figure 14, Cont.

3H When to Add Salt

Step 1 – Determine the size of your pool in cubic meters. Please see Section 3F.

Step 2 – Check the salinity of the pool water. Always use a salinity test strip or electronic salinity meter to determine the salt level in the pool water prior to adding any salt.

Step 3 – Use the **Salt Sizing Table** (**Section 3G**) to determine how much salt you'll need. You will also need to add about 0.6 kg (1.25 lbs) of stabilizer (Cyanuric Acid) for every 23 kg (50 lbs) of salt added to the pool. For example, if adding 340 kg (750 lbs), the quantity of stabilizer needed would equal 340 kg (750 lbs) / 23 kg X 1.25 = 8.5 kg.

Note: To add Cyanuric Acid, slowly sprinkle into the skimmer.

Step 4 – Turn on the main pool pump with suction coming from the main pool drain.

Step 5 – Add salt directly to the pool [**DO NOT add to the skimmer box**] by dispersing it around the outside edge of the pool.

Step 6 – Use a pool brush to mix and help dissolve the salt. Keep the main pump running for 24 hours.

Step 7 – Check the pool salinity. If the salt level is much lower or higher than expected, first re-check your calculations for adding salt. Second, check the pool for any undissolved salt and continue to brush and run the main pump as needed.

REMINDER: Even if the salt concentration is higher than 3,000 ppm, the 'Low Salt' light may flash if the water temperature is at the low end of the specified range or the **Chlorine Control** knob is at a low setting (1-4 shown on the LED display). This is especially true during the initial preparation and start-up. In this situation, the TrioPure may not display '**IO**' at the maximum setting. The addition of more salt to the pool may allow the **Chlorine Output** display to reach maximum readings.

SECTION 4 **Operation**

4A Initial Start-Up Procedure

CAUTION: Depending on water temperature and turnover in pool, it may take several days for the salt to dissolve and salinity levels to be measured accurately. Do not add additional salt to pool unless all salt is dissolved and salinity measurements are consistently less than 3,000 ppm.

CAUTION: Operating the TrioPure with pool salinity below 3,000 ppm will severely reduce cell life.

Step 1 - Before starting the TrioPure, manually add chlorine to the water for the first week to a minimum level of 1 ppm and ensure that all water chemistry parameters are within the specified limits. Check the water chemistry, water temperature, and salt level (salinity) and adjust as needed – all must be within the limits specified in **Section 5B, Monitoring & Maintenance**, of this manual before starting the TrioPure™.

Step 2 - Turn on main pool pump before starting the TrioPure™.

Note: Ozone may cause temporary clouding of water in pool on initial startup (first 24-48 hours) as the ozone causes organic matter to flocculate (stick together) and minerals to precipitate out so that they can be trapped in the pool filter. Clean filter as needed until pool water is clear.

Step 3 - Become familiar with the controls, indicators, and features of the TrioPure™. See **Figure 15** below (TrioPure-50 shown)

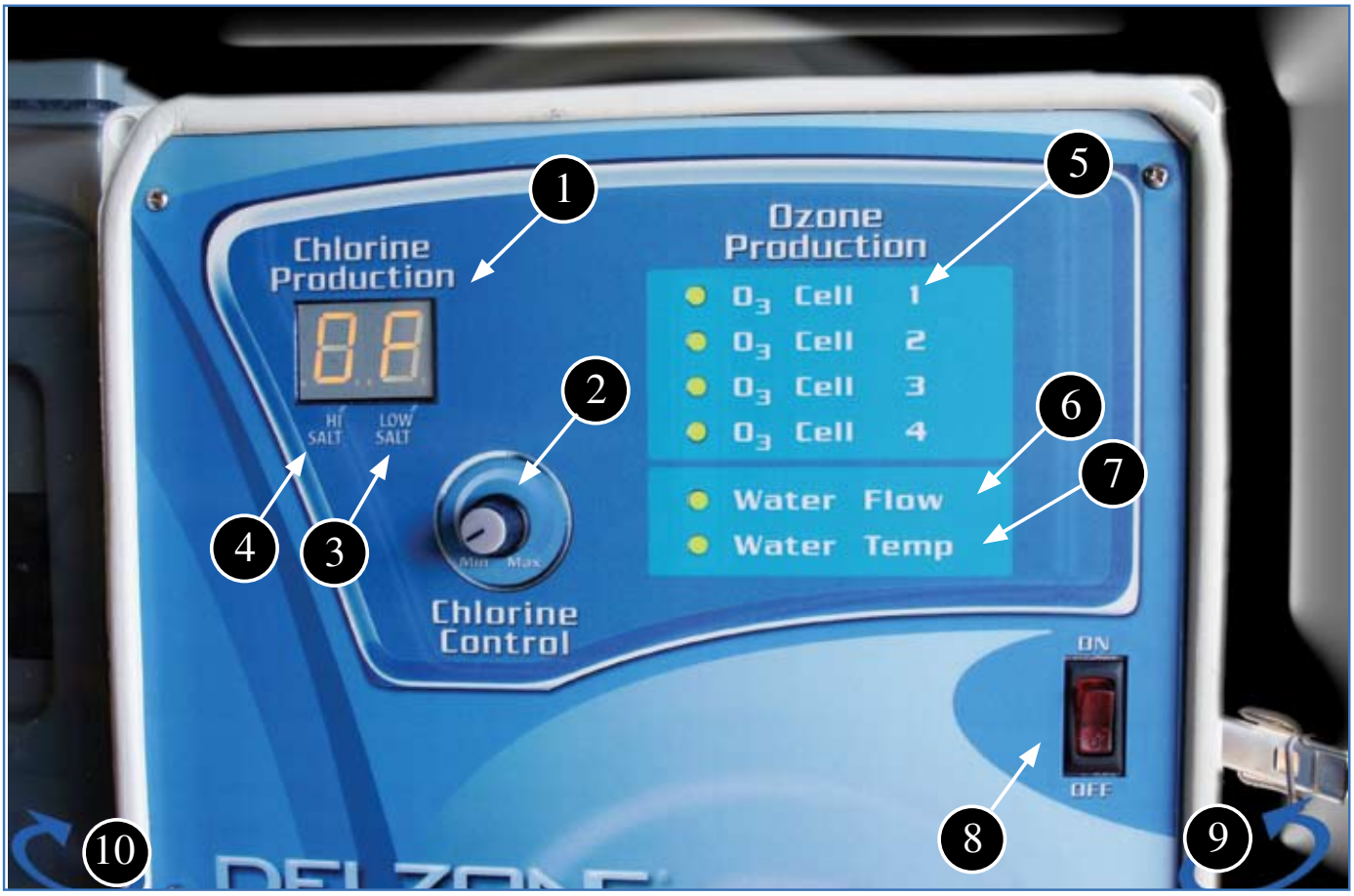

Figure 15

1. Chlorine Production Display
2. Chlorine Control Knob
3. Low Salt Indicator
4. High Salt Indicator
5. Ozone Production Indicators
6. Water Flow Indicator
7. Water Temp. Indicator
8. On/Off Switch
9. Fuse (right side)
10. Serial Number # (left side)

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Step 4 - Unfasten the latch on right side of the TrioPure™ and open clear cover.

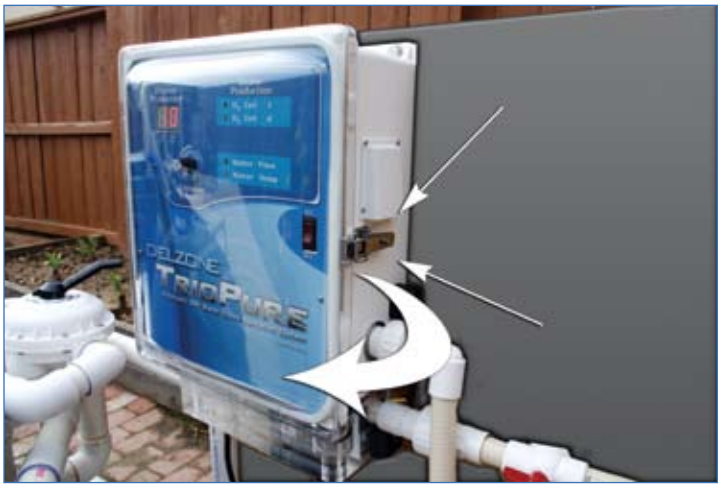

Figure 16

Step 5 - Turn the **Chlorine Control** knob to 'Min' (Counter-clockwise).

Figure 17

Step 6 - Switch the TrioPure™ power switch to '**ON**'.

Step 7 - Observe the color of the following status LED lights:

Ozone Production cell

TrioPure-50 = 03 Cell 1, 03 Cell 2, 03 Cell 3, 03 Cell 4

Water Flow

Water Temperature

All above LEDs should be green. If any LEDs are red, please see the Troubleshooting section, Chapter 6A for assistance.

Step 7a - Observe that the **Chlorine Production** LED display reads '**OF**'.

Figure 18

Step 8 - Look for bubbles of ozone in the water at the injector (found in the chlorinator cell).

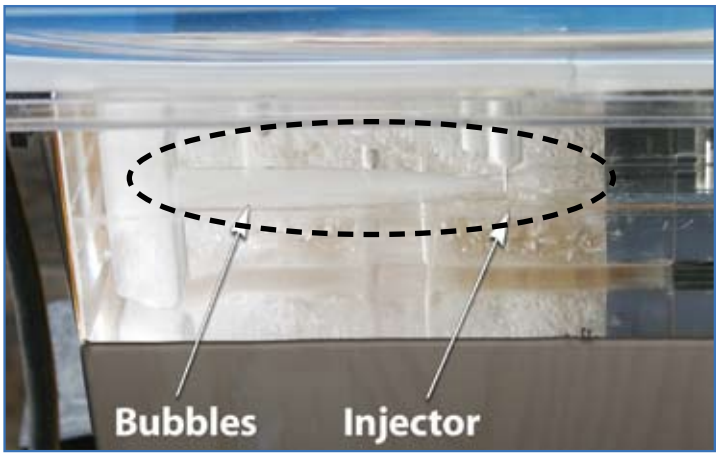

Figure 19

Step 9 - Turn Chlorine Control knob up about half way (pointing straight up).

Figure 20

Step 10 - Observe **Chlorine Production** display: the Low Salt light will flash and the display will read "**O**" until the TrioPure™ chlorinator comes on line.

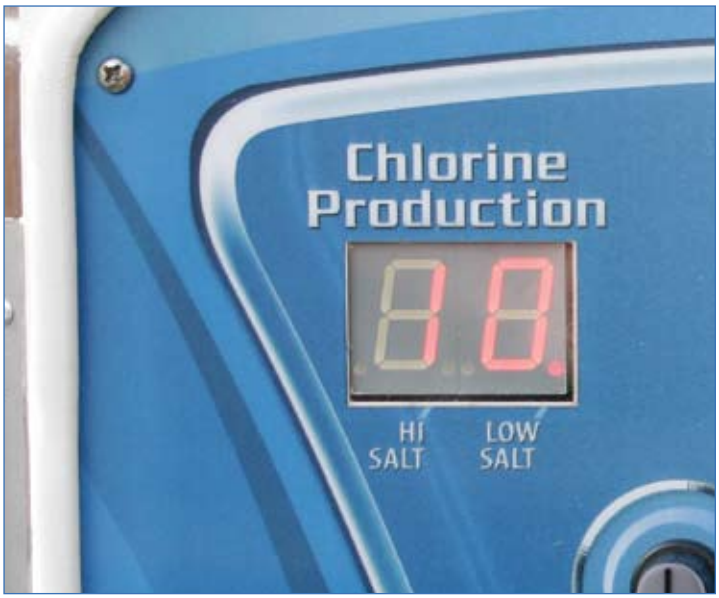

Figure 21

Step 11 - Check pool free chlorine levels every 24 hours, and adjust **Chlorine Control** knob as necessary to get between 1.0 and 3.0 PPM.

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SECTION 5 **Monitoring & Maintenance**

5A Front Panel Diagnostics

The front panel of the **TrioPure™** contains diagnostics and feedback displays to let you know how the system is operating and whether there is a problem with the system. Familiarize yourself with the following diagnostic readouts and functions:

- **Chlorine Production**
  Normal Indicator Messages
  OF = Chlorine Control turned off
  I-IO = Level of chlorine production
  CL = Chlorinator plates are in "clean mode" (down time between polarity changes)

  Error Indicator Messages (refer to Section 6A, Troubleshooting, Page 20)
  Pb = Chlorinator shut off due to problem
  OL = Current over limit

- **Chlorine Control**
  The **Chlorine Control Knob** controls the level of chlorine production. Turn the knob clockwise to increase the amount of chlorine in the pool and counterclockwise to decrease the amount of chlorine in the pool.

- **Low Salt Indicator**
  The **Low Salt** indicator is normally off and not lit.
  The **Low Salt** indicator blinks red when the pool should be checked for low salinity (**Warning**-always check salinity level with a test strip or digital meter before adding additional salt).

- **High Salt Indicator**
  The **High Salt** indicator is normally off and not lit.
  The **High Salt** indicator blinks red when the pool should be checked for high salinity. (**Warning**-always check salinity level with a test strip or digital meter before diluting water).

- **Ozone Production Indicators**
  The normal operating color of the TrioPure's **Ozone Cell** LED indicators is green.
  A red LED indicates that the **Ozone Cell** is not operating (refer to Section 6A, Troubleshooting, Page 20).

  The TrioPure-50 has two LEDs. **Note:** During normal operation, ozone cells do not function if the water flow indicator is RED.

- **Water Flow Indicator**
  The **Water Flow** LED indicator is normally green.
  A red **Water Flow** LED indicates insufficient water flow.
  Note: When water flow is interrupted, both chlorine and ozone production is halted. A **Pb** error is displayed.

- **Water Temperature Indicator**
  The **Water Temperature** LED indicator is normally green (water between 15 and 40°C (59-104˚F)).
  A red **Water Temperature** LED indicates water temperature is either too low or high.

5B Water Chemistry Parameters

VERY IMPORTANT NOTE! Your TrioPure™ is designed to provide continuous sanitation. We recommend the following water chemistry ranges and periodic checks to monitor your systems efficiency.

Maintain daily levels as determined by testing kit.

SWIMMING POOL

Free available chlorine	1.0-3.0 ppm
pH	7.2-7.8
Total alkalinity	100-120 ppm
Calcium hardness	200-300 ppm
Salt level (Salinity)	3,000-5,000 ppm
Cyanuric acid	30-100 ppm

WEEKLY CHECKS

Visual Chlorinator Cell Inspection:	Ozone production **(bubbles at the injector).** Inspect for the build-up of calcium on the plates.

5b-1 Chlorine Level Requirements

During peak sanitizer demand (rainy season, heavy bather load, wind storms, high temperatures, etc.), it may be necessary to increase your sanitizer level by increasing the Chlorine Control level setting. Conversely, during low sanitizer demand, you can decrease your Chlorinator Control level to a lower setting. For extremely heavy sanitizer demand, supplement with a Potassium Monopersulfate (non-chlorine) based shock.

WARNING: During cold-water conditions, sanitizer demand is reduced significantly. For colder climate regions with sustained low or freezing temperatures, contact your local pool professional for proper pool winterizing instructions.

WARNING: Excessive chlorine levels can cause corrosion damage to swimming pool rails, ladders, heater heat exchangers, light faceplates and other metallic equipment. Avoid over saturation of chlorine levels.

5b-2 pH Level:

When pH levels fall below the recommended range, sanitizer is used more quickly and can damage equipment. For pH levels higher than the recommended range, sanitizer becomes less effective. Improper pH also contributes to the strong smell, red eyes, dry itchy skin and brittle hair conditions associated with "too much chlorine".

Water Chemistry Parameters - Continued

5b-3 Calcium Hardness And Total Alkalinity

The TrioPure™ provides sodium hypochlorite and does not affect calcium hardness or total alkalinity levels. Maintain and balance only as needed.

5b-4 Cyanuric Acid (Stabilizer/Conditioner)

Cyanuric acid is sold as "stabilizer" or "conditioner" and allows the chlorine residual to last longer by protecting it from UV degradation. With low or no Cyanuric acid, it is possible for the chlorine to be used up as quickly as it enters the pool. Check and maintain your Cyanuric acid and salt levels at the same time since they both tend to deplete at the same rate.

5b-5 SALT LEVEL (Salinity)

Your TrioPure™ works most efficiently when salt levels are between 3,000 and 5,000 PPM. If the salinity levels fall below 3,000 PPM, add salt according to the Section 3 - 3H, When to Add Salt, on page 12. Low salt will cause premature deterioration of the salt cell plates.

5b-6 Saturation Index (Si)

Saturation Index is a formula used to ensure that your total water chemistry does not fall into a scale-forming or corrosive condition. Protect your chlorinator cell, equipment and cementitious finish by having your water professionally tested periodically according to the Saturation Index or use this chart to determine your water balance.

Saturation Index Formula Calculation [Si = pH + TF + CF + AF - Constant]

Water Temp.	TF	Calcium Hardness	CF	Total Alkalinity	AF	TDS	Constant F
16° C	0.4	150	1.8	80	1.9	0-1000	12.1
19° C	0.5	200	1.9	100	2.0	1001-2000	12.2
24° C	0.6	250	2.0	125	2.1	2001-3000	12.3
29° C	0.7	300	2.1	150	2.2	3001-4000	12.4
34° C	0.8	400	2.2	200	2.3	4001-5000	12.5
39° C	0.9	600	2.4	250	2.4	5001-6000	12.6

TF = Temperature Factor
CF = Calcium Factor
AF = Total Alkalinity Factor
Constant = TDS Factor

Test your swimming pool water for:

• pH • Calcium Hardness • Total Alkalinity • TDS Levels

Use the equivalent factors in the Si equation.

EXAMPLE: For a pool with tested levels of pH = 7.6, Temperature = 27.2° c, Calcium Hardness = 300, Total Alkalinity = 140, and TDS = 4,500 the calculated Saturation Index would be:

Si = 7.6 + 0.7 + 2.1 + 2.2 – 12.5 = 0.1.

The acceptable range for the Saturation Index = -0.3 to +0.3.

If Si is above +0.3, scaling, staining or cloudy water conditions can occur.

If Si is below –0.3, water can be corrosive to metals, etch / deteriorate plaster finishes, or irritating to the skin.

5b-7 Nitrates and Phosphates

Under ideal conditions, nitrate and phosphate levels in swimming pools are zero (0). However, in some geographic locations, these compounds are found in source water or are introduced from the environment. It is important for the pool owner to be aware that relatively small amounts of either nitrates or phosphates can have a significant negative impact on the performance of chlorine in swimming pools.

If you experience conditions such as cloudy water, algae growth, or unable to maintain a measurable level of chlorine in the pool (when the TrioPure™ is working correctly), have your water tested at a local pool store for nitrates and phosphates. Your local pool professional can then advise you on how to remove these compounds from the pool.

5-C WINTERIZATION

During cold-water conditions, sanitizer demand is reduced significantly. For colder climate regions with sustained low or freezing temperatures, contact your local pool professional for proper pool winterizing instructions.

Step 1 - Drain all plumbing lines to protect the TrioPure™ from damage due to freezing.

5-C WINTERIZATION (Continued)

Step 2 - Remove the drain plug from the bottom of chlorinator cell and let all water drain from the TrioPure™.

Step 3 - Replace drain plug back into the TrioPure™.

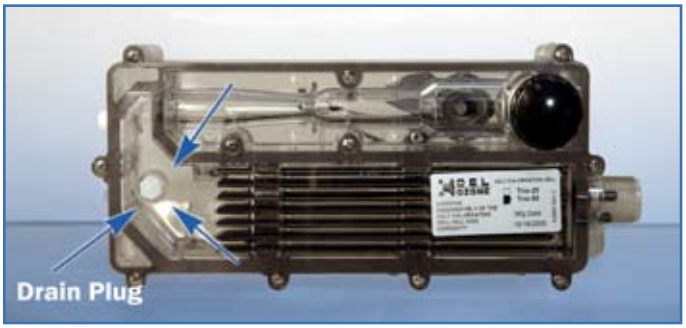


Figure 22 - Chlorinator Cell Drain Plug

5-D TRIOPURE MAINTENANCE

5d-1 Injector

Visually check the injector (see Figure 19); if clogged, there will be a noticeable reduction in ozone bubbles seen through the Chlorinator Cell. If cleaning is required, turn off power and water flow to the TrioPure™. Remove the Chlorinator Cell (See **Section 5D-3**). Remove the plug at the injector and use the Injector Cleaning Tool (end of zip tie) attached to the line going to the injector (or suitable small plastic tool) to push material down through the injector slot. Replace the Chlorinator Cell onto the TrioPure enclosure. **Note:** Never use a metal tool to clean the injector slot.

5d-2 Chlorinator Cell Plate Cleaning

Option 1 - (Acid Solution Injection) Turn off power to the TrioPure™ and main pool circuit breaker. Prepare a solution of 4 parts water to 1 part Muriatic Acid. Always add acid to water, never add water to acid. Disconnect the ozone line going into the chlorinator cell. Connect the acid injection line to the line going into the chlorinator cell. Turn on main circuit breaker and power to the TrioPure and check the chlorinator cell for bubbles at the injector. Place the other end of the Acid Injection Line into the acid solution. Observe that the solution is being drawn up into the chlorinator cell. When the acid solution has been used up, run clean water through the line to clean acid from the line. Turn off power to the TrioPure™ and

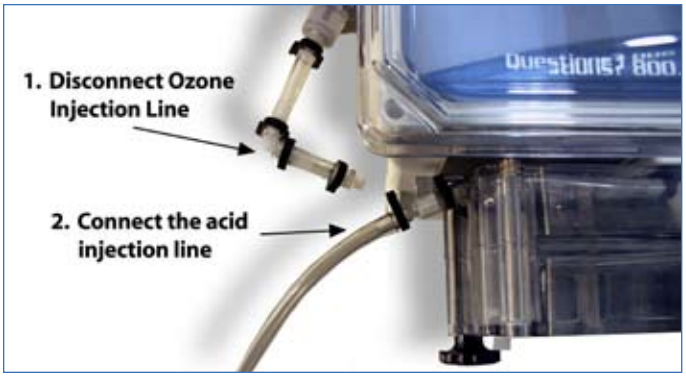


Figure 23 - Acid Injection line

re-connect the line onto the Chlorinator Cell to the line coming from the enclosure. Turn on power to the TrioPure™ and check the chlorinator cell for bubbles at the injector. Properly clean and store the acid injection materials.

Option 2 - (acid soaking) Turn the power off to the TrioPure™ and main pool circuit breaker. Remove the chlorinator cell (See Section 5D-3) and place on a level surface with the front of the cell facing up. Install the elbow fitting to the union at the Water Out location on the chlorinator cell. Prepare a solution of 4 parts water to 1 part Muriatic Acid. Always add acid to water, never add water to acid. Carefully pour acid solution into the elbow fitting just until the Chlorinator Cell plates are submerged. Allow the plates to soak for about 30 minutes, or until effervescence stops and plates are clean. Take care not to let the acid solution into the front chamber of the chlorinator cell, as damage to the flow switch may result.

When the chlorinator cell plates appear to be clean (free of calcium deposits), pour the acid solution from the chlorinator cell into the swimming pool.

Figure 24 - Chlorinator Cell Plate Cleaning

5d-3 Chlorinator Cell Removal

NOTE: CAREFULLY FOLLOW ACID MANUFACTURER'S SAFETY PRECAUTIONS.

Step 1 - Turn the power off to the TrioPure™ and main pool circuit breaker. Close the two ball valves (if installed) to the TrioPure™ and disconnect the union going to the chlorinator cell.

Step 2 - Disconnect the fitting on the Lower Left Hand side of the TrioPure™ by rotating the fittings halves in opposite directions and separate the two halves.

Step 3 - Remove the two electrical terminals by loosening the small hand knobs on the right side of the chlorinator cell and slipping the terminal lugs off the connector studs. If the terminals are attached with ¼-20 nuts, remove the nuts to detach the wires. Retain the stainless steel washers for reassembly. Note the order of disassembly and reverse for reassembly.

Step 4 - Remove the Left Hand Side Attachment shaft by unscrewing the hand knob.

Step 5 - With one hand supporting the chlorinator cell in the middle, unscrew the right hand side attachment knob. As this knob is unscrewed, the chlorinator cell will lower. Use caution and do not allow the weight of the chlorinator cell to stress the wires on the electrical connectors.

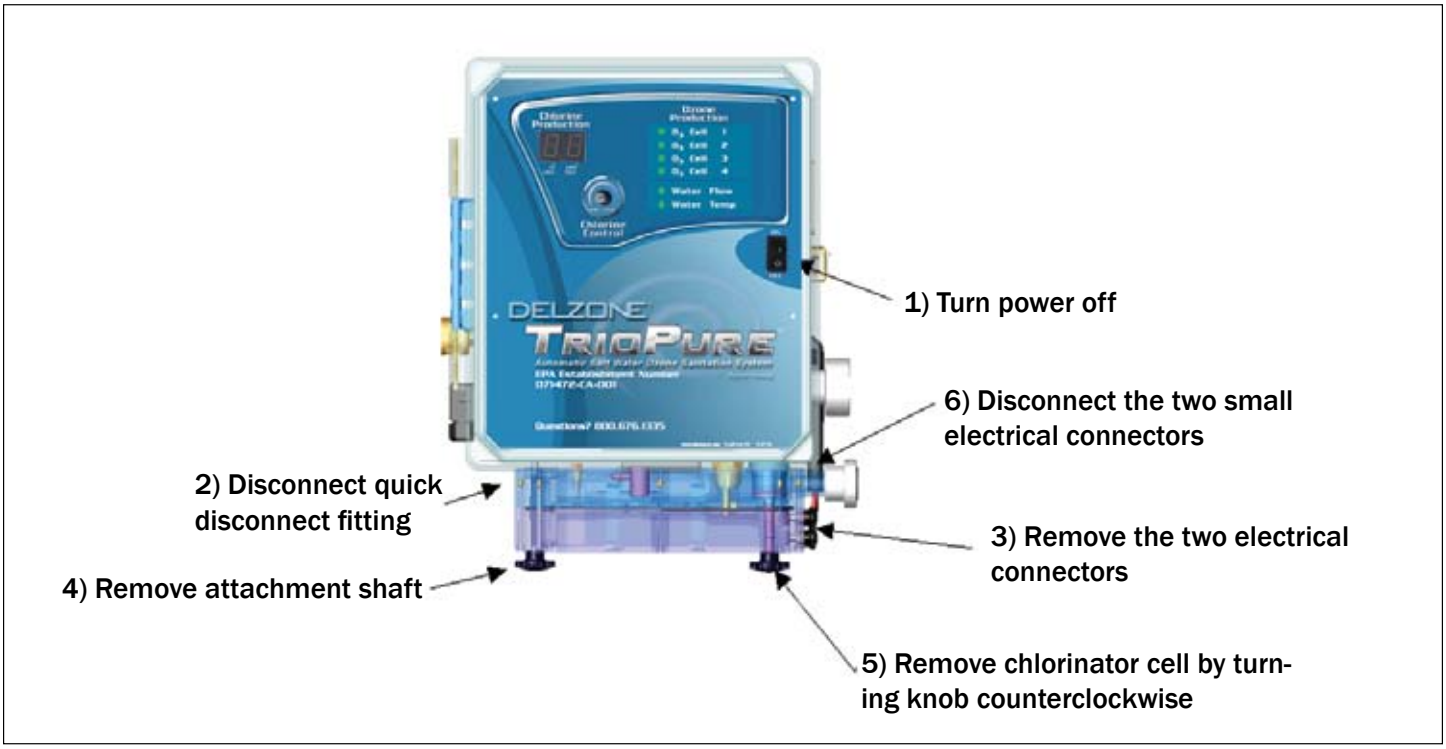


Figure 25

Step 6 - With the chlorinator cell now mechanically detached, access the two small electrical connectors for the flow switch and the temperature sensor and disconnect these connectors from chlorinator cell. The connectors have a locking feature that must be raised to separate the connector plug and socket. Remove the chlorinator cell from the TrioPure™ enclosure.

5d-4 Air Filters

The TrioPure™ has screen filters located at both the cooling fan air intake on the right side of the enclosure and the air exhaust at the bottom of the enclosure (**Figure 26**). The screen filters are intended to keep insects and debris out of the TrioPure™ unit. Allowing these screen filters to become clogged could result in the TrioPure™ shutting down to protect from overheating.

Figure 26

Annual inspection and cleaning of the screen filters is recommended as follows:

Air Intake Screen Filter: Turn off power to the TrioPure™. Remove the cover by sliding the cover up (**Figure 27**). Once the cover is removed, visually check the filter for debris. If the filter appears to require cleaning, carefully remove plastic filter keeper (**Figure 28**) by lightly prying it out. Remove the screen filter and clean it. Replace filter, keeper and cover.

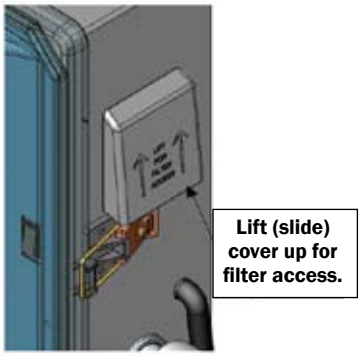


Figure 27

Air Exhaust Screen Filter: The Air Exhaust filter should typically not require servicing. After removing the Chlorinator Cell (See Section 5D-4), visually check the filter for debris. If the filter appears to require cleaning, then remove plastic filter keeper by lightly prying it out. Remove the screen filter, clean and replace.

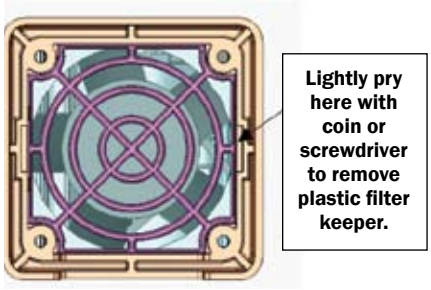
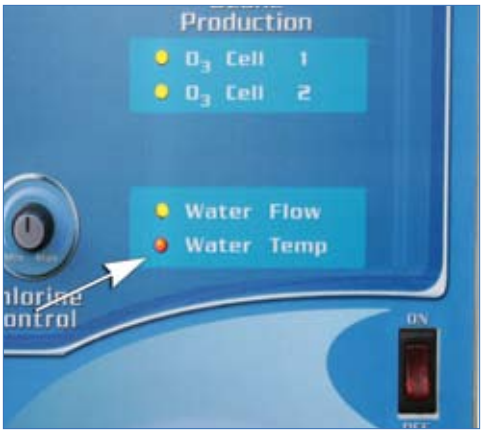


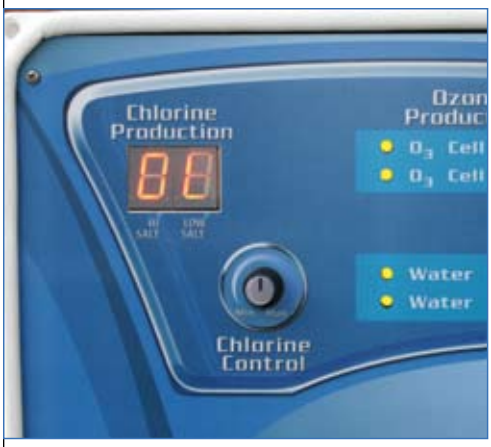
Figure 28

SECTION 6 **Troubleshooting**

6A Troubleshooting the TrioPure™

Problem	Cause(s)	Solution(s)
High Salt Indicator LED is Flashing		
 Figure 29	A) The TrioPure™ has detected a possible high salt condition.	A) Check the salt level (salinity) of the pool water with a test strip or digital meter. Never dilute the pool water without verifying the salt level with a digital meter or test strip first. If the salt level is over 5,000 ppm, then add fresh water, run the pool pump for 24 hours, then check the salt level again. Repeat as needed to reduce the salt level to within 3,000 to 5,000 ppm. **Note:** Water must be pumped out of the pool before fresh water can be added to dilute the pool.
	B) There is excessive scale build-up or debris on the chlorinator cell plates.	B) If the tested salt level is within specified limits, check the chlorinator cell plates for scale formation or debris caught between the plates. Clean as required (refer to Section 5d-3). **Note:** High Salt Indicator may flash momentarily when adjusting the Chlorine Control.
Low Salt Indicator LED is Flashing		
 Figure 30	A) The TrioPure™ has detected a possible low salt condition.	A) Check the salt level (salinity) of the pool water with a test strip or digital meter. Never add salt to the pool without verifying the salt level. If the salt level is below 3,000 ppm, then add salt (refer to **Section 3 - 3H 'When to Add Salt' on page 12**), run the pool pump for 24 hours, then check the salt level again. Repeat as needed to bring the salt level to within 3,000 to 5,000 ppm.
	B) Low Water Temp.	B) Check the pool temperature. If the pool water temperature is low, combinations of low temperature and/or **Chlorine Control** setting can cause the Low Salt LED indicator to flash.
	C) Low Power Setting.	C) If **Chlorine Control** knob setting is set too low (from "**1**" to "**4**"), then disregard the **Low Salt** indicator. Combinations of low temperature and/or **Chlorine Control** setting can cause the **Low Salt** LED indicator to flash.
Ozone Production Cell Indicators Turn Red (O_3 Cell 1–O_3- Cell 4 for TrioPure-50)		
 Figure 31	A) Insufficient water flow.	A) If the **Water Flow** indicator is red, there is insufficient water flow, which causes the TrioPure™ to turn off all ozone cells. Correct the water flow problem before further troubleshooting.
	B) The ozone CD cell has a blown fuse.	B) With power off to the unit, open the enclosure, remove the front panel and examine fuse – replace as necessary, then close up the TrioPure™ and restore power.
	C) There is a faulty ozone power supply.	C) If replacement fuse blows (indicator goes red) on power up, replace the ozone cell. Call for service. The TrioPure™ will continue to work with the remaining ozone CD cells.

Problem	Cause(s)	Solution(s)
Water Flow Indicator turns red & Chlorine Production displays Pb		
 Figure 32	A) Water flow to the TrioPure™ was restricted due to an obstruction in the system.	A) Turn the power off to the TrioPure™ and main pool circuit breaker. Check pool equipment for obstructions, and remove as necessary. Check filter, clean or pump to waste as required. Turn the pool pump on and then the TrioPure™ back on – both **Water Flow** and **Ozone Production** cell indicators should return to green.
	B) Flow switch has become disconnected from the TrioPure™ enclosure.	B) Turn the power off to the TrioPure™ and main pool circuit breaker. Check the wiring from the flow switch to the main harness on the right side of the enclosure and reconnect if necessary. Turn the power on to the TrioPure™ and main pool circuit breaker and check that both **Water Flow** and **Ozone Production** cell indicators are green.
Water Temperature Indicator turns red & Chlorine Production displays Pb		
 Figure 33	A) Water is too hot.	A) Lower the pool's water temperature to less than 40°C. The **Water Temp** indicator should return to green when the pool temperature is back within the TrioPure's specified limits.
	B) Water is too cold.	B) Raise the pool's water temperature to more than 15°C. The **Water Temp** indicator should return to green when the pool temperature is back within the TrioPure's specified limits.
	C) Temperature sensor has become disconnected from the TP enclosure.	C) Reconnect sensor.
Chlorine Production display reads CL		
 Figure 34	A) The salt chlorinator is in Cleaning mode.	A) The TrioPure™ will shut off power to the salt chlorinator when in Cleaning mode. If the **Chlorine Control** display shows **CL** longer than twenty-four (24) hours, contact our telephone support number, 800.676.1335 ext. 293, for service.

	Cause(s)	Solution(s)
Chlorine Production display reads **OL**		
 Figure 35	A) The Salt Chlorinator plates have scale build-up.	A) Look through the salt chlorinator cell, checking for any white scale build-up on the plates. If scale build-up is found, clean the chlorinator cell plates per **Section 5d-3**, page 18, of this manual. Check and balance pool chemistry as required after cleaning.
	B) The Salt Chlorinator plates are shorting out due to a foreign object lodged in the cell.	B) Look through the salt chlorinator cell, checking for any object that may have gotten through the filter and become stuck in the salt chlorinator plates (i.e., hair-pin, paper clip, etc.). Contact our telephone support number, 800.676.1335 ext. 293, for service.
	C) Cell terminals have become loose, disconnected, or corroded.	C) Tighten, reconnect, or clean as necessary.
Chlorine Production display will not read all the way to 10		
 Figure 36	A) Pool water low salinity, low temperature, or calcium buildup on the chlorinator cell are restricting the amount of current drawn at the chlorinator cell.	A) Check the pool salt level (salinity) and water temperature. If either level is low this may affect the amount of chlorine production. If the tested free chlorine level is too low or if the pool shows signs of insufficient chlorine production (algae or chlorine smell) in the pool water, you may increase the salinity slightly in order to make the TrioPure™ produce more chlorine. Add salt in small 12 to 23 kg (25-50 pounds) increments and allow 24 hours for the salt to dissolve before taking the next reading and making any more adjustments. Always keep the salinity below 5,000 ppm. If there is scale buildup, clean chlorinator cell per **Section 5-d3.**
Indicator lights on front panel are not on.		
 Figure 37	A) The TrioPure™ is switched off.	A) Open the TrioPure™ and turn the power switch on..
	B) The TrioPure™ is not getting power.	B) Check main pool circuit breaker.
	C) Main breaker is off.	C) Check main breaker.
	D) Main fuse is blown.	D) Check main fuse and replace if necessary. Note: A blown fuse can be caused by excessive salt levels above 5,000 ppm with the **Chlorine Control** knob set to full power (10).

SECTION 7 **Contact, Ordering Information, Replacement Parts & Warranty**

7-A Technical Support Contact

CONTACT TECHNICAL SUPPORT

Online: www.delozone.com • Phone: (800) 676-1335, extension 293 • e-mail: triopure@delozone.com

Online: Received 24/7. Click Contact DEL/Customer Support Info and e-mail a description of your needs. A Technical Support representative will reply by way of e-mail.

By Phone: Monday through Friday 8:00am - 4:30pm, PST. Outside of these hours, please leave callback information. A Technical Support representative will return your call at the first available opportunity. (800) 676-1335, extension 293.

The majority of TrioPure™ problems can normally be addressed and resolved by e-mail or by phone. Please have the following information at hand before contacting Technical Support:

When filing a claim, you must provide:

1. Your name, mailing address and telephone number.
2. The selling dealer's name.
3. Model# (Trio-50), serial # and proof of date of purchase.
4. Date code on TrioPure™.
5. The date and description of the failure.
6. Pool Salt Level
7. Pool pH, Chlorine Level, Total Alkalinity
8. TrioPure™ Chlorine Production reading
9. Status of TrioPure™ Ozone cell LED's
10. Status of TrioPure™ Water flow & temp LED's

Authorization to return a unit or part to the plant of manufacture must be obtained from DEL Ozone Field Service. DEL Ozone will release a RETURN MATERIALS AUTHORIZATION (RMA) NUMBER. After receiving the RMA number, the product or part in question must be returned to Del Ozone, freight prepaid, with the RMA number clearly marked on the outside of the package. All pre-authorized defective parts must be returned to DEL Ozone within thirty (30) days and be packaged to prevent shipping damage. Under no circumstances may any product be returned to DEL Ozone without prior authorization. You must call or write DEL Ozone prior to returning product or your returned goods shipment will be refused. Upon receipt of preauthorized returned goods, DEL Ozone will repair or replace, at Del Ozone's option, the product(s) proven to be defective in materials or workmanship and return them (freight prepaid for products under warranty). Buyer's acceptance of the product and use thereof constitutes acceptance of these terms.

There are Del Ozone Authorized Service Centers in most areas of the USA. If the warranty problems cannot be resolved by our Technical Support Personnel, then Del will arrange for the nearest DEL Ozone Authorized Service Center to schedule a service call.

7B. Ordering information:

To locate a dealer nearest you, visit **www.delozone.com** or call DEL at **1-805-541-1601, ext 249**.

Be prepared with the following information:

- **Name**
- **Address**
- **DEL Model #**
- **Date Purchased**

7C. Standard replacement parts list:

		TrioPure-50
1.	Assembly, Ozone Cell-Pwr Supply O-rings, and Fuse	9-0649
2.	Chlorine Control-Display PCB	9-0665-02
3.	Ozone Control-Display PCB	9-0664-02
4.	Salt-Chlorination Cell and Flow Switch	9-0663-02
5.	Filter Media, Vent-Fan	7-1217
6.	Bypass Manifold	9-0645
7.	Chlorine Control Knob	7-1234
8.	Mixing Degas Vessel (MDV)	MDV-30
9.	Installation/Operation Manual	4-0777

7C. Standard replacement parts list (Continued) TrioPure-50

10.	Quick Troubleshooting Guide	4-0779
11.	Fuse 3.0 A (for 120V)	5-9019
12.	Fuse 1.5 A (for 240V)	5-9020
13.	Fuse 0.5 A, Ozone cell	5-0180
14.	Tubing - 0.4 cm (3/16") ID x 0.7 cm (5/16") OD Black Air Tubing for Ozone Inlet	7-0079
15.	Ozone Tubing/Check Valve Replacement Kit	9-0674-01
16.	Acid Cleaning Kit	9-0653

Notification Change

3580 Sueldo Street

7D. DEL Ozone TrioPure™ Limited Warranty

The limited warranty set forth below applies to products manufactured by DEL Ozone – ~~3428 Bullock Lane,~~ San Luis Obispo, California 93401, and sold by DEL Ozone or its authorized dealers. This limited warranty is given only to the first retail purchaser of such products and is not transferable to any subsequent owners or purchasers of such products.

DEL Ozone warrants the TrioPure™, including all parts and components thereof, to be free of defects in material and workmanship. This limited warranty applies only if the TrioPure™ is installed and maintained in accordance with the TrioPure™ installation instructions and specifications provided with the product.

This limited warranty commences on the date of installation or, if written proof of the date if the initial system installation is not provided to DEL Ozone, the manufacturing date code on the TrioPure™ unit + sixty (60) days will be the sole determinant of the date of the initial system installation and shall remain in effect for:

One (1) year on all parts with the exception of the chlorine cell.

One (1) year on all parts of the chlorine cell, with an additional two (2) years on a pro-rated basis based upon the following formula. Defects that become evident during years 2 and 3 of the warranty will be repaired or product replaced at the following costs to the TrioPure™ owner:

Year 2: 50% of the current list price
Year 3: 75% of the current list price

One (1) year on labor for removal or reinstallation of the initial system due to defects in material and workmanship. The consumer will be responsible for any additional fees or expenses imposed by the service center.

(All parts) ANY REPAIR OR REPLACEMENT WILL BE WARRANTED ONLY FOR THE BALANCE OF THE ORIGINAL WARRANTY PERIOD. NOTE: USE ONLY DEL OZONE AUTHORIZED REPLACEMENT PARTS. USE OF ANY OTHER PART(S) WILL AUTOMATICALLY VOID THIS WARRANTY.

THIS LIMITED WARRANTY DOES NOT INCLUDE ANY OF THE FOLLOWING: (a) repairs/modifications made or attempted by other than DEL Ozone or one it its Authorized Service Centers: (b) any repair or replacement of such parts necessitated by faulty installation, improper maintenance **(Calcified chlorinator cells are not covered)**, improper operation, misuse, abuse, negligence, accident, fire, repair materials, lack of reasonable and necessary maintenance and/or unauthorized accessories; (c) any such products installed without regard to required local codes and accepted trade practices or; (d) ANY IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE, AND SUCH WARRANTIES ARE HEREBY DISCLAIMED: AND (E) DEL OZONE SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR LOSS OF USE OF SUCH PRODUCTS, LOST PROFITS, DIRECT DAMAGES, INDIRECT DAMAGES, CONSEQUENTIAL DAMAGES AND/OR INCIDENTAL DAMAGES.

This warranty gives you specific legal rights. You may have other rights, which vary from state to state.

TO VALIDATE THIS WARRANTY PRODUCT

Registration should be completed for each TrioPure™ product purchased. You may register your products online at www.delozone.com. Additionally, product registration cards are included with each TrioPure™ product, for registration by mail. You may also register by calling (800) 676-1335, extension 293.

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