Rondo Pools

Pools, Spas, Water Features

Customer Owner's Manual

Introduction

Warranty Statement

Regular maintenance and upkeep of the pool, spa and equipment is the owner's responsibility.

This is the specific period of time, from the date of start up, during which any defects in materials and workmanship are guaranteed. This warranty shall not apply to any such items that have been subject to negligence, improper maintenance, chemical imbalance, improper operation or willful abuse.

Should you call for service and it is determined that the problem is a maintenance issue, please do not become upset when you receive a bill for services rendered.

Just how long is my warranty period?

Plumbing_____Two (2) years parts & labor.*
Vac-Breaker _____ One (1) year parts/Two (2) years labor
*Owner's Responsibilities (not under warranty): Freeze protection for vac-breaker (in freezing temperatures, water inside pipe and plumbing fixtures can expand and break pipe, fixtures and fittings. During freezing temperatures, run your equipment from at least one hour before temperatures drop below 32 degrees until an hour after the freeze abates.

Gas Line _____ Two (2) years parts & labor
Fire Rings & Key Valves _____ Two (2) years parts & labor

Electrical Wiring _____ Two (2) years parts & labor
Underground Plumbing, Electrical, & Gas ___ Two (2) years parts & labor
GFCI Outlets, Switches & Breakers _____ One (1) year Parts & labor
Intellitouch/EasyTouch _____ Three (3) years parts & labor

Shotcrete Structure _____ Lifetime to original owner*

Natural Concrete_____ Two (2) years Material & labor
Kool Deck _____ Two (2) years Material & labor
Acrylic Deck Topping _____Three (3) years Material & labor*
* Acrylic decking does not crack unless the substrate has lifted, cracked or moved. This warranty covers delamination of acrylic from substrate. In extreme heat, colors will fade over time. This is not a material or workmanship defect and is not covered under warranty.

Concrete Pavers _____ Two (2) years Material & labor
Hardscape (stone decking, rockwork*, coping stone, ledger-stone, other natural stonework)
_____ Two (2) years Material & labor
* Natural rocks shed material. This is a natural process and cannot be considered a defect in material or workmanship.

Masonry & Stucco Two (2) years Material & labor
Stone Veneers Two (2) years Material & labor

Water features (Non-Rock): Scuppers, Sconces, PowerFalls, Rainfalls, PowerStreams, Deck Jets (Aqua Arches), Splash-Downs, Laminars, or other manufactured water feature Two (2) years Material & labor

Concrete Scupper Pots Two (2) years parts/one (1) year labor

Tile Two (2) years Material & labor
Tile Top Joint One Time Repair, within first year

Plaster Two (2) years Material & labor
Pebble-Tec Five (5) years*
*Stone material only. Cementitious binding mixture covered for Two (2) years materials and labor
Ultra Poz Seven (7) years*
*Two years material and labor (five additional years on the mix)

Pentair Pumps Three (3) years parts & labor
Pentair Pump Seals & O-Rings One (1) year parts & labor
Pentair Filters Three (3) years parts & labor
Pentair Filter Psi Gauge, Filter Elements, DE Grids, External Valves, Seals & O-Rings One (1) year parts and labor
Pentair Filters Tanks Three (3) years parts & labor
Pentair Heaters Three (3) years parts & labor
EasyTouch Control System Three (3) years parts & labor
Intellitouch Control System Three (3) years parts & labor

Automatic Water Leveler Valve One (1) year*
The valve is warranted against defects. Normal maintenance is not included in the warranty coverage. It is the responsibility of the buyer to periodically disassemble the float valve assembly **(Page 21)**, clean and reassemble it. If Rondo is called out to clean out a float valve, the Buyer will be charged a fee for the service provided.

Pool Vacuum Cleaners Three (3) years parts & labor*
*Pentair Brand Only – Other brand subject to their warranty policy.

In-floor Cleaners Lifetime parts & Labor to Original Owner

Blowers Two (2) years parts & labor

Ozone Water Oxidizer Two (2) years parts & labor

Incandescent Light Fixture One (1) year parts & labor

Pentair IntelliBrite (LED) Three (3) years parts & labor
Pentair Globrite (LED) Three (3) years parts & labor

Wrought Iron Fencing Two (2) years parts & labor

Congratulations on the purchase of your new swimming pool! We hope you will find your new pool enjoyable and trouble free! The purpose of this manual is to familiarize you with the operation and upkeep of your equipment and to help you maintain the proper water balance to keep your pool clean and inviting.

On the following page, you will find spaces in which to record your equipment data for future reference. This information is important when calling for help with service and proper chemical applications, so please be ready to share this information with our service representative.

Starting on page **42**, you will find a "Trouble-Shooting Guide" that will help you identify and solve many of the common problems that may arise. A Glossary of pool-related words is included on page 47 to help you understand the terminology commonly used in the wonderful, wet world of swimming pools and spas.

Continuous filtration helps speed up the elimination of "*plaster dust*".
(See Glossary, 48)

During the first two weeks, it's very important to brush the plaster surface (floors, walls, steps, and benches) as often as possible. We suggest that you brush 3 to 4 times a day for the first 3 days, 2 times a day for the next 4 days, and at least once a day for the next 7 days. We strongly suggest that you continuously run the filter until the water is clear. Continuous filtration helps speed up the elimination of plaster dust.

What does "*Cure*" mean?
(See Glossary, 47)

Plaster products can take from 2 to 3 months to completely "cure". During this time dirt and "plaster dust" can cement itself to the plastered surface. Frequent brushing will prevent this. In addition, the brushing will further smooth and "polish" the surface and help to clear the plaster dust out of the pool.

Start brushing at the tile line, and then forcefully drive the brush downward along the pool walls and across the bottom toward the main drain covers. The most effective way to help clear out the "plaster dust" while you are brushing is to open the main drain and close the skimmer. This can be done as follows:

- RESIDENTIAL POOLS (with skimmer/main drain combinations): Slide the teardrop plate over the opening in the equalizer valve assembly, located in the skimmer (See page 17).
- RESIDENTIAL POOLS (with dedicated main drain lines):
  Open the main drain valve completely. Close the skimmer valve half-way (See page 10).
- SEMI-PUBLIC POOLS: Open the main drain valve completely. Close the skimmer valve half-way (See page 10).

What is *Cavitation*?
(Glossary, 47)

IMPORTANT: *DO NOT* completely close off the skimmer. Doing this causes an insufficient intake of water into the pump and creates a condition known as "cavitation".

Fortunately, Pebble-Tec and Pebble-Sheen finishes do not require the same degree of maintenance during the initial start-up period. However, Rondo Pools suggests that you brush the surface a few times during the first week after its initial application. This helps eliminate the loose pebbles from the walls and floor. Then, to maintain a beautiful interior, brush the pool every couple of weeks.

As soon as possible after your project's start-up, you should take a sample of your pool water, in a clean plastic container, to your nearby pool supply dealer for a complete water analysis. Follow the dealer's instructions for adjusting pH, total alkalinity, and stabilizer and sanitizer. This will help confirm whether your on-site test results are on track.

What You Should Know About Your Interior Finish

When we visualize beautiful swimming pools, the first thing we think about is the "look" of the water. We usually ask ourselves the following questions:

1. Is the water crystal clear?
2. Does the interior finish look consistent?

If the answer to each of these questions is, "yes," when we know our pool will look great. How can you ensure that your pool is clean, your water is crystal clear and your interior finish looks consistent? The information on the following pages will help you keep your water balanced and your pool looking great for years to come …

Maintaining a pool is not hard; it just takes some self-discipline to develop a routine so that you can control your water's balance instead of having it control you!

The following are some basic principles you should understand:

1. Using a weekly service *does not mean* that you don't have to check your water's chemistry.

2. How you treated the water on your last pool (or on your pool before it was remodeled) has *nothing to do with* how you should treat the water on your new (or remodeled) pool.

3. Most pool stores and chemical service companies' check for Chlorine, pH, Alkalinity Calcium Hardness, and Total hardness but many fail to check for Cyanuric Acid (stabilizer) levels. Cyanuric Acid levels impact your "true" Alkalinity readings. If your Alkalinity readings have not been adjusted for Cyanuric Acid content, you may have corrosive water without knowing it.

4. Salt systems tend to raise pH and always raise the amount of Total Dissolved Solids in your water.

5. Mineral Sanitizers like FROG and NATURE 2 kill algae and bacteria but do not control pH, Alkalinity, Cyanuric Acid or Calcium Hardness.

6. Ozone units eliminate non-biological waste but do not control ph, Alkalinity, Cyanuric Acid or Calcium Hardness.

7. In pools with Cartridge filters, you must periodically (once every 4 months) drain approximately 1/3 of your pool's water and refill your pool to reduce the water's Total Hardness.

8. The consistent use of sequestering Agents, like "Sequest," will help you reduce the chances of staining your interior finish (with calcium and other mineral deposits).

9. Interior finishes don't "start out" looking fantastic, then turn "bad". Only improper water chemistry can make a finish that is properly applied look bad.

(For extended explanations of each principle, see the following pages)

1. Using a weekly service does not mean you don't have to check your water.

Most service companies make one visit a week. At that time, they may clean your baskets and check your water's balance and treat it. However, they cannot control the weather, the bather load of your pool, your water source or other factors that impact your water's chemistry throughout the following week. So, while it's great to hire a service to do the weekly cleaning and chemical check, it's still *your responsibility* to monitor your water chemistry on the other days of the week. We've included a set of guidelines for the MINIMUM FREQUENCY of the times you should check your water (or have your water checked at a reputable store). See the attached "Water Balance Guidelines" handout.

2. How you treated the water on your last pool (or on your pool before it was remodeled) has nothing to do with how you should treat the water on your new (or remodeled) pool.

Each pool is its own entity and has characteristics unique to its particular environment. You may have previously owned a pool at another property and may thing that you understand exactly how you should treat your **new pool**. Wrong! Unless you had the exact same water from your home water source, the exact same compass orientation, the exact same size of pool, the exact same interior finish project and the exact same equipment, you cannot expect to treat your new pool the way you treated your previous pool.

The same goes for **remodeled pools**. Evan though many of the conditions listed above do not change on a remodeled pool, the interior finish does. Also, if you are remodeling, chances are, you haven't had a "new" interior finish in your pool for many years. Taking care of a newly finished pool, that is going through its "curing" phase, is crucial to its beauty and longevity, and is *nothing like* maintaining an older finish.

3. Most pool stores and chemical service companies check for Chlorine, pH, Alkalinity Calcium Hardness, and Total Hardness but many fail to check for Cyanuric Acid (stabilizer) levels.

Cyanuric Acid levels impact your "true" Alkalinity readings. If your Alkalinity reading has not been adjusted for Cyanuric Acid contact, you may have corrosive water without knowing it. Always insist on having the Cyanuric Acid levels checked and insist that the Total Alkalinity levels have been adjusted based on the Cyanuric Acid reading. If your store cannot or will not do this, find another store ASAP. This "hidden" reading can be the key to maintaining the integrity of your interior finish.

4. Salt systems tend to raise pH and always raise the amount of Total Dissolved Solids in your water.

Rondo Pools and Spas strongly discourages the use of Salt – based Chlorine Generators. If you have one on your pool, you will have signed a disclaimer stating the potential challenges associated with these systems. While these systems reduce your need to buy and add chlorine to your pool, they do change the pH dynamic of your water. You may have used chlorine tablets on your last pool (or on your pool before it was remodeled). If you did, these would most likely have been "Tri-Chlor" tablets. Tri-Chlor tablets have a pH of 2.9. This is on the highly acidic side of the pH index. You may have occasionally had to raise your pH. You would have had less of a chance of developing calcium scale on your pool's surface. The same is not true of salt systems and pH. You need to be cognizant of the fact that salt systems usually generate pH readings of 7.8-8.0. These levels are higher than the recommended range and will put your water in a "scaling" mode. You will have to be *very diligent* about adding acid to your pool on a *regular basis* to keep the pH between 7.4 -7.6. Otherwise, you will see scale formation on your pool's surface.

5. Mineral Sanitizers like FROG and NATURE 2 kill algae and bacteria *but do not control* pH, Alkalinity, Cyanuric Acid or Calcium Hardness.

Mineral sanitizers work by allowing water to pass through mineral embedded canisters that skill algae and bacteria on contact. They only work when the pump and filter are in operation. When the system is turned off, they do not sanitize anything. That is why you must maintain a "residual

sanitizer" (chlorine" in your pool. Usually, you only need between .5 – 1.5 p.p.m. of chlorine in your pool. This helps kill any potential algae and/or bacteria that may be in your water (when the system is not running water through the sanitizers).

Mineral sanitizers only affect the algae and bacteria in the water. *The do not control* pH, Alkalinity, Calcium Hardness, Cyanuric Acid levels for Total Hardness. *They are not a "cure-all."* You must still check these other crucial components of your pool's water.

6. Ozone units eliminate non-biological waste *but do not control* pH, Alkalinity, Cyanuric Acid or Calcium Hardness.

Ozone units are designed to break down organic compounds (lotions, oils, cosmetics) and to alter ammonia compounds (perspiration and urine) from your water. Ozone does not eliminate algae. Most people don't realize that they perspire when they swim. When broken down, perspiration and urine are very similar. They are ammonia compounds. These molecules can combine with chlorine molecules in the water to produce "chloramines." When you think you smell too much chlorine in your water, it's more likely that you are smelling chloramines. When ammonia compounds combine with (and use up) chlorine, they reduce the chlorine's ability to kill algae and bacteria. Ozone eliminates the compounds that cripple the chlorine's ability to do its primary job.

Ozone units help Mineral sanitizers and chlorine to do their jobs more effectively *but they do not control* pH, Alkalinity, Calcium Hardness, Cyanuric Acid levels or Total Hardness. *They are not a "cure-all."* You must still check these other crucial components of our pool's water.

7. In pools with Cartridge filters, you must periodically (approx. once very 4 months) drain approximately 1/3 of your pool's water and refill your pool to reduce the water's Total hardness.

When you buy a new house, you will be instructed to periodically drain your water heater. We should do this because we have such high calcium content in our water here in the valley. The calcium drops (precipitates) out of the water and sits at the bottom of the water heater tank.

The same is true of swimming pools. When we add water to our pools (through our Automatic Water Leveler or manually with a hose), we are introducing water with high calcium levels into our pool. In the desert heat, the water evaporates but the mineral content stays in the pool. Then we add more water with more calcium and the cycle continues. Eventually, the calcium hardness levels get too high in the pool. Because water always seeks a balance, eventually, it will drop (precipitate) out the excess minerals (calcium) and they will deposit themselves on the walls and floor of your pool. If pH levels are high, this can immediately cause scaling on the surface of your pool.

The only way to reduce high calcium content in your pool water is to remove a percentage of your pool's water on a regular basis. If you have a sand or DE filter, you do this by backwashing on a regular basis. If you have a cartridge filter, backwashing is not necessary. However, you still need to remove water to remove high levels of calcium. **Before you remove water from your pool, get your calcium hardness levels checked.** If they exceed the written guideline we've provided, proceed with draining 1/3rd of your pool's water and refill it. Then, check levels and rebalance your water to its proper levels (SEE IMPROTANT NOTE on pg. 4).

IMPORTANT: We recommend NOT draining plaster pools when the temperature exceeds 80°. If you have to drain off some water to reduce calcium content, you must immediately begin refilling it or you could cause damage to the surface. Schedule your "drains" for before and after the hottest part of the year and once in the middle of the winter.

8. The consistent use of Sequestering Agents, like "Ultra SeaQuest, " will help you reduce the chances of staining your interior finish.

Sequestering agents are products that help to keep solids and minerals in your water "in solution." The "sequestered" minerals stay in the water and can be filtered out at the equipment. By keeping these minerals from precipitating (dropping out) out of solution, these agents help prevent scaling and staining in your pool.

If you dose you're on a regular basis with these agents, you will help to prevent staining and scaling that might otherwise occur (see the page labeled "Interior Finish Staining and Scaling").

You can order "Ultra SeaQuest" by contacting Rondo's Customer Service Team at 602-870-1285.

9. Interior finishes don't "start out" looking fantastic, then turn "bad." Only improper water chemistry can make a finish that is properly applied look bad.

When you meet your superintendent for your Final Customer Walk-Through, you will both look at the pool's finish. If the finish looks correct at that time, you will then assume responsibility for it. With the exception of some obvious physical breakdown of the material (like a crack or a delamination), any interior finish conditions that occur after your Final Customer Walk-Through will be your responsibility.

Plaster and Pebble products don't go "bad". If your pool looks great after initial start-up, the only thing that can change its appearance is improper water chemistry. Workmanship and material issues present themselves immediately. If they are not present at Start-up, and cannot be seen at your Final Customer Walk-Through with your superintendent, they won't "show-up" later.

Every pool finish is subject to normal variations in shading called "mottling." Mottling looks like cumulous clouds. This is normal and is not evidence of a defect in workmanship or materials.

We do not assess interior finishes at night. Under lights, you will see variations in the surface. You will see high and low areas. These are unavoidable. Plaster and Pebble projects are hand-finished. They are not manufactured in a controlled atmosphere and then placed onsite. Differences in finish are normal when different artisans do their work. Weather conditions, the shell temperature, material conditions and other factors each affect how an interior finish is applied and how it looks. Keep in mind that the workmanship of an interior finish is judged based on how it looks on a sunny day (free of cloud cover).

We've included a "Taylor Test Kit" with your Pool.

This is the top test kit in the industry. Please read the informative booklet included in this kit; you will learn everything you need to know to maintain a beautiful pool. Always keep this kit in a cool, shaded area (do not leave it outside). Please also read the "Interior Finish Staining and Scaling" on page 36 and follow the "WATER BALANCE GUIDELINES " on page 39.

By adhering to the advice, principles and guidelines we've given you, you can ensure that your pool water will look crystal clear and your finish will be consistent

Description and Function of Various Swimming Pool Components

(See full-view illustrations on the following pages)

GENERAL COMPONENTS

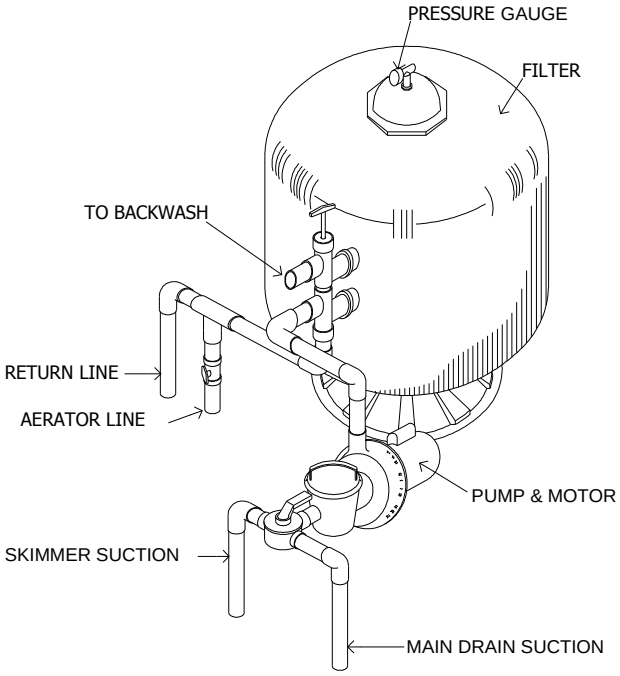
- MAIN DRAIN: Draws water from the deepest portion of the pool, insuring more complete circulation. The main drains have large covers that allow water to flow to the actual pipe opening while keeping large objects from getting to the pump strainer.
- POOL WALL RETURNS: Return pipes (located in the pool walls) that distribute filtered water throughout the pool. Ideally, these adjustable fittings will be directed upward (in a clockwise direction) to keep the surface water moving toward the skimmer.
- SKIMMER: Draws water from the surface and removes floating debris by creating a skimming action with the floating weir door located inside the of the skimmer throat opening. (See page 17) Once this debris has been drawn into the skimmer throat, the weir door prevents it from escaping back into the pool area.
- AERATOR: An aesthetic feature that can be also be used as a cooling device. Running the aerator at night cools the water by spraying it through the cooler night air. Conversely, running it during the day may help to slightly raise the water's temperature (See page 21).
- FILTER: Removes the dust, sand, grass, leaves, etc., by passing the water through a filtering material (media) such as sand, diatomaceous earth or fabric cartridge. This material allows the water to pass freely through the minute opening, while retaining the debris in the filter. The filter media traps and collect debris as water passes through it.
- PUMP AND MOTOR: With the aid of the motor, the pump pulls water from the pool through the skimmer, main drain, and pool-vac pipes. It then pushes it through the filter and back to the pool through the pool's wall returns or other return options (See page 11).
- PRESSURE GAUGE: Located on top of the filter, this is used to measure the pressure in the filter. The filter pressure is used to gauge the cleanliness of the filter. When the pressure rises 8-10 lbs. (psi) higher than the original (clean) operating pressure, it is time to clean the filter.

VALVES

- BACKWASH VALVE: Used to reverse the direction of water flowing through the filter. It is the direction of flow that determines whether the filter is in normal operation or backwash operation. The Backwash valve is used only on sand and diatomaceous earth filters (See page 13).
- BALL VALVE: Controls the amount of water going through a plumbing line.
- GATE VALVE: Controls the amount of water going through a plumbing line. Turn left to increase flow, turn right to decrease flow or turn off (See page 21).
- THREE-WAY VALVE: Used to redirect water flow coming from two different pipes into one pipe (suction side) or the water flow going from one pipe into two different pipes (return side) (See page 21).
- TWO-WAY VALVE: Used to restrict the water flow through a pipe to calibrate the proper operating back pressure on a pump. Closing off a small portion of the water flow can help the pump to run more quietly and efficiently

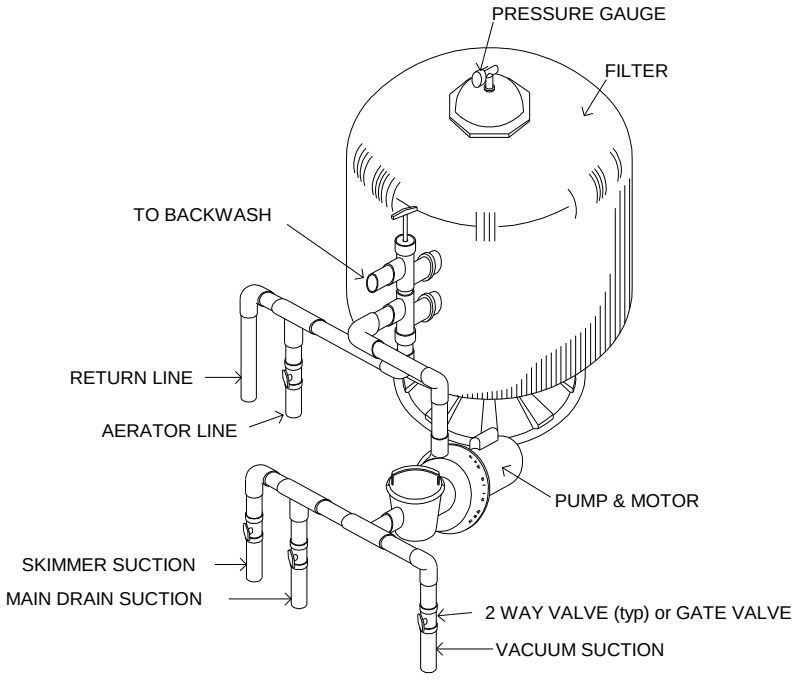
- Residential Swimming Pool Schematic

(General schematic, individual options may vary)



Commercial Swimming Pool Schematic

(General schematic, individual options may vary)



Operation and Maintenance of Equipment

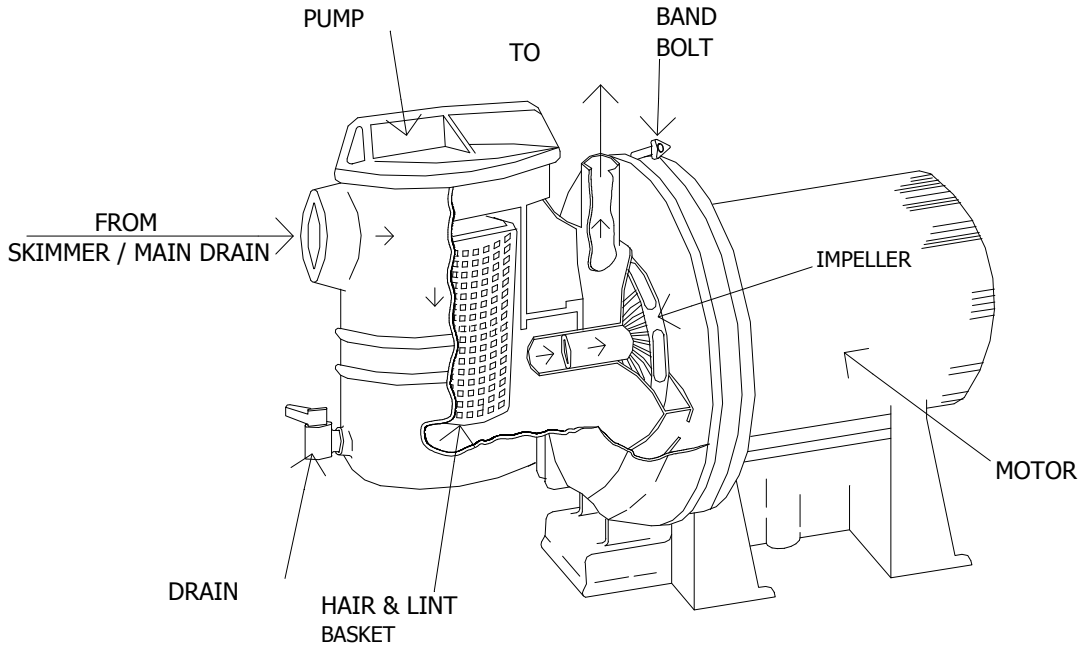
This section is intended to cover the general operation and maintenance of the equipment that may be installed on your swimming pool or spa. For further details and information, please refer to the manufacturer's "Homeowner's Manual" for the specified piece of equipment.

POOL RECIRCULATION PUMP Whisperflo Pump User's Guide or IntelliFlo VS+ User's Guide

- TO SERVICE PUMP

1. Turn off the pump.
2. Using the air relief valve located on the top of the filter, release air from the filter, then close the air relief valve.
3. Remove the pump lid.
4. Empty the hair and lint basket, and replace it in the pump pot.
5. Clean and lube the "O" ring with a non-petroleum based water repellent lubricant.
   Note: **NEVER** use Petroleum Jelly. It will deteriorate the o-ring and lessen its life.
6. Replace the lid; hand tighten only. **DO NOT OVERTIGHTEN THE LID** (Doing so can damage the "O" ring).
7. Turn on the pump switch.
8. Using the air relief valve located on the top of the filter, release air from the filter one more time. (See the "Filter Diagram") Leave the valve open until a continuous flow of water flows from the valve opening, then close the valve.

If the pump will not prime, repeat steps 1-3. Fill the pump pot with water, and repeat steps 4-6.

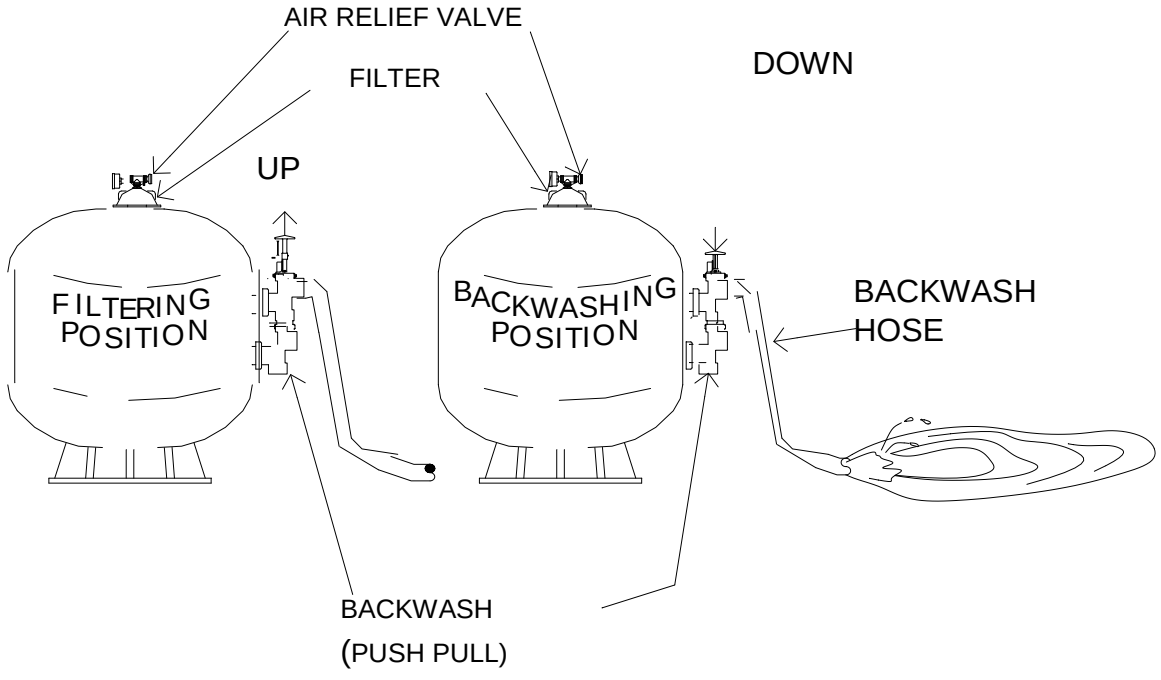


SAND FILTER [Pentair Sand Filter User's Guide]

- TO FILTER
    1. The backwash valve must be locked in the (UP) position.
       CAUTION: NEVER shift the valve handle while the pump is running!
    2. Turn on the pump.
    3. Using the air relief valve located at the top of the filter, release air from the filter. Leave the valve open until a continuous stream of water flows from the valve opening, then close the valve.

- TO BACKWASH: Backwash the filter when the reading on the pressure gauge reaches 8-10 lb. above clean operating pressure. At your orientation, the backwash pressure for your individual system will be labeled on your filter. If you do not know your clean operating pressure, backwash your system for 3 minutes, then record your filter pressure. Whenever your pressure is 8-10 lb. above that "clean operating pressure" reading, it's time to backwash again.

    1. Turn the pump off.
    2. Cclean your pump basket as described on the previous page.
    3. Turn the backwash handle 1/4 turn (CLOCKWISE) to clear the locking pin.
    4. Push the valve handle (DOWN) to the backwash position and turn back (COUNTERCLOCKWISE) to lock.
    5. Extend the backwash hose to the area which you have chosen to dispose of the water. Note: It is important that you lay out the backwash hose with no rolls or kinks in it. Rolls or kinks can cause the hose to split or blow up due to high water pressure.
    6. With the backwash handle in the down position, turn on the pump. Run the pump for approximately 3 minutes. Watch the water coming out the end of the hose. When the backwashed water appears clean, backwashing is complete.
    7. Turn off the pump.
    8. To unlock the backwash handle, turn it 1/4 turn (CLOCKWISE). Return the valve handle (UP) to the filter position and lock.
    9. Turn the pump on and release air from the filter. Your filter pressure should now be back to normal. Check your pressure weekly and backwash your system as needed.

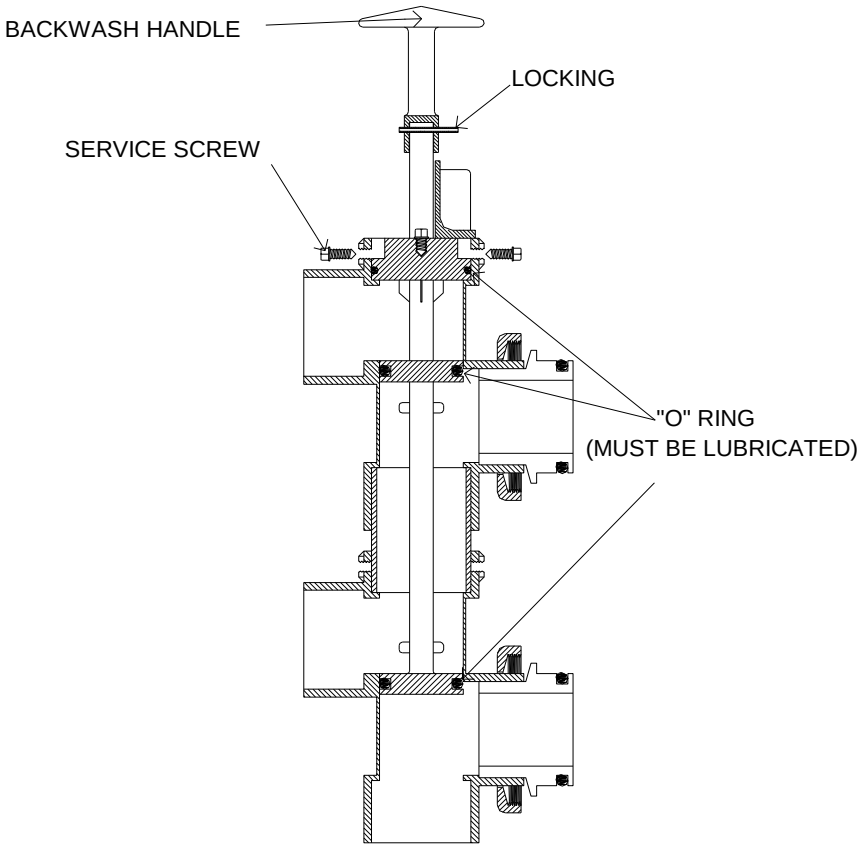


BACKWASH VALVE Two Position Slide Valve User's Manual

To prevent the deterioration of your o-rings, your must regularly (about every other month) lubricate the backwash valve with a water resistant, *non-petroleum based* lubricant. If the handle is hard to lift it is time to disassemble and lubricate it.

- LUBRICATING THE BACKWASH VALVE

1. Turn off the pump
2. Pull up the backwash valve handle and remove the screws on the side. (See Diagram Below)
3. To remove the shaft, pull up on it with a twisting motion.
4. Lubricate the o-ring with a water resistant, *non-petroleum based* lubricant.
   Note: DO NOT use Petroleum Jelly! It will deteriorate the o-ring and shorten its life.
5. If any of the o-rings are broken or deteriorated, replace them. If you do not replace it, a bad o-ring will affect the flow of water through your system and may cause water to bypass through your backwash line and drain your pool.
6. Lubricate the internal o-rings by applying a small amount of lubricant to the shaft below the top o-ring.
7. Replace the shaft, and tighten the screws on the side.



D.E. FILTER (Diatomaceous Earth) D E Filter User's Manual

- TO FILTER:

1. The backwash valve must be locked in the (DOWN) position.
   CAUTION: Never shift the valve handle while the pump is running.

2. Turn on the pump.

3. Using the air relief valve located on the top of the filter, release air from the filter. Leave the valve open until a continuous stream of water flows from the valve opening, then close the valve.

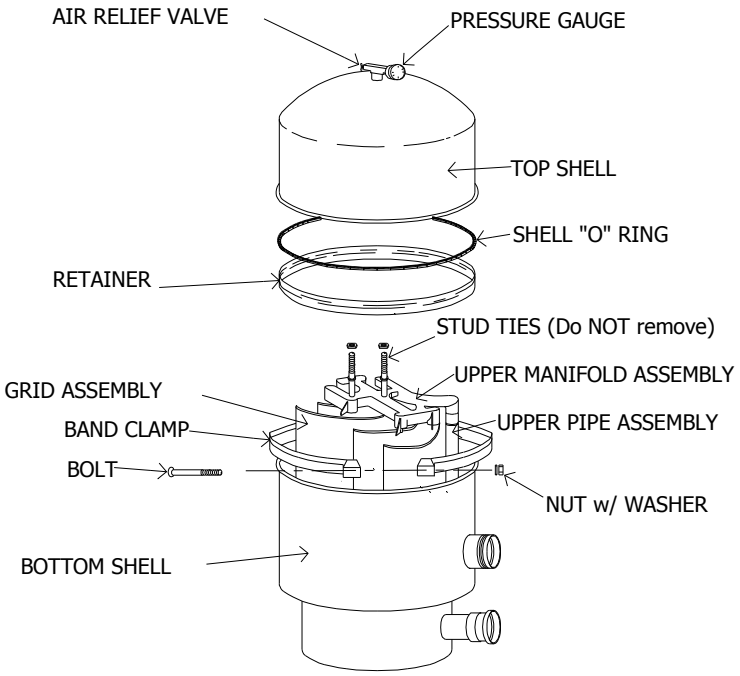
4. Remove the skimmer lid (pg. 17), mix the recommended amount of D.E. in a bucket with some water, then slowly pour the mixture into the skimmer. The D.E. will be drawn into the filter and evenly deposited across the grid elements. For the best distribution of the D.E., run the filter for at least an hour.

MANUFACTURER'S RECOMMENDATION FOR D.E. QUANTITIES

24 sq. ft. filter = 2.5 lb.
36 sq. ft. filter = 3.5 lb.
48 sq. ft. filter = 5 lb.
60 sq. ft. filter = 6 lb.
72 sq. ft. filter = 7.5 lb.

TO BACKWASH: Backwash the filter when the reading on the pressure gauge reaches 8-10 lb. above the clean operating pressure. At your orientation, the backwash pressure for your individual system will be labeled on your filter. If you do not know your clean operating pressure, backwash your system for 5 minutes, then record your filter pressure. Whenever your pressure is 8-10 lb. above that reading, it's time to backwash again.

1. Before you backwash, clean your pump basket as described on the previous page.
2. Turn the pump off.
3. To clear the locking pin, turn the backwash handle 1/4 turn (CLOCKWISE).
4. Pull the valve handle (UP) to the backwash position and turn it back (COUNTERCLOCKWISE) to lock it.
5. Extend the backwash hose to the area which you have chosen to dispose of the water and DE.
   Note: It is important that you lay out the backwash hose with no rolls or kinks in it. Rolls or kinks can cause the hose to split or blow up due to high water pressure.
6. With the backwash handle in the up position, turn on the pump. Run the pump for approximately 3-5 minutes. Watch the water coming out the end of the hose. When the backwashed water appears clean, your backwashing is complete.
7. Turn off the pump. To unlock the backwash handle, turn it 1/4 turn (CLOCKWISE). Return the valve handle (DOWN) to the filter position and lock it.
8. Turn on the pump and release air from the filter.
9. Your filter pressure should now be back to normal.
10. Replace the Diatomaceous Earth as described above. Check your pressure weekly and backwash as needed.



- MANUAL CLEANING OF A D.E. FILTER

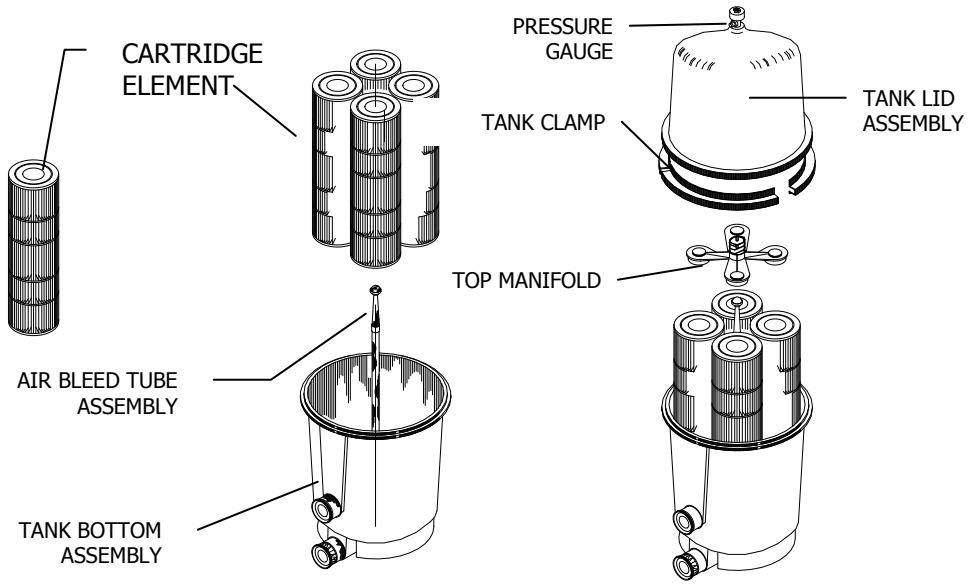
At least once a year or when the pressure rises 4 to 6 pounds higher than normal operating pressure after backwashing, the internal filter grids should be removed and cleaned. Backwash the filter before doing the following:

1. Turn the pump off and open the air relief valve. IMPORTANT: Before you remove the clamp assembly, be sure that you relieve all pressure from the filter tank.
2. Loosen each clamp nut alternately until the clamp can be removed. Remove the tank top.
3. Lift the entire grid assembly straight up off the upper piping assembly.
   Note: Do NOT keep grid assembly in the sunlight more than two hours; leaving the grid assembly in direct sunlight for more than two hours will shorten the life of the grid cloth.
4. Thoroughly hose off the grid elements. The grids can be cleaned as a whole unit with a high pressure garden hose or be placed in a large plastic container filled with warm detergent solution. Scrub the grid cloth with a soft brush. In cases where calcium deposits are evident, soak the assembly in a solution of 4 parts water to 1 part muriatic acid for 20 to 30 minutes. Rinse it clean and proceed with detergent scrubbing.
5. Inspect the grid cloth for tears and check both the small upper pipe "O" ring and the large tank seal for any nicks. Lubricate with a water repellent, *non-petroleum based* lubricant and clean the "O" ring and tank seal seating areas. Any damaged components should be replaced.
6. Replace the grid assembly by setting the manifold opening directly over the connector pipe. Push down on the grid assembly and check to see that it is seated properly.
7. Position the tank seal and place the tank top on the filter. The tank top should rest on the seal evenly.
8. Clean the inside of the tank top clamp and replace it. Tighten the nuts on both sides alternately and evenly.

CARTRIDGE FILTER Cartridge Filter User's Manual

- TO FILTER (Filtering Operation):
  1. Turn on the pump.
  2. Using the air relief valve located on the top of the filter, release air from the filter. Leave the valve open until a continuous stream of water flows from the valve opening, then close the valve.
- TO CLEAN:
  1. Turn off the pump.
  2. Open the air relief valve on top of filter. This will cause the water level in the filter to drop below the locking clamp before you remove the lid.
     CAUTION: The air bleeder valve should always be open before releasing any clamp on the filter system.
  3. Loosen the clamp nut until the clamp can be removed from around the filter. Remove the tank top.
  4. Remove the top manifold and each cartridge by lifting upward.
  5. Once the filter cartridges are removed, then each cartridge can be cleaned with a garden hose and a nozzle. Adjust the nozzle for its highest velocity and direct the spray at an angle that will remove dirt and debris. The cartridge can also be soaked in a solution of Tri-Sodium-Phosphate cleaner.
  6. Install clean cartridge back into the filter tank. There is no correct side up for the cartridge element, as long as it sits down on the bottom manifold.
  7. Replace the top manifold.
  8. Clean the tank o-ring and clean the o-ring seat area. **DO NOT LUBRICATE THE O-RING!**
  9. Seat the tank o-ring and place the tank lid on the filter.
  10. Replace the clamp around the center of the tank and tighten clamp by turning the nut.
  11. The filter is now ready to operate. To start a new filtering cycle, refer to the Filtering Operation (see above).

With proper cleaning and maintenance, your cartridge element should last 2 to 3 years. Once your cartridge tears or starts to bypass debris, you should contact your local pool supply store for replacement cartridges.



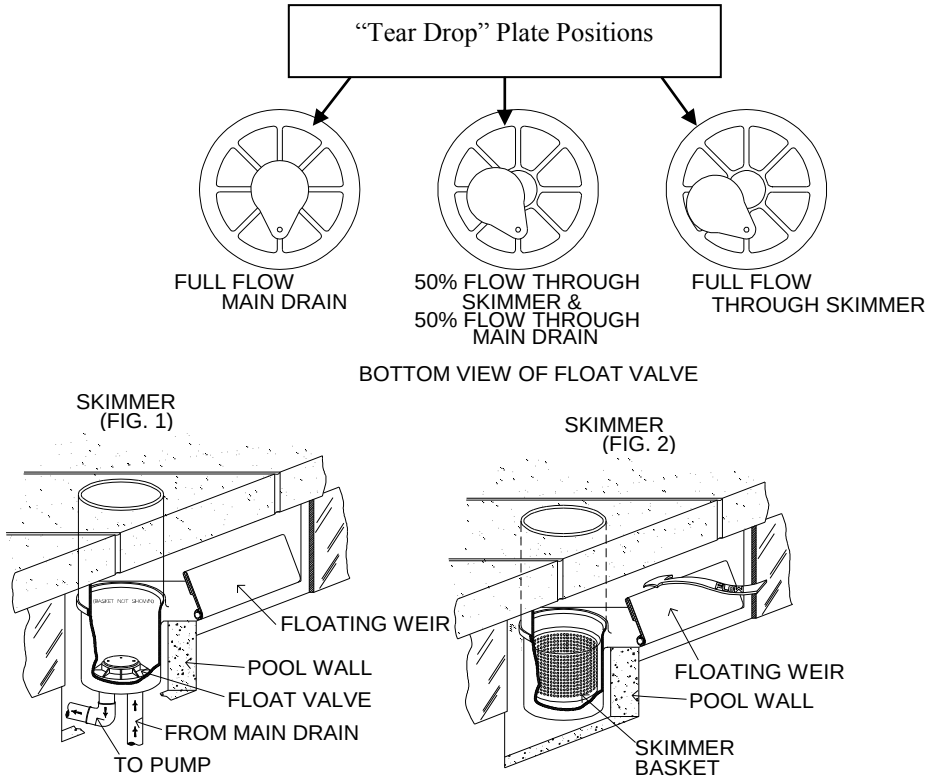
SKIMMER

- TO CLEAN:

    1.) Remove Skimmer lid from deck
    2.) Remove Skimmer basket from skimmer using the handle across the middle.
    3.) Empty basket of all leaves and debris. A clean basket will ensure good water flow to the pump.

- NORMAL OPERATION:

If you have separate skimmer & main drain suction lines, use the individual valves to control flow. If your pool does not have separate skimmer & main drain suction lines, then the balance of the water flow to the pump (suction) is controlled by the equalizer ("float") valve assembly located at the bottom of the skimmer (under the skimmer basket). If there is an obstruction of the normal flow or if too much evaporation occurs (causing a significant reduction in flow over the weir door), the equalizer valve will automatically snap shut. This diverts all the flow to the pump from the main drain and prevents a possible loss of prime (meaning that air is in the lines and the pump cannot operate correctly). When the pump shuts off, the float will rise back to the top of the equalizer valve assembly (allowing for normal operation if the flow or water level condition has been remedied). The adjustment of the tear drop plate (on the bottom of the equalizer valve) can change the ratio of skimmer-to-main drain suction. (See Diagram Below) By adjusting this ratio, you can match the system's cleaning efficiency with the personality of the pool and yard. If your pool has a lot of floating debris, opening the tear drop will increase the amount of skimmer suction you have. On the other hand, closing the tear drop will give more suction to the main drain to assist with the heavier debris at the bottom of the pool.



EASY-TOUCH AND INTELLI-TOUCH AUTOMATED CONTROL SYSTEMS

Due to the complexity and flexibility of the Easy-Touch and Intellitouch Control Systems, there is simply too much information to enable us to list the full programming and operational instruction in this owner's manual. For any questions regarding these systems, please refer to Pentair's Easy-Touch or Intelli-Touch Owner's Manual supplied to you.

If you do not have a copy of the Pentair Manual, you can download a copy by visiting www.pentairpool.com. When on the home page, select "pool products", then select "Automation", and then finally select "Easy Touch Control Systems" or "Intellitouch Control Systems" depending on which manual you would like to download. At the bottom of the control system's description page are links that will enable you to download the "Owner's Manual" in a user friendly PDF format.

TIME CLOCK

- TO SET "ON/OFF" PINS:

Loosen the small nut on the trippers (Sometimes called "timing dogs"). Hold the trippers all the way in against the edge of the clock dial, and point to the time (A.M. or P.M.) when you want your system to turn ON and OFF. Tighten the screws firmly.

- TO SET "TIME OF DAY":

Pull the clock dial outward. Turn it in either direction to align the current time of day on the clock dial to the time pointer. Do NOT move the pointer.

- MANUAL "ON/OFF":

The pump can be turned on and off manually. Just move the toggle to the on or off positions as desired. The time clock will continue to keep time and will turn on or off at the set pin times. If the time pins are not set, the pump will stay in the current position until manually switched back.

- OVERRIDE SWITCH:

There is a time clock override/maintenance switch located under the time clock. It is just an on/off switch that will disconnect power to the time clock if electrical work needs to be done. **NOTE:** When shut off, the time clock will no longer keep time and your pump will not turn on until the power is restored. This function should only be used in emergencies when you need to keep the pump off for a number of days.

POOL LIGHT

Brush your light frequently. Plaster dust, chemicals, etc. from your new plaster pool or spa can accumulate on the chrome face ring and leave an unsightly residue.

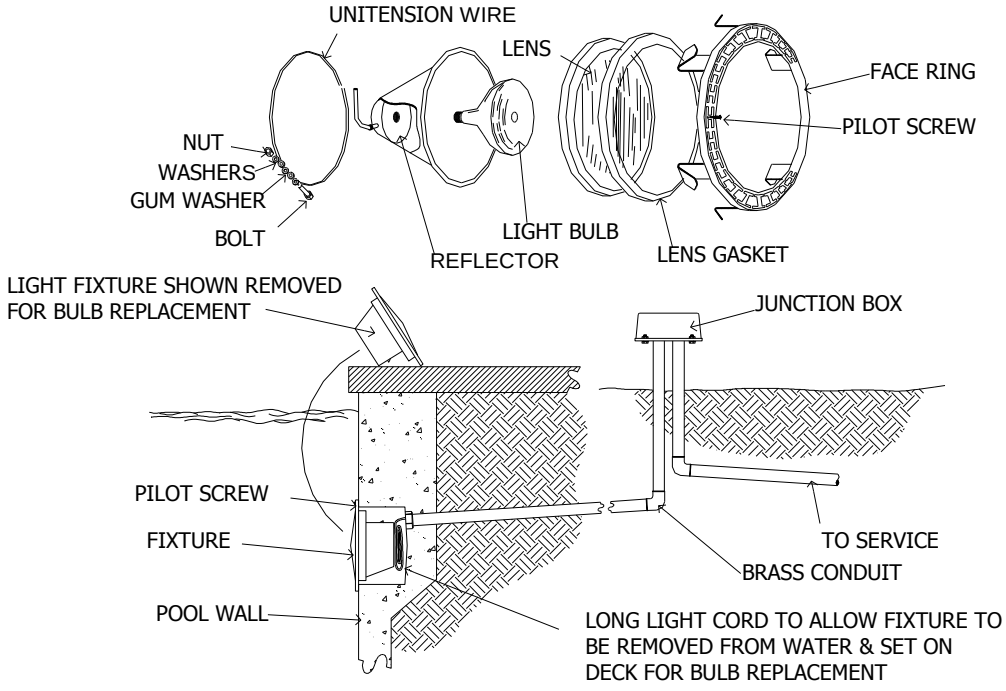
Your light is equipped with a "low water cutoff sensor". This sensor is designed to keep the fixture from over- heating. When first used, it needs to adjust to its new environment- if your light cycles on and off, turn the light on and leave it on for about 12 hours to adjust itself. The cycling will stop.

If your spa is hotter than 104 degrees, your light may go off. This indicates that the sensor is working.

- REPLACING THE LIGHT BULB:

1. Remove the pilot screw.
2. Tilt the top of the fixture forward and lift it up to remove it from the pool wall.
3. Carefully place the fixture on the deck.
4. Remove the screw holding the unitension wire (this is located behind the face ring). The wire sits in the extension on the backside of the ring.
5. With the wire removed, remove the lens gasket and lens.
6. Replace the bulb.
7. Reassemble the lens, gasket and ring, utilizing the unitension wire as it was assembled prior to replacing bulb.
8. Place the fixture back into the light niche in the pool wall, with the top tilted forward, so that the fixture catches on the lip of the niche.
9. Replace and tighten the pilot screw.

IMPORTANT: Before you reassemble the fixture, make sure there are absolutely NO drops of water or any moisture whatsoever inside the lens. Moisture inside the lens can cause water vapor to build up inside and cause the lamp to overheat and burn out.



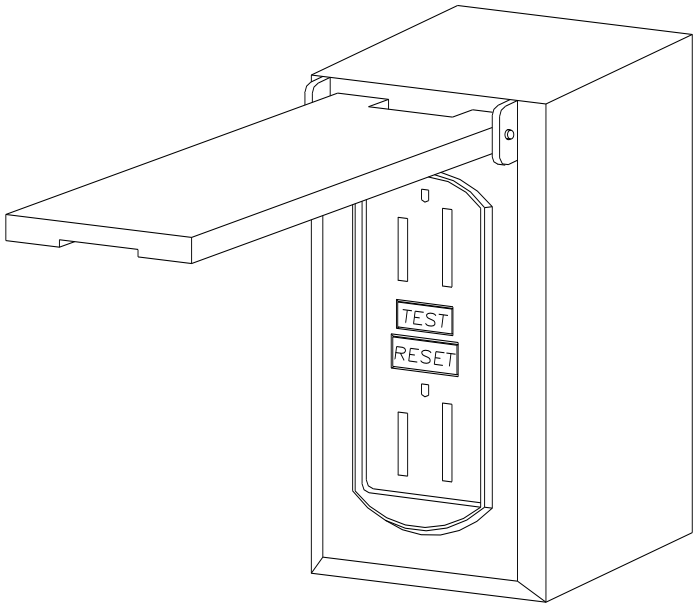
GFCI

In the electrical circuit that supplies your light, there is a ground fault circuit interrupter (GFCI), which limits the duration of any electrical fault current to ground. This is an important safety device, and should be tested on a monthly basis to ensure that it's working properly.

- TO TEST THE GFCI:

1. Turn the pool light on. The circuit must be "live" for the test to work.
2. Press the TEST button in. If the GFCI is functioning, the RESET button will pop out; if not, the GFCI is defective. You can contact our service department to arrange to have it replaced.
3. If the GFCI is working properly, press the RESET button back in and the light should operate as usual.

NOTE: A tripped or defective GFCI is the most frequent cause of light problems. It is common for the GFCI to trip during a lightning storm any kind of power surge. If you turn on your pool light and it does not come on, check your GFCI. In most cases, resetting the GFCI will solve your problem.



GATE VALVES

- OPERATION:

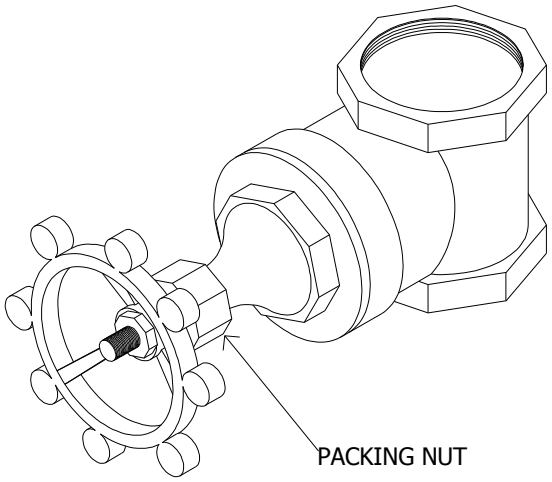
  TO OPEN: Turn left (counter-clockwise)
  TO CLOSE: Turn right (clockwise)

- MAINTENANCE:

Periodically, you may have to tighten the packing nut on the gate valve because it can loosen slightly with each adjustment of the valve.

To tighten, place an adjustable wrench on the nut and turn slowly to the right. Do not over-tighten; this can make it difficult to turn the valve handle.

The most common cause of leaking gate valves is a loose packing nut; this can also be the source of air bubbles showing up in the pump. The latter only occurs in situations where a valve is plumbed in before the pump, such as in semi-commercial applications where the skimmer, main drain and vacuum lines (suction) have valves between the pool and pump.



AERATOR

The Aerator is an aesthetic and useful water feature that is included with every Rondo pool (except on pools with coping stone/pavers). Not only is the aerator nice to look at and play under, it can also be used to help control the water temperature by incorporating the outside air temperature into the temperature of the water. The aerator will be most effective as a water-cooling aid when operating during the evening hours (when air temperatures are lower). This also helps to reduce evaporation loss. Since the aerator uses the pool water, it will operate only while the pool pump is on. The aerator can also be use during the day to add a few degrees to the pool (when the temperature is a little too cold).

- OPERATION

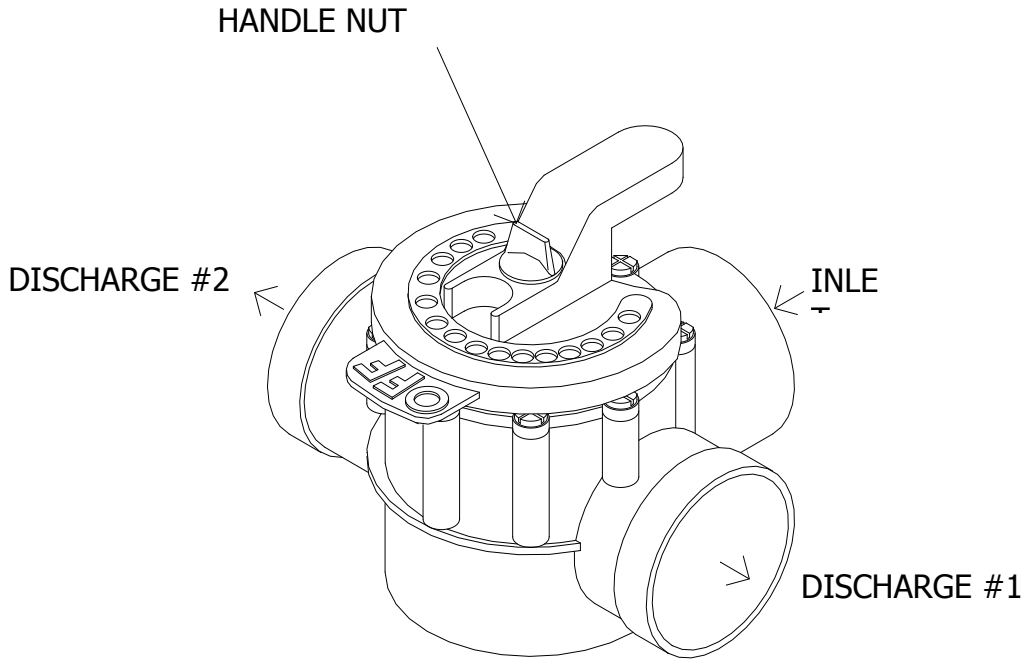
On your equipment schematic, locate the aerator gate valve. This will allow more or less water to flow through the aerator. See the section above for when to open and close it. Adjust your aerator to a level you prefer. Remember: To use the aerator function, the pump must be on.

3-WAY VALVES

Three-way valves are used in situations that require the ability to control water flow and direction from or to two separate plumbing lines. Three-way valves can be used on the return side where there are (1) inlet and two (2) discharge lines or on the suction side where there are (2) inlets and (1) discharge line.

- TO OPERATE :

Loosen the handle nut slightly to enable you to turn the handle. The OFF area on the valve handle represents the exact position of the internal valve equalizer seal. This should be placed over the pipe you want to close off. In this example we will be controlling a return side three-way valve. By closing off a specific discharge line, you direct water to the other discharge pipe, thus controlling the operation of such things as spillway skimmers, cleaning systems, spas, etc. In the event you want to cut down on the amount of water going through a pipe, but not cut it off completely, turn the handle so that the OFF area partially covers the pipe; adjust for more or less flow as desired. On a suction side three-way valve, you use the valve to change the suction from one line to another. The most common scenario is when using a pool vacuum. When installing the pool vacuum, the "off" symbol will be over the "vacuum line" option with all the water suction coming through the "skimmer and main-drains" option. In this case, you will open the "vacuum line" option and begin to close the "skimmer and main drain" option until you achieve the correct amount of suction through the pool vacuum. When you've found the desired setting, finger-tighten the handle nut to secure the handle. The valve handle has a stopper that prevents the valve from moving to an improper position. However, under no circumstances should the "off" symbol cover the inlet on the return side or the discharge on the suction side. This would cause the system to "dead-head" and could cause damage to the equipment.



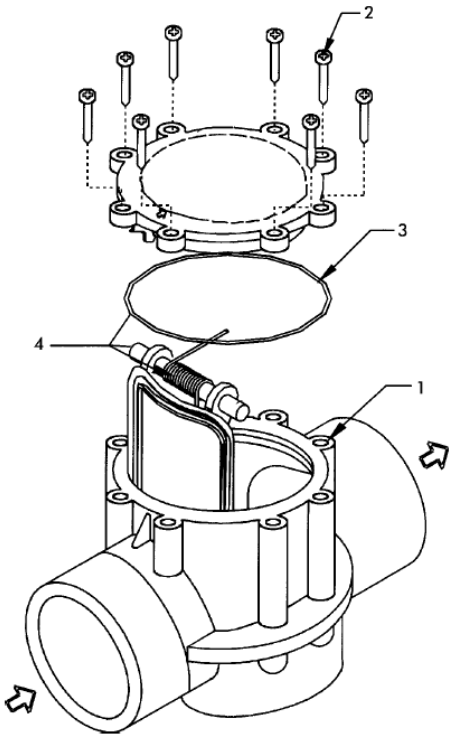
Note: This example is a "return side" three-way valve and it shows the "off" symbol in the middle position with the water being split equally between discharge #1 and discharge #2.

CHECK VALVES

The check valve is a device that prevents water from siphoning backward through the plumbing lines. This siphoning may occur when a pool and spa share common equipment or plumbing lines, or when one body of water is higher than the other. At some point, your spa or water feature may drain down into the pool. A pool's water may also drain down into a negative edge basin and cause it to overflow. This is caused by some type of debris that has lodged itself in the check valve. In order for the check valve to correctly function, this debris must be removed.

- SERVICING THE CHECK VALVE.

1. With the pump off, unscrew the eight screws on the top of the check valve.
2. Remove the top plate. You may need a regular screwdriver to pry the top plate off as it has a good water tight seal.
3. The spring plunger it attached to the top plate. Clean the plunger to make sure it is free of any debris.
4. Next, check the check valve housing to make sure it is also free of any debris.
5. Replace the top plate back onto the check valve housing. Make sure the o-ring is properly seated around the perimeter of the top plate. Also, make sure the plunger is in the correct location. There is a direction arrow that should point in the direction of the water flow.
6. Replace all eight screws. Do not over tighten
7. Start up the system and keep an eye on the water level.
8. If this fails to resolve your problem, your plunger may have been damaged or has worn out due to water chemistry. If you are out of warranty, Rondo can send a service technician out to resolve the issue, or you can go to your local swimming pool supply store for a replacement.



AUTOMATIC WATER LEVELER

- WATER LEVEL ADJUSTMENT:
    1. Using your garden hose, get the water level in your pool or spa to the desired position.
    2. Submerge the float cup under water to fill the bottom half of the cup with water for ballast.
    3. Grasping the entire assembly, turn it counter-clockwise to raise the assembly up until you hear the valve constantly filling.
    4. Next, slowly turn the assembly clockwise, a 1/2 a turn at a time, until the valve stops filling.
       Now it should be set to that water level (give or take a 1/4 inch).
    5. The float cup height can be adjusted by pinching the metal clip and sliding it up and down on the metal bar. This may be of some help when trying to fine tune the level.

- CHECKING THE LEVELER FOR MALFUNCTIONS:
    1. When an AWL (Automatic Water Leveler) valve malfunctions, it results in the pool overfilling or not filling at all. The first step is to figure out what it's doing wrong.
    2. Check your water source. The AWL is supplied with water from your house and can be turned on and off with the two butterfly valves located at the vacuum breaker. Make sure both valves are running in the same direction as the pipe they are on. (See Vacuum Breaker)
    3. With the water source on, check the AWL valve. To see the water flow, pull the black tubing out of the crock. Using your fingers, raise and lower the float and make note of the water flow problem. Go over to the vacuum breaker and shut off the water source.
    4. Now remove the valve for service. Reach below the float cup and pull up on the locking ring. You should now be able to remove the top portion by pulling up on the entire valve.
    5. Check the float. Does it easily slide up and down on the shaft? Oils and lotions can build up on the shaft and cause it to be sticky. Clean the shaft to ensure good movement of the float cup.
    6. Remove the upper cap assembly by turning counter-clockwise 1/4 turn. The black seal on the under side of the cap can collect sand and other particles. These particles can cause the valve to malfunction by disrupting the seal. Clean all debris from the seal and from the seat where the seal sits. Replace the upper cap assembly.
    7. Slide the AWL valve back into the crock and lock it back down by sliding the locking ring into place.
    8. Turn the water source back on and see if the problem has been remedied. If so, adjust the valve to the correct water level (following the steps in the previous section). If not, the valve should be replaced with a new one. Remove the valve and bring it to a local hardware store for a replacement. The valve supplied to you is a Fluidmaster 400a Toilet Tank Repair Valve.
    9. When installing a new valve, make sure the threads of the new valve are sealed using Teflon tape. This will prevent the threads from allowing water to bypass the valve and overfill the pool.

A. Turn off water supply. Remove fill tube & snap off cover.

B. Remove float by gently squeezing float arms inward.

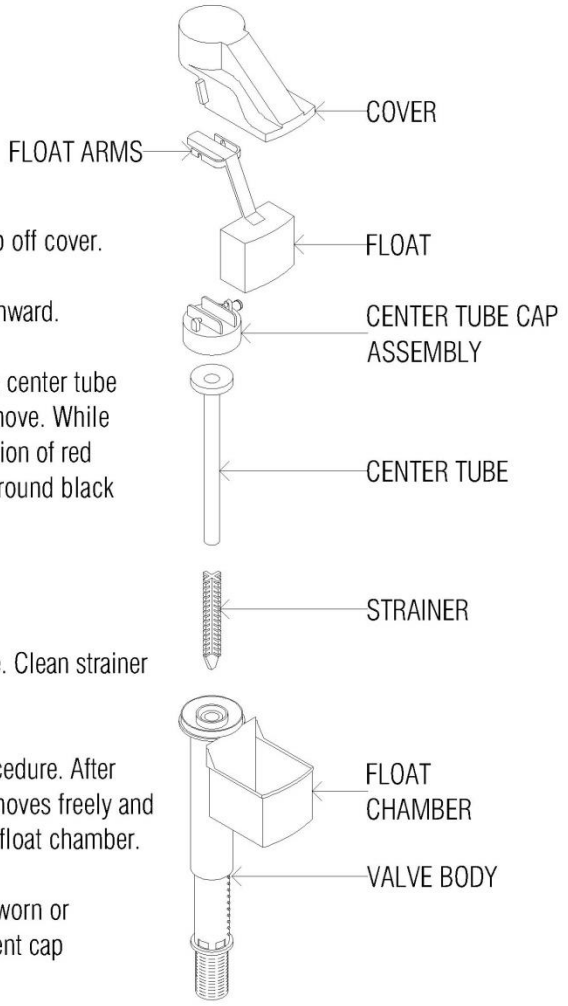
C. While holding valve body with one hand, twist center tube cap assembly 1/8 turn counterclockwise and remove. While running under warm water, compress raised portion of red diaphragm seal to ensure seal is moving freely around black peg.

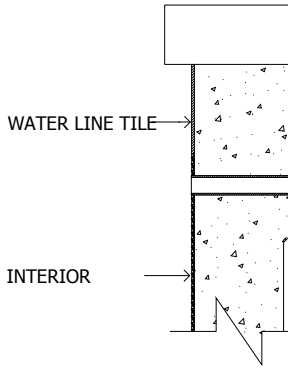
D. Lift out center tube.

E. Use pliers to remove strainer from center tube. Clean strainer by placing under running water.

F. Reassemble valve by reversing the above procedure. After reattaching float, tap top of float to ensure float moves freely and does not make contact with the side walls of the float chamber.

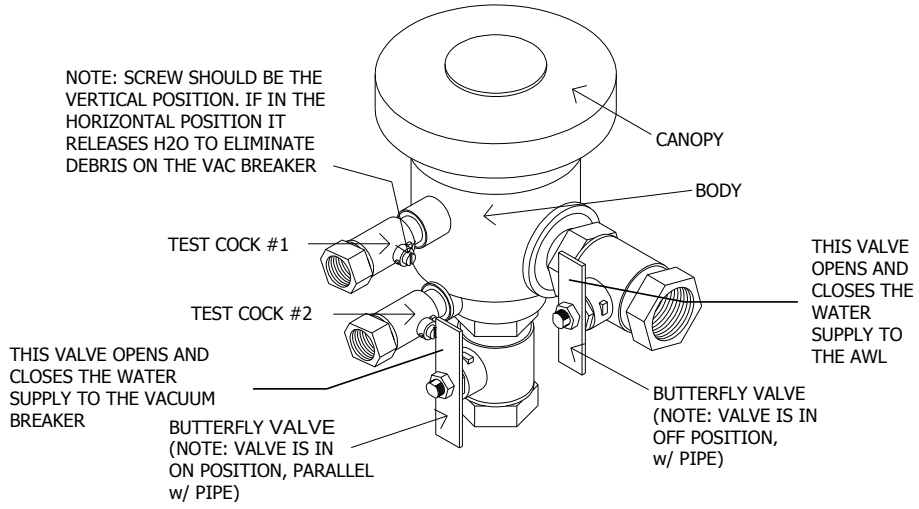
NOTE: If red rubber diaphragm inside the cap is worn or punctured, cleaning will not suffice. A replacement cap assembly, Lavelle p/n: R528, will be required.





If your swimming pool or spa has come equipped with an Automatic Water Leveler, there will be a vacuum breaker installed on the fresh water supply line. The purpose of the vacuum breaker is to prevent water from siphoning back from the pool water to the fresh water supply. It consists of a single spring loaded check valve and spring loaded air vent. Under normal operating conditions, the check valve will open (depending on the quantity of water flowing), and the poppet will seal the air vent. Under low pressure, the poppet will open the air vent and break any vacuum.

There is no necessary maintenance for the vacuum breaker and, in most cases, there should be no need to adjust the valves. In the event you need to control the flow, the lower valve controls the incoming fresh water and the upper lever controls water flow to the auto leveler valve. The vacuum breaker uses butterfly valves to control water flow to and from the breaker. When the butterfly valve lever is in line with the pipe, it is fully open; however, when it is perpendicular to the pipe, it is closed. Generally, it is best when the incoming supply line is fully open (lower valve), and the line to the pool is partially open (upper valve). To shut off the water to the automatic water leveler, turn either of the butterfly valves perpendicular to the pipe that they are running on. After servicing the water leveler, make sure both valves are fully closed. Then open the lower valve first (all the way open). Finally, open the upper valve (that supplies the water leveler). If you do this in the wrong order, the vacuum breaker can leak.



AUTOMATIC CHLORINATORS

- RAINBOW:

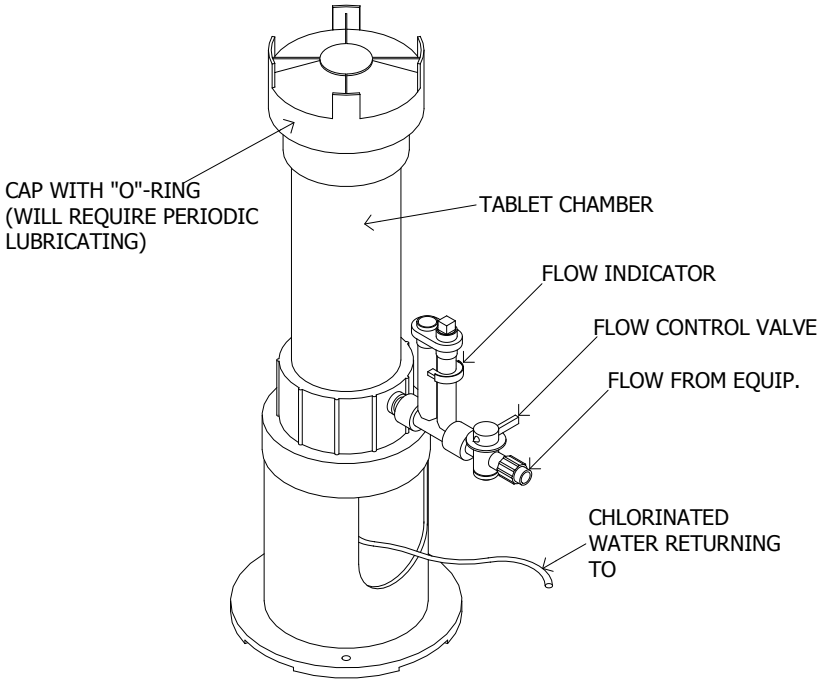
The Rainbow 300 and 300-29 off-line chlorinators are mostly used for semi-commercial applications (but can be used in residential applications as well). These chlorinators will deliver chlorine to your system by eroding tablets inside the chlorinator and delivering chlorine to your pool returns through the black 3/8" or 5/8" tubing. Before starting up your chlorinator, your pool/spa should be properly stabilized and the chlorine residual should be 1.0 to 1.5 ppm. The chlorine demand in a pool/spa will vary based upon certain factors. (See Water Chemistry) As a result, the valve setting may have to be changed from time to time to conform to conditions.

- OPERATION:

1. With the pump off, Remove the cap off the top of the chamber and fill it with the proper size of Tri-Chloro-S-Triazinetrione tablets.
2. Make sure that the "O" ring is clean, well lubricated and seated properly, then replace the cap. Hand-tighten the cap.
3. Turn on the pump.
4. Adjust the control valve to regulate chlorine dispersion.

- HOW TO RECHARGE THE CHLORINATOR:

1. Turn the control valve to the "closed" position. Shut off the pump.
2. Wait one minute. This will allow water and fumes to drain from the chamber.
3. Leave the control valve closed and turn on the pump. The check valve will prevent water from entering the chamber.
4. Remove the cap and fill the chamber with tablets
5. Make sure the "O" ring is clean, well lubricated and seated properly, then replace the cap. Hand tighten the cap.

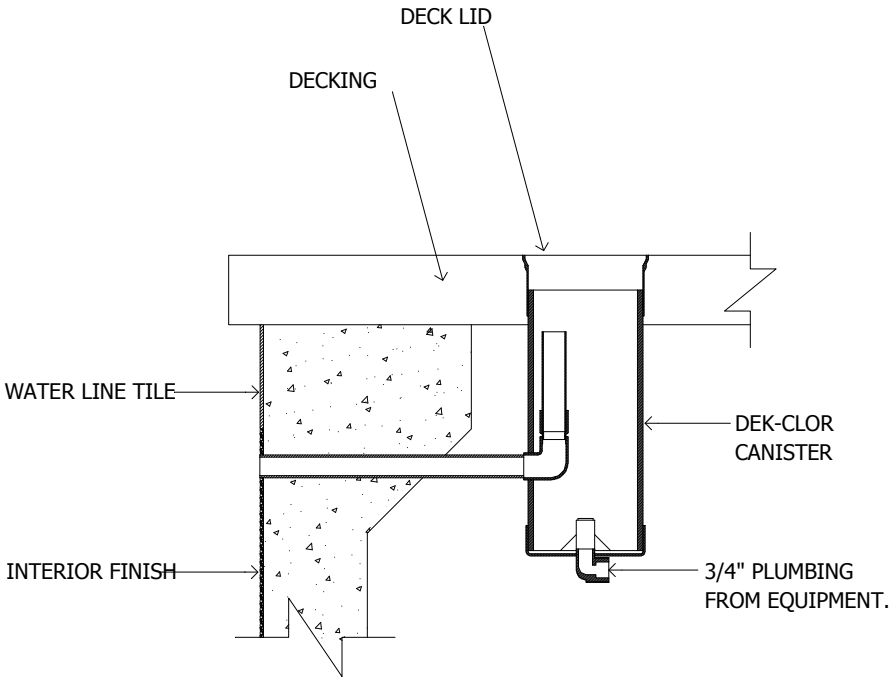


QUIK-DEK-CLOR

The Quik-Dek Clor is a chlorine feeder that is conveniently installed at the deck and delivers chlorine directly to the pool. Special inlets have been engineered into the Quik-Dek-Clor canister to ensure even water flow around the tabs. Because of this advanced design, you can easily adjust the Quik-Dek-Clor to compensate for swimmer load and chlorine conditions.

- CHLORINE ADJUSTMENT:

    1. The Quik-Dek-Clor can be adjusted in two ways, (1) by increasing or decreasing the number of tablets used or , (2) by adjusting the water flow to the canister.
    2. The easiest way is to keep the water flow constant and adjust the number of tablets you are using to regulate the amount of chlorine you are delivering to the pool water.
    3. In different seasons, you may want to increase or decrease the flow to compensate for higher or lower chlorine demand. Keep in mind that when you are constantly adjusting two different variables, it makes fine tuning a bit more difficult.
    4. Depending on the seasonal demand, add chlorine tablets to the canister as needed to keep the chlorine reading in the suggested range.



POLARIS "ATV" POOL VACUUM

Your Polaris ATV Pool Vac comes with a detailed installation manual to help you install and trouble shoot the unit. When you are ready to install your pool vac, please refer to the manual. The pool vac is an excellent cleaning device that has an internal steering program designed to cover the entire internal area of your pool (excluding the steps and benches). Regardless of the pool's shape, the pool vac is designed to make a number of right and left turns to cover areas otherwise missed by random steering vacuums.

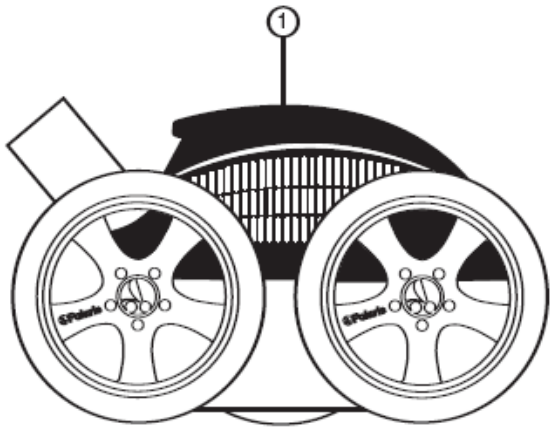
NOTE: Never install a pool vac during the first two weeks after a plaster or Ultra-Poz finish has been installed. The finish needs time to harden and cure. Prematurely installing a pool vac may result in permanent marks on your pool's interior finish.

Once the vacuum has been installed and the correct amount of suction has been set, the vacuum should be left in the pool. In the case where there will be a lot of swimmers and the pool vac becomes an obstacle, remove it. Be sure to close the pool vac suction before removing the unit from the pool. The pool vac suction should always be closed when the pool vac is not installed. Also, when you remove pool vac, remember to take the hose sections apart and lay them flat. DO NOT EVER coil the hose and leave it in the direct sunlight; the hose will retain the coil in its memory. This will prevent the unit from functioning properly in your pool.

The only recurring maintenance issue that needs to be addressed is the debris that may become caught in the intake area or the propeller. This will cause the Polaris ATV to be sluggish or stop moving around the pool all together. If you see the Polaris ATV sitting in one spot (when you know the pump is on), make sure the suction side valve is open that allows the unit to function, ensure your pump basket & filter are clean, then, if the unit is still not moving, follow these instructions on how to remove any obstruction.

- CLEARING A CLOGGED INTAKE OR PROPELLER:

1. Turn off the pump.
2. Remove the Polaris ATV from the pool and turn it upside down.
3. Remove the (2) screws in the center/triangular bottom plate, remove the bottom plate and verify that the intake area is free of debris.
4. Turn the unit over. Remove the (2) top housing screws, pull off the top housing and make sure the propeller is free of debris.
5. If both are free of debris and the unit was not moving, remove the (3) lower housing screws, pull off the lower housing and ensure that belts are on and properly tensioned. Replace bottom housing (3 screws).
6. Replace the bottom plate (2 screws) and top housing (2 screws).
7. Submerge the vacuum head and purge all of the air out of the vac hose (the same way you did for the initial installation).
8. Turn on the pump and check the system for proper suction and movement.



AIR BLOWERS

Air blowers force air into the air line, creating increased therapy action. If your pool or spa has come equipped with a blower, we recommend the running time be limited to approximately:

30 minutes for a spa 20 minutes for "fun bubbles"

Let the motor cool down 15 to 20 minutes before starting it up again. Excessive use causes the motor to over- heat. Limiting the running time aids in protection against motor damage.

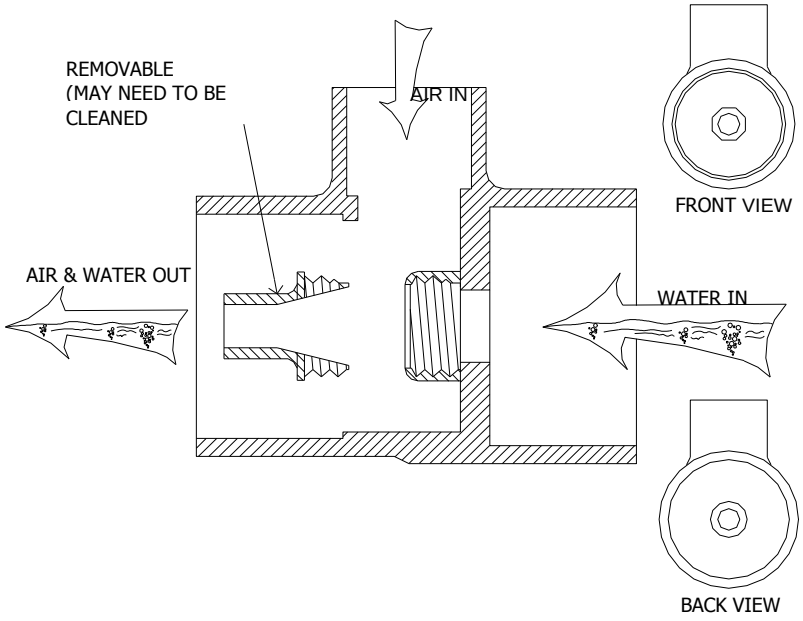
THERAPIES

Therapy heads are specially designed to allow air to be drawn in with the water through the wall fitting, creating the bubbling action that is found to be so relaxing to sore muscles. Occasionally, a small pebble or stone may find its way into the air line and end up lodged in the orifice (opening) of the therapy head, reducing or even eliminating flow. If this should happen, the orifice must be removed so that the debris can be removed. You will need a 9/16" socket wrench with an 18" extension in order to get to the orifice.

- CLEARING A CLOGGED THERAPY ORIFICE:

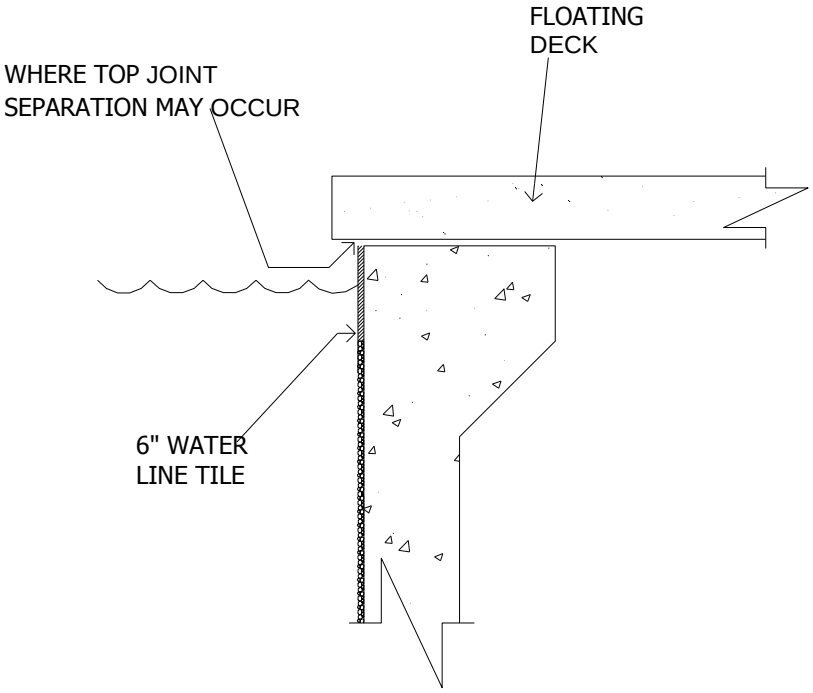
    1. With the pump on, place the socket over the orifice and turn to the left (counter-clockwise) to unscrew. The water flow will help you remove the orifice.
    2. Once you have removed the orifice, let the pump run for a couple of minutes to flush out any debris that may have been lodged in the pipe. Also, check the orifice for debris that may have wedged itself into the opening.
    3. Replace the orifice and check for therapy action. Keep in mind that a clogged therapy can affect all the jets, not just the one it is in. If the problem still exists, check all the other orifices for any obstructions.

Note: The main cause for therapies becoming clogged is debris that falls into the air intake pipe. This pipe is usually located near the equipment. Be sure that it is not left open so leaves and rocks can fall in. The pipe should be cut so air will always have access but not so items can fall or be kicked into (causing future problems).



TOP JOINT SEPARATION

Rondo Pools constructs your pool to last a lifetime. One of the ways we protect your investment is by taking into account that the soils in your yard can move and lift the deck. The way we compensate for this is that in large deck areas, where the deck is greater that 3 feet wide, we do not tie the deck into the bond beam. This is called a "floating deck" in the pool industry. Because we float the deck, over time you may see the grout between the top of the tile and bottom of the cantilever edge crack and open up. Don't be alarmed, this is perfectly normal. If you see this happening, call Rondo Customer Service. Our policy is to wait one year from construction to allow for complete settling. At that point, we will send a tile crew to seal the crack.



MANUAL VACUUMING

Manual vacuuming works through the skimmer suction line, or in the case of semi-public pools, from the vacuum line. The cleaner itself consists of a vacuum head with wheels, a vacuum hose and a handle (pole). Rondo does not include a manual vacuum cleaning head or hose on residential pools (unless you have specifically contracted for one)

A freshly plastered pool should NOT be vacuumed during the first two weeks. The plaster is in the first stages of curing at this time, and vacuuming may cause damage to the plaster surface.

- TO VACUUM YOUR POOL (RESIDENTIAL):

1. Check for normal operating pressure; if the pressure reading is too high, clean the filter first. High pressure can indicate a dirty filter and may cut down on the suction required to properly vacuum the pool.

2. Empty the pump strainer basket if it is full. This basket will need ample space to catch debris as you vacuum the pool or spa.

NOTE: Both #1 and #2 may need to be repeated during the vacuuming stage if the pool is extremely dirty and/or full of debris.

3. Remove the deck lid, basket and equalizer valve assembly from the skimmer.

4. Attach the vacuum head to the pole. Connect the hose to the vacuum head and place this assembly in the pool.

5. Rid the hose of air by feeding it in vertically (or like a straw) until you have fed the entire hose into the pool. The hose can also be filled with water by holding it over a return fitting. Whichever method you choose, remember that it is important to eliminate as much air in the hose as possible. This helps prevent the pump from losing prime and overheating.

6. When all of the air has been removed from the hose, cup your hand over the end to keep air from entering, then quickly place the free end of the hose into the suction port in the skimmer. This is the opening in the bottom of the skimmer farthest from water's edge.

7. Slowly move the vacuum head over the pool walls, bottom, and steps until the pool is clean. Try not to lift the vacuum attachment above the water line. Doing so will draw air into the pump and may cause a loss of pump prime. If so, it might take a minute to regain suction strength.

8. When you have completed vacuuming, disconnect the hose from the skimmer, then remove the vacuum assembly from the water. By disconnecting from the skimmer first, you help to avoid losing prime in the pump because you are eliminating the opportunity for air to be introduced into the plumbing lines.

9. Now, turn off the pump and empty the pump strainer basket. Remember to lube the "O" ring on the lid, replace the lid and hand tighten it; then start the pump again. Also, clean the filter (if necessary).

TO VACUUM YOUR POOL (SEMI-PUBLIC):

1. Check for normal operating pressure; if pressure reading is too high, clean the filter first. High pressure can indicate a dirty filter and may cut down on the suction required to properly vacuum the pool.

2. Empty the pump strainer basket if it is full. This basket will need ample space to catch debris as you vacuum the pool or spa.

NOTE: Both #1 and #2 may need to be repeated during the vacuuming stage if the pool is extremely dirty and/or full of debris.

3. To open up the vacuum line, turn the vacuum line gate valve to the left (as far as it will go).

4. To close the skimmer and main drain lines, turn the gate valves on these lines to the right (as far as they will go).

IMPORTANT NOTE: To prevent cavitation, always open up the vacuum line BEFORE you close off the skimmer and main drain lines. If cavitation still occurs, open up the skimmer line partially....to the point where cavitation stops.

5. Attach the vacuum head to the pole. Connect the hose to the vacuum head and place this assembly in the pool.

6. Rid the hose of air by feeding it in vertically (or like a straw) until you have fed the entire hose into the pool. The hose can also be filled with water by holding it over a return fitting. Whichever method you choose, remember that it is important to eliminate as much air in the hose as possible. This helps prevent the pump from losing prime and overheating.

7. When all of the air has been removed from the hose, cup your hand over the end to keep air from entering, then quickly place the free end of the hose into the suction port in the skimmer. This is the opening in the bottom of the skimmer farthest from water's edge.

8. Slowly move the vacuum head over the pool walls, bottom, and steps until the pool is clean. Try not to lift the vacuum attachment above the water line. Doing so will draw air into the pump and may cause a loss of pump prime. If so, it might take a minute to regain suction strength.

9. When you have completed vacuuming, disconnect the hose from the skimmer, then remove the vacuum assembly from the water. By disconnecting from the skimmer first, you help to avoid losing prime in the pump because you are eliminating the opportunity for air to be introduced into the plumbing lines.

10. Open the gate valves on the skimmer and main drain lines by turning them to the left (as far as they will go).

11. Open the gate valve on the vacuum line by turning it as far as it to the right (as far as it will go).

VERY IMPORTANT WARNING!

Interior Finish Staining and Scaling

We want you to be aware of the potential for calcium hardness issues with your swimming pool water

HIGH CALCIUM CONTENT
Tap water supplied by the various cities and counties often contains higher concentrations of minerals (including calcium and salt) than found in past years. This can result in your having higher levels of these minerals in your pool water. When these levels exceed recommended guidelines, various forms of chemical damage can occur. How does this happen?

Evaporation, Precipitation and Scaling
In desert climates, water can evaporate at a rate of ½ -1" per day. When water evaporates, the minerals in the water do not; they stay in the pool. When new water is added to maintain proper pool water levels, more minerals are introduced to the water in the pool. The concentration of these minerals increases. When the water's mineral content gets too high, the water "relieves" itself by dropping the minerals (precipitating) out of solution. This creates a "scaling" condition in your water. Scale formation on the pool's surface often takes on a Grey or brown appearance in plaster pools and a whitish/gray appearance in darker or pebble pools.

Scale Prevention
With proper *pH* and *Alkalinity* control (remember to adjust Alkalinity for Cyanuric Acid!), the use of a *sequestering agent* and *regular removal of a percentage of your pool's water* (see #7 above), you can prevent scale from forming on the surface of your pool.

Calcium Hardness Levels
Water (from the tap) is usually in the 250-300 ppm range. While this is an acceptable range, the evaporation-filling cycles described above can, within one swimming season, bring levels up to 500-600 ppm. With proper pH and Alkalinity levels, and the use of a good sequestering agent, one can usually still prevent scale if calcium levels are at 500 ppm or lower. However, once calcium levels get above the 500 ppm level, it is virtually impossible to prevent scale formation (no matter what your pH and Alkalinity levels are).

Calcium scale formation is *never* caused by workmanship or material defects.
Scaling is not covered under any warranty, so please follow our guidelines to ensure that you do not create scaling conditions in your pool. Even the Arizona State Registrar of Contractors stipulates that "the builder of the pool is not responsible for the scaling of the interior finish. Your water should be tested *at least twice per month* (once at a store) for Calcium Hardness.

LOW CALCIUM CONTENT
On some occasions, your tap water may actually have a calcium content that is lower than needed for proper pool water balance. If this is the case, you will need to add calcium to the water to bring it up to levels within the "Water Balance Guidelines" included in this packet.

Failing to keep the calcium up to a minimum level can result in additional surface problems. When water is unbalanced (hungry for calcium), it seeks to balance itself by pulling calcium from the interior finish material (plaster or pebble). It can etch the finish, damage metal components, corroding them and leading to surface staining and cause other staining in the pool surface. Keeping your calcium levels within the specific guidelines we have given you will help you maintain the beauty and integrity of your interior finish.

WATER CHEMISTRY 101

Filtration, chemical treatment, and cleaning are the three essential methods of keeping your pool water clear, clean, and free of bacteria. Proper water testing and maintenance will not only ensure sparkling clean pool water, but also protect the interior finish, plumbing, and equipment from possible corrosion, scale formation, and staining. A clean inviting pool is not difficult to achieve. It just requires an understanding of equipment operation and maintenance, (presented to you in the previous sections), and a knowledge of how chemistry affects the water in your pool or spa, and the factors that influence both.

- TESTING YOUR POOL WATER

Because the formulation of chemicals varies between manufacturers, be sure to follow the instruction on the container of your test kit. Test kits provide the information necessary to determine the chemical requirements of the water. The test kit we provide is The Taylor Complete Test Kit. This kit will allow you to test for pH, Free and Combined chlorine levels, Total Alkalinity, Calcium Hardness, and Cyanuric Acid.
Each kit contains instructions for performing these tests. To help you test accurately, remember these important guidelines:

1. Rinse the test tubes before and after each test.
2. Avoid using surface water when you fill the tube; take a sample from 12" to 18" below the surface.
3. Hold the dropper bottle vertically and add the required number of drops slowly, to make s they are full drops.
4. When adding the specified amount of reagent, mix it gently. Do NOT place your thumb over the top of the tube--body acids can affect the reading.
5. Look at the color comparison against a light background (but not against the sun).
6. Store the test kit in a cool, dark place.

Ideally, during the first three to four weeks after your pool has been finished (interior finish placed) you should check your **chlorine**, **alkalinity**, **cyanuric acid, total hardness** and **pH** daily. This is very important. After the initial three to four weeks, the tests should be done *no less than twice a week*. Remember to always check chlorine levels before and after heavy swimming loads, following dust storms, or any other time the weather has introduced large quantities of debris into your pool or spa.

The shelf life of testing reagents is limited, and should be replaced each season. OTO (used to test chlorine) is a strong acid, so avoid contact with skin, clothes or decking; hence, rinse immediately if any is spilled. Phenol Red, used to test pH, is sensitive to hands, perspiration, pool water and air. Make sure you keep the container tightly capped when not in use. Particular care is needed to avoid touching the phenol red container and the sample test tubes. It should have a deep red color. If it turns orange, discard it and replace it with a new bottle.

- WATER BALANCE

Controlling the chemical balance of pool water is <u>vital!!</u> The pH scale in chemistry runs from 0-14: 0 is pure acid, 14 is pure alkaline, and 7 is neutral. The ideal range for pool water is slightly above neutral on the alkaline side, between 7.2 and 7.8 on the pH scale. If the pH is too high, chlorine is less effective at destroying bacteria and algae. Scale and staining can develop on the equipment and plaster very quickly and the water may become cloudy. If the pH is too low, it will cause eye and skin irritation, corrosion of metal parts (especially heaters), etching and discoloration of the plaster. In newly plastered pools, it will be necessary to adjust your pH more frequently, because of the tendency of new plaster to increase pH values during the curing period. Again, we strongly advise you to have a sample of your pool water professionally tested before you administer chemicals to your pool or spa.

- TOTAL ALKALINITY AND pH:

Alkalinity prevents wide variations in pH. Though pH is quickly controlled by adding chemicals, it can bounce around on the scale daily or even hourly; the fluctuation can be considerably reduced by adjusting the total alkalinity to within 100-140 ppm range.

NOTE ON "CYANURIC ACID": To make sure your alkalinity levels are correct, you must check for Cyanuric Acid (Stabilizer) levels. The Taylor test kit explains the need for testing Cyanuric Acid and gives you complete instructions for how to do this. The levels of Cyanuric Acid in your pool or spa water directly affect the Alkalinity readings; without a proper reading of Cyanuric Acid, you will get a false reading on your total Alkalinity. It will read higher than it actually is. You may think that your chemistry is fine, when, in fact, it may be in an etching mode (destroying metal components and eating away at your interior finish.

> *Many stores do not automatically check for cyanuric acid levels. If you take your water in for testing, insist that the cyanuric levels are tested and that the total alkalinity reflects an adjustment based on cyanuric acid content in your water.*

If the pool's alkalinity is high and the pH is over 7.8, add small doses of acid frequently to bring the pH down to 7.4. The pH will probably rise again, so continue the treatment until the water tests out consistently at 7.4 to 7.6 over a period of a few days. As the total alkalinity level approaches the correct range, the pH should be checked often to make sure it does not drop below 7.2 at anytime. Once the total alkalinity level has been reached, the pH will be "buffered" to a point where further acid control will be minimal.

- CHEMICALS USED FOR CONTROLLING pH AND TOTAL ALKALINITY

Muriatic acid (liquid) is the most commonly used chemical to lower pH and alkalinity. It stores well, and, in small amounts, can adjust the pH significantly. However, if incorrectly applied, it can be very damaging to your pool's finish. Add no more than one gallon per 10,000 gallons of water at a time, and wait at least 24 hours before adding more acid. Handle it carefully to prevent splashing it on yourself or on the decking, and wash off any spills immediately. NEVER add acid through the skimmer.

Adding Soda Ash is an inexpensive, quick-acting method to raise the pH. The need to raise the pH is an commonly found in testing the water in a separate spa. This seems largely due to the fact it is a small body of water and the introduction of too much acid is not properly controlled. Because pH readings lower than 7.2 are very destructive to equipment and finish surfaces, you should keep a strict watch on the pH of all water (and especially spas).

Remember, equipment and material warranties are voided when the damage caused is due to chemical imbalance.

- DISINFECTING THE POOL WATER

Chlorine is definitely the most popular disinfecting agent. It is effective at killing the bacteria and algae commonly found in swimming pools. If properly used, it will remain in a sufficient quantity (called "free chlorine"), which effectively controls new algae or bacteria entering the pool water.
Chlorine also helps keep the water sparkling clear. Perspiration, urine, suntan lotion, hair spray, deodorant, etc., can dull the water. In sufficient quantity, chlorine will absorb these particles and polish the water.

When you put chlorine in your pool, part of it will be used up at once, immediately killing algae and bacteria. Some of it must stay in the water until the next time you add chlorine. The amount that remains is the "chlorine residual".

Pool water also contains ammonia nitrogen. Nitrogenous compounds, i.e., urine, perspiration, and fertilizers used near the pool are the primary sources. Residual chlorine and ammonia combine to form chloramines, which cause burning eyes, skin irritation and unpleasant "chlorine" odor, particularly strong if the pH is low. If you can smell "chlorine" there is *not enough* residual chlorine in the water. Chlorine in an uncombined state is practically odorless.

The chlorine residual should never drop below 1.0 ppm; it can range up to 3.0 ppm, but 1.0 ppm is considered ideal. Chlorine residual is tested much the same way as pH. Follow the instructions in your test kit.

- CHLORINE TYPES

Chlorine is available in almost every form. It comes as liquid, gas, granule and most convenient, a tablet form. Most swimming pool service companies recommend a tablet type made of trichlore-s-triazinetrione, because of the high concentration of available chlorine.

Never toss tablets directly into the pool or spa, because they will leave yellowish stains on the plaster. Tablets are best used in automatic chlorine feeders installed on your pool equipment or in your pool deck (in a canister). You may choose to purchase a container for the tablets that floats on the surface of the water, allowing the tablets to dissolve slowly. If you use a floater, you should ensure that it cannot lodge against the pool wall over your top step; if it gets trapped there, it will discolor the step and will etch your interior finish. Most people tie it to their skimmer so that it stays away from really shallow step areas. Whatever form of disinfectant you choose to use, always apply according to manufacturer's instruction.

- SUPERCHLORINATION

Superchlorination involves adding 5 to 7 times the normal dose of chlorine to the pool water to "burn out" chloramines. This is easily accomplished by broadcasting granular chlorine into the pool. Every 10,000 gallon increment of water the pool holds will require one pound of granular chlorine.

You will want to superchlorinate about every month or two during the swimming season and always after heavy swimmer loads or storms. Remember, the relationship between free and combined chlorine on your test kit results will let you know when your pool water requires superchlorination. Superchlorination should be done after sundown, since ultra violet rays can destroy some of the chemicals. Close the pool to swimmers until the chlorine residual drops to a normal range (1.0 to 3.0 ppm free chlorine).

- STABILIZING/CONDITIONING YOUR POOL WATER

Stabilizers are chemical compounds added to pool water to prevent the rapid loss of chlorine by sunlight (ultra violet rays). Pools that are unstabilized use as much as 3 to 4 times more chlorine than is needed in a stabilized pool. Cyanuric acid is the compound used to stabilize or condition the water. It is a semi-permanent additive, because it does not get used up, evaporate or wear out. Losses of cyanuric acid occur through splash out, backwash and leakage. The recommended level of cyanuric acid is 50-80 ppm. The test for this is referred to as turbidity type test. The kit supplied to you contains a cyanuric acid test for your convenience.

If your stabilizer is low, add 1lb. for every 5,000 gallons. This will increase your CYA by 25 ppm. The restabalization of your pool water should be done about once a year. You should test your cyanuric acid levels twice a month to see where you stand. ***See notes about cyanuric acid's influence on overall alkalinity readings above.

High Cyanuric Acid Warning

Cyanuric Acid is a commonly used pool chemical that helps protect your chlorine from the UV rays of the sun to help maximize the chlorine's effectiveness in killing bacteria in your pool. Cyanuric Acid is sold in most pool stores and may be referred to as chlorine stabilizer or conditioner. This warning is to advise our buyers on the proper use of cyanuric acid and the potential issue that will result if levels are gone unmonitored.

The recommended range for cyanuric acid (CYA) in your pool is between 30-50 ppm (parts per million). When the pool is initially filled, the tap water will have no initial levels of CYA. Many pool stores would recommend that you immediately add enough CYA to bring you up to the 30-50 ppm range. However, most people do not take into account the fact that almost all of the chlorine tablets on the market are either Di-Chlor or Tri-Chlor tablets and are considered "stabilized chlorine". This means that each tablet contains a percentage of CYA. This will result in the gradual increase in your CYA level as you continue to add chlorine tablets. The next question is what happens when the CYA gets too high.

- **High CYA's Effect on Chlorine Levels** – As the level of CYA rises, the "killing power" of the free chlorine residual weakens. At above 50 ppm of CYA, the time it takes to kill bacteria in the water is much longer compared to swimming pool water without CYA. As the level of CYA builds up, the chlorine will become increasingly less effective in keeping the water clean and problems such as increased cloudiness in the pool

water, high bacterial test results, and even algae growth can occur. Very high levels of CYA can cause the chlorine to be "locked up" and completely prevent the chlorine from effectively sanitizing the water.

- **High CYA's Effect on Total Alkalinity (TA)** – Any amount of CYA will have an effect on your TA readings. The chemistry pamphlet in the Taylor Test Kit we provide at startup has a detailed "Cyanuric Acid Correction to Total Alkalinity" formula that shows how to determine your true TA based on your actual CYA reading. The formula can vary depending on the pH of the water, but a good rule of thumb, assuming your pH is in the correct range, is that you take 1/3 of the CYA level and subtract it from the TA reading. For example, if your CYA tested in the correct range and was 45 ppm and your TA tested at 100 ppm, you would take 1/3rd of the CYA (45 x .333= 15) and subtract that from the tested TA (100 – 15 = 85) to get a true TA of 85 ppm. You see that when the CYA is in the correct range, there is only a small adjustment to the TA. Now, let's take the same example when the CYA tested very high at 120 ppm. That causes you to subtract 40 ppm from your TA reading causing you to have a true TA of 60 PPM. A TA reading of 60 ppm is much too low which means the water is too acidic in nature which can cause the water to be aggressive on the interior finish and irritating to the skin and eyes. Gone unchecked, low TA can cause irreversible damage to your equipment and interior finish showing spotting and discoloration also known as "spot etching". It is very important that you make the CYA adjustment to the TA reading and raise the TA levels so that the true TA reading falls in the accepted range.

Many of our clients ask us what to do when the CYA levels are too high. Unfortunately, the only way to lower the CYA level is to drain water from your pool. We recommend that you drain either a portion or all of your pool on a yearly basis to help maintain the proper CYA and calcium hardness levels in your pool. We recommend that you always plan for draining your pool in the cooler months when the daytime high does not exceed 80 degrees.

- SPECIFIC WATER PROBLEMS

ALGAE

Algae are microscopic plants that grow in water. They enter into pool water through air currents. Free chlorine is an excellent algae killer. If there is a constant and adequate free chlorine residual, 1.0 ppm or more, algae growth is virtually non-existent.

There are three common types of algae: green, mustard and black algae. *Green algae* first appears as a green tint in the water and can spread very rapidly in a matter of hours. Green algae is easily destroyed by superchlorinating the water during the early stages of its growth. If superchlorinating does not clear up the problem, add a recommended amount of algaecide, following the directions on the label. *Mustard algae* has a yellowish-green color and clings loosely to walls and steps. To treat mustard algae, brush the entire plaster surface of the pool and superchlorinate. Maintain a high chlorine residual level and apply a good algaecide. Remember, mustard algae brushes off plaster surface easily, but this does not destroy it. *Black algae* does not generally show itself until it has a good start. It usually is first seen as black spots about 1/4 inch in diameter. The spots most often appear first around the steps or in corners. The algae cells are so small they can actually penetrate the hairline cracks in the plaster and in the shotcrete behind the plaster. This makes black algae very difficult to kill.

To treat black algae, vacuum the pool so that the spots are clearly seen. To speed up the killing process, remove the surface of the algae by attaching a small stainless steel brush or pool block (pumice stone) to the pole and brushing the spots. Stainless steel brushes and pumice can be tough on the plaster surface. Use them with care, trying not to mar the plaster surface. Now, superchlorinate and add algaecide at the recommended dosage rate for black algae.

SCALE

Scale is normally rough to the touch and looks grayish or light brown in color. It can appear on the walls, at the waterline, under water features and at the bottom of a pool. Scaling is usually found in hard water areas. With proper pH, total alkalinity and total hardness control, scale can usually be minimized in your pool. Once a month, take a pool water sample to your pool supplies store and have it analyzed for hardness content. You have also been supplied with a calcium hardness test in your kit. Use this in the weeks between your store visits (twice a week). Whatever method you

use to have the hardness tested, make sure it is within its suggested range. When it gets over 500 ppm, you should drain at least one third of the pool water, and refill it with fresh water.

STAINS

A pool surface can be stained by fertilizers, leaves, metal objects, algae and mineral deposits. Too much acid added to the water at one time or too close to the skimmer can cause corrosive particles to appear as stains. Blue-green or turquoise stains are generally due to copper. The copper (found in heater elements and in back-wash valves) is dissolved in the water and then deposits itself on the plaster.

Hairpins, toys, coins and other metal objects dropped into the pool should be removed immediately to prevent rust stains. Remember to maintain proper pH to help prevent these problems. Buffing ordinary stains with waterproof sandpaper may remove them. Use sandpaper with as light a touch as possible to reduce chances of defacing the plaster surface.

WATER BALANCE GUIDELINES

TEST FOR:	RECOMMENDED RANGE	TESTING FREQUENCY	POSSIBLE CONSEQUENCES IF: LOW	HIGH
FREE AVAILABLE CHLORINE	1.0-3.0 ppm .5-1.5 ppm with Nature2 1.0-2.0 ppm with Fiberglass	Two times per week	Algae and bacteria formation	Possible odor and eye Irritation
pH [4]	7.4-7.6	Two times per week	Plaster etching; spots; roughness; streaks; metal corrosion; discoloration; stains.	Plaster scaling; discoloration; roughness; increased chlorine usage; cloudy water
TOTAL ALKALINITY [4]	120-150 ppm [1] for plaster and pebble 135-180 ppm [1] for fiberglass	Two times per week	Plaster etching; spots; roughness; streaks; metal corrosion; discoloration; stains; pH bounce	High acid demand; Scale formation; roughness; grout damage
CALCIUM HARDNESS	200-400 ppm	Once per month	Plaster etching; spots; roughness; streaks; metal corrosion; discoloration; stains	Scale formation; rough and/or discolored plaster; scale in heater and/or pipes
CYANURIC ACID (STABILIZER)	40-60 ppm [2] 60-90 ppm [3]	Once per month	Chlorine dissipates (evaporates too rapidly)	Additional Chlorine needed; Neutralizes alkalinity (drops it); etching; grout damage

"TOTAL DISSOLVED SOLIDS" should be tested monthly (at a store)

NOTES:

1. After adjusting for stabilizer (Cyanuric acid).
2. If using a stabilized chlorine (like Tri-chlor) for chlorination.
3. If using a non-stabilized chlorine (like liquid chlorine) for chlorination.
4. pH, Total Alkalinity, Calcium Hardness, Total dissolved Solids, and Temperature are key factors that determine water balance. Balanced water is usually defined as, "water that is neither corrosive nor scaling. Balanced water is in a state of "dynamic equilibrium" and, as such, is constantly seeking to maintain specific levels of minerals.

When pool water is deficient in its proper chemical levels, it begins to "eat" anything with which it comes into contact…it corrodes metals, etches into the pool's finish, and dissolves tile grout in an effort to satisfy its "hunger" for balance.

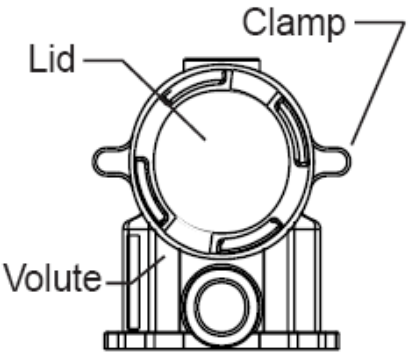
When pool water has "too much of a good thing" (excess levels of chemical saturation and/or minerals), it relieves its "over-fed" condition by releasing the excess particles from solution. These "precipitated" particles are the cause of scale, the presence of residues or the appearance of cloudiness)

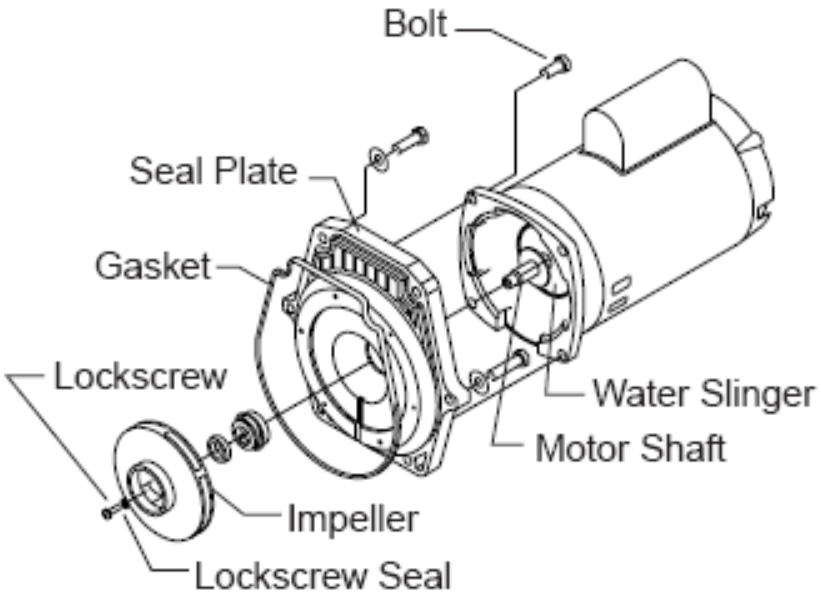
Both "corrosive" and "scaling" water can do permanent damage to equipment, metals, plaster and tile grout. As a pool owner, you will be responsible to ensure that your water stays "balanced." You can protect your valuable investment by frequently and thoroughly testing and treating your pool or spa water.

IMPORTANT! Rondo Pools and Spas, Inc. cannot accept responsibility for the advice or product recommendation of any employee, any referred pool chemical maintenance company, any store or any sub-contractor who gives recommendations contrary to these written guidelines.

TO CLEAR A CLOGGED IMPELLER

1. Turn off electrical power to the pump via the circuit breaker and the time clock.
2. Remove the six bolts that hold the volute to the seal plate.
3. Slide the motor and seal plate away from the volute.
4. Clean debris from impeller. If debris cannot be removed, complete the following steps:
    a. Remove the lockscrew (left-handed thread, which is reverse from standard screw).
    b. Remove, clean and reinstall impeller.
    c. Reinstall the lockscrew.
5. Reinstall motor and seal plate into volute aligning with keyway at top of volute.
6. Reinstall six bolts around seal plate and volute and tighten securely.
7. Make sure pump is full of water and that the pump lid is on tight.
8. Turn on pump via the circuit breaker and the time clock.





TROUBLE SHOOTING

PUMP WILL NOT PRIME

	PROBLEM		SOLUTION
1.)	No water in strainer pot.	1.)	Fill pump with water from garden hose and lube o-ring and replace lid.
2.)	Strainer pot lid is not tight.	2.)	Remove lid, lube o-ring and tighten.
3.)	Damaged lid o-ring.	3.)	Replace lid o-ring.
4.)	Water level below skimmer.	4.)	Fill pool with water until it reaches the center of the tile line.
5.)	Pump basket or skimmer basket is clogged.	5.)	Empty basket and replace.
6.)	Air leak in suction line.	6.)	Check for loose packing nuts on suction side gate valve, also check for loose or leaking drain plug on pump pot.
7.)	Automatic cleaner riding wall to surface, sucking air.	7.)	Turn suction down on pool vac.

LOW FLOW/HIGH FILTER PRESSURE

1.)	Filter is dirty.	1.)	Backwash filter or hose off cartridge.
2.)	Restriction in return line.	2.)	Open any valve that may be closed.

LOW FLOW/LOW FILTER PRESSURE

1.)	Pump basket or skimmer basket is clogged.	1.)	Empty basket and replace.
2.)	*Clogged impeller.	2.)	Remove debris from impeller. (pg. 38)
3.)	Air leak in suction line.	3.)	Check for loose packing nuts on suction side gate valves, also check for loose or leaking drain plug on pump pot.

MOTOR DOES NOT TURN ON

1.)	Power switch is off.	1.)	Turn power on at maintenance switch or time clock.
2.)	Circuit breaker had tripped.	2.)	Check breaker and reset
3.)	Motor shaft is locked by bad bearing.	3.)	Call for service.
4.)	*Impeller is locked by debris.	4.)	Remove debris form impeller. (pg. 38)

**Always replace cracked or broken skimmer and pump baskets, as they are often the reason for clogged impellers. If you continuously have a problem with the impeller clogging with fine debris such as hair or palm frond "strings," replace the basket with one that has a finer mesh. This should help cut down on the amount of debris getting through to the impeller.

SKIMMER LID "BLOWS" OFF WHEN PUMP SHUTS OFF

PROBLEM	SOLUTION
1.) Back pressure in the suction line.	1.) Check for air in pump lid, remove, lube o-ring and hand tighten.
2.) Internal automatic air-relief tube in filter is plugged.	2.) Turn pump off and open air bleeder valve. (See IMPORTANT note)
3.) Air in filter, backs up when pump is shut off.	3.) See solutions for air in filter.

IMPORTANT: Be sure that all pressure is relieved from the filter tank before disassembling!!

SAND FILTER: Remove dome, pull the strainer cap from the tubing. Blow air through the tubing until all dirt is removed. Reinstall the strainer cap on the tubing. Lube the dome o-ring and replace dome.

DE FILTER: Remove band clamp and tank top. On the top of the grid assembly you will see the small strainer screen element. Remove and blow air through the element until all dirt is removed. Reinstall the strainer. Lube the o-ring and replace the tank top and band clamp.

CARTRIDGE FILTER: Remove band clamp and tank top. Remove the strainer from the plastic cap, located on the top of the cartridge assembly. Blow air through the element until all dirt is removed. Reinstall the strainer. Lube the o-ring, and replace the tank top and band clamp.

DIRTY, CLOUDY WATER, OR SAND RETURNING TO POOL DURING FILTERING CYCLE

1.) Damaged cartridge or not assembled properly.	1.) Remove cartridge from the filter (cartridge filter) and replace if damaged. Reassemble and replace in the filter tank.
2.) Damaged grid or o-ring (DE filter).	2.) Remove grid assembly and replace any damaged grid elements and/or upper piping assembly o-ring. Reassemble filter as described in "Manual Cleaning" for the DE filter.
3.) One or more of the lower laterals are damaged. If you have large amounts of sand getting in your pool, this is definitely your problem.	3.) Requires removal of the sand from the filter. Recommend you call for service.

BACKWASH VALVE DIFFICULT TO MOVE

1.) The internal o-ring requires lubrication.	1.) See backwash valve maintenance section (pg. 8).

LIGHT WILL NOT COME ON

1.) GFCI has tripped.	1.) Press the reset button on the GFCI.
2.) Breaker at main panel has tripped.	2.) Reset the tripped breaker.
3.) Bulb has burned out.	3.) See REPLACING THE BULB.

TIME CLOCK FAILS TO OPERATE

1.) Breaker at main panel has tripped.	1.) Reset the circuit breaker.
2.) The maintenance switch is turned off.	2.) Turn on the maintenance switch.

TIME CLOCK MALFUNCTIONS

PROBLEM	SOLUTION
1.) Trippers out of position, missing, or sliding around wheel.	1.) All trippers must be pushed all the way in on the dial and screwed tight.

HEATER GOING ON AND OFF CONTINUOUSLY

1.) Dirty filter.	1.) Backwash or clean cartridge.
2.) Low water level in pool causing pump to lose prime.	2.) Raise water level and see priming pump suggestions.

PILOT WILL NOT LIGHT

1.) Low gas pressure.	1.) Check gas supply.

HEATER LEAKING AT WELL/HEAT EXCHANGER

1.) pH too low (overacid).	1.) Replace well/heat exchanger and maintain water chemistry properly.

POOL/SPA WILL NOT STAY HEATED

1.) Losing heat from the surface of the water	1.) Utilize a pool/spa cover to retain heat during the heating stage.
2.) Blower pulling cold air into spa.	2.) Shut off blower until spa is heated.

CHLORINE READING TOO HIGH/LOW

1.)	Check valve clogged.	1.)	Remove the tablet chamber from bottom collar assembly. Gently unscrew the check valve from the bottom of the tablet chamber. Clean off the residue from the valve replace. Lube the o-ring and replace the tablet chamber, hand tight.

NOTE: If the check valve is constantly "gumming up" switch brands of tablets. Some manufacturers use heavy binders in the process of pressing the tablets, which can contribute to the problem.

CHLORINATOR LEAKING AT FEED TUBING

1.)	Tubing cracked/ split.	1.)	Remove tubing, Cut 1/4" from end of tube and replace.
2.)	Fitting cracked.	2.)	See your local supply dealer for a replacement part, re-install.

HAZY CLOUDY WATER

1.)	Poor filtration or circulation.	1.)	Backwash or clean cartridge. Check valves for proper position during filtration cycle.
2.)	High pH (greater than 8.0).	2.)	Adjust pH to 7.2--7.6 range.

PROBLEM		SOLUTION	
3.)	Beginning stages of algae.	3.)	Adjust pH to 7.2 - 7.6 range. Superchlorinate, brush plastered surfaces vigorously. Extend filtering cycle. If this does not correct the problem after a day of so, you may need to use analgaecide.
4.)	Pool water chemistry out of balance	4.)	Take sample of water to your pool supplies dealer for testing. Follow recommended procedures for adjusting.

BURNING OR RED EYES

1.)	pH too low or too high.	1.)	Adjust pH to 7.2 to 7.6 range.
2.)	Chloramines or combined chlorine level too high.	2.)	Superchlorinate with 1 lb. of shock per 10,000 gallons of pool water.

COLORED STAINS ON PLASTERED SURFACES

1.) Corrosion caused by low pH.	1.) Raise pH to 7.2 to 7.6 range. Have water sample tested for proper chemical balance. Repair orreplace damaged equipment as required.
2.) Something may have fallen in the pool causing stain. I.E., metals, leaves, toys, chlorine tablet.	2.) Lightly sand using a wet/dry sand paper, or pumice stone.

ROUGH DISCOLORED PLASTER/TILES

1.) Scale: Excessively hard water, high level of dissolved solids, high pH.	1.) Have a sample of water tested for chemical balance and hardness. Adjust as required.

SPA DRAINING DOWN TO POOL LEVEL

1.) Check valve has debris stuck in it or a bad plunger.	1.) Remove and clean check valve as described in the check valve detail. If plunger is warped see your local pool supply store for a replacement part.
2.) If you have common equip, your suction may not be	2.) Remember, the only time you dedicated to the pool skimmer/ M.D. suction should switch from pool skimmer/M.D. to spa skimmer/M.D. is when you are heating the spa.

GLOSSARY OF COMMON POOL TERMS

ACID: A chemical that lowers the pH when added to the water.

ACID DEMAND: Amount of acid required to lower pH and total alkalinity of pool water to correct level.

ALGAE: Microscopic aquatic plant life that can grow on pool surfaces or float free in the water. Though harmless, algae discolor the water and indicate improper sanitation.

ALKALINITY: Various chemicals in the pool water that increase the pH

AVAILABLE CHLORINE: Free or combined chlorine used to disinfect pool water.

BACKWASHING: Cleaning pool filter by reversing water flow

BROMINE: Chemical used for disinfecting swimming pools, in the same family as chlorine.

CAVITATION: Occurs in a pump when the flow of water (suction lines) is restricted. Commonly recognized by the rumbling noise in the pump.

CHLORAMINE: Chemical compound of nitrogen and hydrogen that combines with free chlorine in pool water; chloramines causes burning eyes, skin irritation, and chlorine odor.

CHLORINE: Chemical used for disinfecting swimming pools.

CHLORINE DEMAND: The amount of chlorine required to destroy the bacteria in the pool water.

CHLORINE RESIDUAL: The amount of chlorine remaining in the pool water after chlorine demand has been satisfied.

CLEAN OPERATING PRESSURE: The reading taken (on the pressure gauge at the top of the filter) just after the filter has been cleaned (or the reading taken at the "start-up" phase).

CORROSION: Chemical reaction that causes deterioration of metal.

CURE, CURING: "The curing phase of a pool surface application process is defined as the transformation of the material from a liquid to a very hard solid. This process is started from the moment that material is placed on the walls of the pool. The process is critical in the first 28 days and can take up to 8 months for the surface to fully cure." *Mitch Brooks: The National Plasterers Council*

CYANURIC ACID: (conditioner/stabilizer) Acid used in pool water to prevent chlorine loss.

DIATOMACEOUS EARTH: (DE) A white powder that is manufactured from microscopic skeletons of diatoms.

DISSOLVED SOLIDS: Calcium, copper, salts, magnesium and other minerals that are suspended in the water.

DPD: A chemical reagent that reacts with active chlorine/bromine and turns the water sample pink.

FREE CHLORINE: Basic chlorine, not combined with other chemicals, allowing it to be released immediately for disinfecting. This is usually the kind of chlorine used to superchlorinate.

HARDNESS: A measurement of dissolved solids in the water.

MURIATIC ACID: A dilute solution of hydrochloric acid used to lower alkalinity and pH.

OTO: (Ortho-tolidine) A chemical reagent that reacts with total chlorine/bromine, and turns the water sample yellow.

pH: Used to describe the acid/alkaline balance in the pool water. A pH of 7 is neutral, pH values below 7 are acidic, values above 7 are basic. The recommended pH for pool water is 7.2 to 7.8. NEVER allow pH to drop below 7.0 or go over 8.0
PHENOL RED: A chemical reagent used to measure pH

PLASTER DUST: "…calcium salts, namely calcium hydroxide, that are released from cementitious materials [plaster] when submersed in water,…if not removed from the water in a timely manner, will react with carbon dioxide or carbonate ions within the water to form a calcium carbonate precipitate [scale], which adheres immediately to the surface and cannot be removed without aggressively sanding the surface." *National Plasterers Council, Technical Manual, Fifth Edition, p.33.*

PPM: Parts per million. The accepted measurement of the quantity of a substance in water.

Reagent: Liquid or powder chemicals used to test concentrations of specific compounds in water.

RESIDUAL: The amount of a compound existing in water. Usually expressed as parts per million.

SCALE: Mineral deposits formed on pool surfaces, inside piping and on the filter as a result of high calcium hardness and high pH.

SODA ASH: Sodium carbonate used to adjust the total alkalinity by increasing the pH.

SUPERCHLORINATION: Heavy dose of chlorine added to pool water to "burn out/shock" nitrogen compounds when bacteria, algae or chloramine build-up cannot be reduced by normal treatment.

TOTAL ALKALINITY: (TA) The measurement of the alkaline chemicals in the water. TA acts as a pH buffer. Too high a TA prevents easy adjustment of pH. Low TA causes pH to change and fluctuate widely. Proper pool TA is 100-150 ppm.

TOTAL DISSOLVED SOLIDS: The total of dissolved materials in the water. High total dissolved solids in the pool water (over 2000 ppm) can cause poor sanitizer efficiency cloudy water and odors.