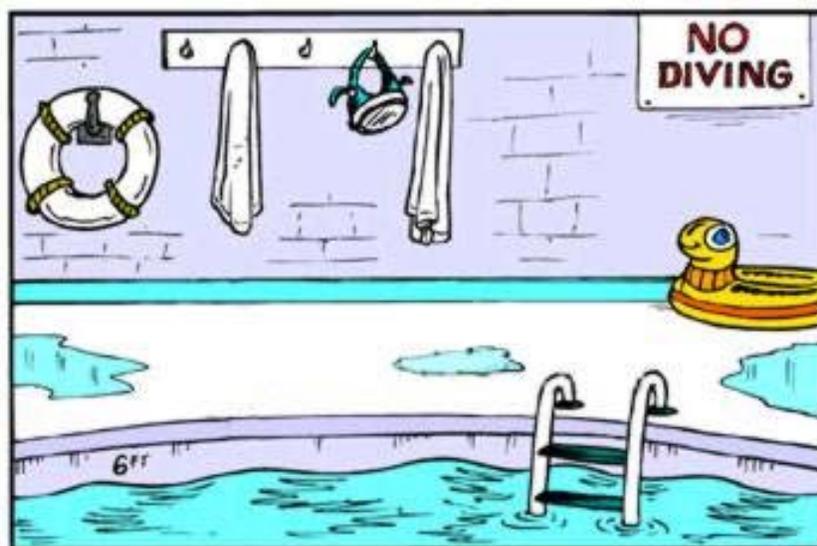


CALMES NECK
PROPERTY OWNERS ASSOCIATION

POOL CARE AND
MAINTENANCE MANUAL



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POOL CARE AND MAINTENANCE OVERVIEW

Pollution in pool water comes either from the environment or is carried into the water by the swimmers. Environmental pollution includes dust, leaves, chemical wastes, pollen, spores, bacteria and so on, that are blown into the water by the wind. Swimmers carry other pollutants into the water: sweat, suntan oils, urine, bacteria, viruses, etc.

Every swimming pool has a circulation pump and filter. The most common filters these days are sand filters. Cartridge filters are also quite widespread and are very simple to maintain. The pool pump ensures that the swimming pool water moves through the filter every day, thus removing unwanted pollutants and disinfected organic materials as quickly as possible.

Generally, the swimming pool pump should run for at least 6 - 8 hours each day. There is usually a timer which cycles the pool pump on and off to ensure this constant filtration. The circulation of pool water will remove floating or suspended particles of dirt from the water, but has no effect on the substances which have settled to the bottom of the swimming pool or "stuck" to the walls.

The swimming pool needs regular brushing and vacuuming, generally about once a week in the swimming season. With the circulation pump turned off, the walls and floor of the pool are swept with a stiff brush. When the "dust" from the brushing settles, it is vacuumed off the floor of the swimming pool.

After the vacuuming is done, it is time to backwash the filter.

Once the swimming pool looks clean and the filter has been rejuvenated, it's time to test the pool water and adjust the pH and chlorine levels.

If the swimming pool needs topping up, this is the ideal time to put the hose in the pool. It is very healthy for the swimming pool water to be replaced bit by bit, to prevent it becoming stale and creating chemical problems or pool water problems. A routine of 5-minute backwashing followed by a 1-minute rinse every week will ensure that you replace about 5% of the swimming pool water each month. This means a complete changeover of swimming pool water approximately every 2 years.

The useful lifespan of the sand in the filter is about 5 to 7 years. If you neglect to change the sand, the filter will not be able to remove the finer particles of dirt and the swimming pool can never be completely clean. Have the pool filter opened for inspection at least every 2 to 3 years to avoid filtration problems.

POOL SUPPLIES

Most day-to-day chemicals, supplies, and equipment for the pool can be purchased in Winchester at the following locations.

- Lowes
- WalMart
- K-Mart
- The Stop- <http://www.shopthestop.com>

GOOD WATER BALANCE

Properly maintaining pool water chemistry is the most important aspect of maintaining a swimming pool. Proper water chemistry is required to keep the pool safe and clean for swimmers, can save hundreds of dollars per year, and endless hours of time.

Even if the pool the water looks clear you can't just assume that everything is O.K. That's because if the water isn't properly balanced, pool swimmers are not safe, the pool & its components (filter, pump, pool surfaces, fittings, etc) won't last long, and money is being wasted.

Good Water Balance for Swimmers: When the pH & Total alkalinity are out of balance, the chlorine (sanitizer) doesn't work as efficiently as it should. When the sanitizer doesn't work efficiently, bacteria & other things start gaining control. Pool swimmers could easily end up with skin rashes and eye irritations as a result.

Good Water Balance for the Pool: Without proper chemical maintenance, the pool can get water line scum build-up, clogged filters and shortened filter life.

The source water for filling the pool has certain properties that can cause chemical changes when the pool water is topped off; especially pH, total alkalinity, calcium hardness & metals & minerals. Adding water after evaporation or backwashing will eventually have an effect on the water balance. Additions of more than 2 inches of fresh water should be allowed to circulate for 24 hours then tested to make any necessary adjustments.

Rain water can dramatically effect the water balance, depending on its pH & the quantity of rain. Heavy rain water can add to chlorine demand. The pH of rain varies across the country generally becoming more acidic as you go from west to east. As rain falls, it carries down particulate matter that is suspended in the air. This suspended particulate contains dust, dirt, soot, chemicals, even bird droppings.

Be sure to test the water with a good quality test kit or test strips. Remember to change the strips or testing reagents each swimming season. For added accuracy hire a pool professional who is able to properly and thoroughly test the pool water. These test should include: Total chlorine, free chlorine, combined chlorine, pH, total alkalinity, acid demand, alkali demand, calcium hardness, total dissolved solids, water temperature, iron and copper levels.

Without good water balance, more chemicals will be purchase when they're not really needed. Proper water balancing, testing & care shouldn't take more than 15 to 20 minutes per week on average. Don't wait to adjust the water balance. Like most things, it costs more to fix than to maintain.

Here are the proper water balance parameters to keep in mind:

1. pH - 7.0 - 7.6
2. Total Alkalinity - 80 - 120 ppm in concrete pools
3. Calcium Hardness - 200 - 250 ppm in concrete pools
4. Total Dissolved Solids - less than 2500 ppm (in NON-salt pools)
5. Iron or Copper - ZERO
6. Cyanuric Acid - 40 - 100 ppm

MAINTAINING CHLORINE LEVELS

Chlorine must be continually added to pool water. Once it combines with organic contaminants in the pool, which it has to do to kill them off, it is rendered inactive.

- Water testing should always be performed at least two times per week to ensure proper water balance.
- Sanitize the swimming pool with chemical chlorine, which is dissolved into the swimming pool water and combines with bacteria and other organics in the water on a molecular level to kill these harmful contaminants. Once chlorine combines with the bacteria and organics in the swimming pool water, the chlorine becomes inactive and no longer work to sanitize the pool. The combined chlorine and organic contaminants are burned off by a weekly shock treatment, and removed from the water by the pool filter system.
- Chlorine is available in 3" tablets, 1" tablets, sticks and in a granular form. The active ingredient is exactly the same in all of them. The active ingredient in 3" tablets, 1" tablets and sticks is called "Trichlor" (or Trichloro-S-Triazinetrione), and the active ingredient in granular chlorine is called "Dichlor" (or Sodium Dichloro-S-Triazinetrione). The only real difference you may find between brands of chlorine is the concentration of the active ingredients. You should look for a concentration of 56% to 62% Sodium Dichloro-S-Triazinetrione in granular chlorine, and a concentration of 90% Trichloro-S-Triazinetrione in chlorine tablets or sticks. Granular Chlorine can also be in the form of Calcium Hypochlorite. It is typically only available up to 65%.
- The type of chlorine you select depends upon the application, your preferences or your pool maintenance habits. The most common (and therefore the least expensive) form of chlorine is 3" tablets. 3" tablets are slow dissolving, which requires less maintenance. You can fill a floating chlorine feeder or automatic chlorine feeder with large amounts of slow dissolving 3" chlorine tablets, and if the feeder is adjusted properly, you may not have to worry about the chlorine level for a week or more.
- Chlorine has to be added gradually; it should never be dumped into the water, and sticks or tablets should never be simply placed in the skimmer because it will pass through the plumbing highly concentrated before being diluted in the pool, and corrode the pipes and equipment.
- Floating or automatic chlorine feeders are the best choice for making sure the chlorine is added gradually and safely. They are available from any pool supply distributor and will automatically dissolve 1 inch chlorine tablets, 3 inch chlorine tablets or chlorine sticks into the pool water. Automatic chlorine feeders are a great help to properly maintaining the swimming pool. Chemical feeders slowly meter out precise amounts of chlorine into the pool water automatically, and offer very precise control over the amount of chlorine being added to the swimming pool.
- Never just dump chlorine tablets or chlorine sticks into the swimming pool, or place chlorine tablets or chlorine sticks in the skimmer basket of the swimming pool. If a chlorine tablet is dissolving in the skimmer basket, all of the water passing through the pool plumbing and circulation system carries a high level of chlorine. This high concentration of chlorine slowly eats at the inside of the circulation system, and causes premature failure of the pool pump and pool filter components.

CHECKING AND ADJUSTING PH LEVELS

Knowing the pH of pool water is essential for properly controlling all the water chemistry parameters. pH is the measure of how acid/alkaline the pool water is. pH should be tested and corrected at least every week. A pH level of 7.0 is neutral - below 7.0 is acidic, above 7.0 is alkaline. The pH of your eyes is 7.2 which is also the ideal pH for the pool. The pH should be kept within the range of 7.2 to 7.6.

The pH of water is usually tested by matching reagent colors against a colormetric standard. The liquid reagent generally used for swimming pool water is phenol red, which has a pH range of 6.8 to 8.4 and a corresponding color range of yellow to red.

The test kit has instructions for use printed inside the lid. Just follow those instructions.

- When using the test kit with liquid reagents, add the required amount stated on the kit and immediately recap the dropper bottle.
- Never interchange the caps of reagent containers.
- The test tubes or cells used in test kits should be furnished with caps to avoid contact between the test sample and the fingers. After the test results have been recorded, discard the test sample and thoroughly wash the test tubes or cell.
- The first step to proper water testing is to make certain that the test sample is representative of the entire body of water. Take the samples from as far below the surface as is convenient. Do not take a sample adjacent to the inlet pipe unless it is for the express purpose of checking the water being introduced or returned to the pool or spa.
- Rinse the collection container or the comparison tube several times with the water to be tested. The water sample should be tested promptly after being collected.
- Carefully measure the sample of water to be tested. Water in a tube will form a meniscus (curved top surface) that is higher around the edges and lower in the center. The tube should be filled so that the bottom of the meniscus is level with (sitting upon) the graduated line.
- Use a pH increaser to adjust and maintain correct levels if the water is acidic. (Acidic water causes burning eyes, corrodes metals and eats away at plastic and rubber.)
- Add a pH decreaser to adjust and maintain correct levels if the water is alkaline. (Alkaline water leaves a dry feeling on the skin, looks cloudy and causes a scale to form on any surfaces that it contacts.)
- Test pool water frequently and keep a continuous record. A record of test results will allow you to observe the true profile of the chemical changes of the pool or spa.
- Remember that each test tells the status of the water at one particular moment. The composition of the water is constantly changing, perhaps very slowly or perhaps quite rapidly. A continuing testing program provides valuable data to anticipate the requirements for disinfecting treatment, pH adjustment, filter runs, etc.
- Never use the same test tube for both chlorine and pH tests. The orthotolidine (OTO) reagent used in the chlorine test is strongly acidic. If a pH test is run in a tube that contains a trace of the OTO reagent, a false low reading will be obtained.
- Avoid exposing the test reagents and comparator to direct sunlight, freezing, or high temperatures for prolonged periods.

- When testing is completed, rinse all test tubes thoroughly, cap them tightly, and return all components to the case for safe keeping.
- Store the test equipment properly. Avoid storing the test equipment where there are extremely high temperatures. Store the test equipment indoors if there is a possibility of its freezing in the wintertime. Keep the reagents away from chlorine, bromine, or acid containers. It is also important that the test reagents be stored out of the reach of children.
- Anticipate your requirements for replacement reagents. All reagents should be replaced annually before spring start-up to assure accurate test results.

What happens when the pool is too acidic (pH is low)?

- The pool water will begin to dissolve the plaster surface of the pool, creating a roughness which is ideal for pool algae growth.
- Metals corrode - and this includes swimming pool equipment, pipe fittings, pump connections, etc.
- As the swimming pool walls and metal parts corrode, sulphates are formed. These sulphates are released from the water onto the walls and floor of the swimming pool causing ugly brown and black stains.
- Chlorine, which is used as a disinfectant in the swimming pool water, is activated and lost to the atmosphere very quickly. The water is not being sanitised, and money is wasted by adding chlorine when the pH is too low.
- When you swim, your eyes and nose burn and your skin gets dry and itchy.

What happens when the pool is too alkaline (pH is high)?

- The calcium in the swimming pool water combines with carbonates and forms scale. This calcification is seen most at the waterline, where it traps dust and dirt, turning black with time.
- The swimming pool water starts to become cloudy or murky and it loses its sparkle.
- The calcium carbonate has a tendency to plate out on the sand in the swimming pool filter, effectively turning it into cement. So the sand filter becomes a cement filter, and loses its ability to trap dirt from the pool water.
- As the pH rises, the power of the chlorine to act on foreign particles is lost. At a pH of 8.0 the pool can only use 20% of the chlorine you put in. So 80% of it goes to waste and you would need 5 times as much chlorine to provide the disinfection you need.
- In alkaline swimming pool water, the swimmers suffer too. Your eyes and nose burn and your skin gets dry and itchy.

PREVENTING AND ELIMINATING GREEN ALGAE

- Use an algae inhibitor before there is an algae problem to keep an algae bloom from starting in the pool. Algae inhibitor is usually in a liquid form which can be poured into the pool near the skimmer and distributed to all the areas of the pool.
- Brush the walls and floor of the pool to remove as much of the algae as possible. This will reduce the amount of time it takes to kill and clear the algae bloom.
- Be sure the pH level is within the range of 7.2 - 7.6. This ensures that any chlorine added will work more efficiently as high pH levels impair the efficiency of the chlorine. With the pool filter system running, add a chlorine based pool shock at the rate of 1 lb. per 7,500 gallons (or follow the pool shock manufacturer's dosage suggestion for killing algae). The pool filter system should continue to run 24 hours a day.
- If the condition of the pool does not significantly improve after 24 hours of filtering, add a 2nd dose of shock at the increased rate. Repeat until all algae has been eliminated.
- Once the algae is dead it will turn a white or grayish color, and it will be suspended in the pool water or settle to the floor. When there is no longer any sign of the color green in the pool, thoroughly vacuum the swimming pool. It is recommended that you vacuum dead algae to waste and not through filter.
- The pool filter should be backwashed or cleaned to be sure that dead algae is not trapped inside the filter. If the filter is not thoroughly cleaned the algae may quickly return.
- Test and balance all of the pool chemical levels using the following guidelines. Free Chlorine: 1-3 ppm, pH: 7.2 – 7.6, Alkalinity: 80 – 120 ppm and Calcium Hardness: 200 – 350 ppm.
- Begin adding an algaecide pool chemical on a weekly basis to prevent algae from returning.
- The swimming pool cannot be used until the algae is dead, and the chlorine level of the pool water has returned to a safe level of 3 ppm or less.
- Pay closer attention to the chlorine level of the swimming pool water in the future. Algae and harmful bacteria are almost immediately destroyed by a free chlorine level of 1 ppm or higher. You have experienced an algae problem because you have not properly maintained the chlorine level, and it was allowed to drop below 1 ppm. Test pool water frequently and make any necessary adjustments for a clean, safe and easy to maintain swimming pool.
- Chlorine pool shock needs to be dissolved in a large bucket of water before it is added to the swimming pool. Always add chemicals to water when dissolving. NEVER add water to chemicals.
- Monitor the pool filter system closely during this entire process and thoroughly backwash or clean the filter each time the pressure rises 10 psi. above the normal operating pressure. The dead algae that the pool filter collects may quickly dirty the filter, and need to be cleaned out frequently.
- Phosphate Levels - high levels of phosphates in pool water will result in the pool using much more chlorine than usual. They are also one of the main food sources for algae, therefore it is important to have these levels checked fairly regularly especially if the pool seems to be using more chlorine than usual. I have seen a pool with a particularly bad case use approx. 2.5 times the amount of chlorine that it should have, making it very difficult to maintain.
- In the winter, use a mesh pool cover that will prevent debris from entering the pool, yet allow water to pass through, and keep the pool clean.

CARE OF THE POOL FILTER

Filtration is one of the most important factors in the circulation system of the pool to keeping it clean. The CNPOA pool has a sand filter.

Sand filters trap dust and dirt, as the name implies, in a bed of sand. Sand filters generally have the advantage of being reliable and simple to operate. Sand filters are capable of continually filtering water without shutting off the pump for days on end.

As long as proper water balance is maintained along with regular cleaning cycles the sand inside the filter will be good for up to about 5 to 7 years. If there are problems keeping the water clean and clear, challenges in the pool chemistry are likely the cause. Only change the sand as a last resort.

When the filter has accumulated a large amount of dirt, the water cannot pass freely through the sand and the filter loses efficiency as the pressure increases. Clean a sand filter by back flushing water through the system on a regular basis (about once a month).

When the filter becomes dirty pressure will build up, and you can see this on the pressure gauge. When the pressure gauge reads approximately 5 to 7 PSI above the normal operating pressure you know that the filter is dirty and it is time to backwash. Backwashing sends water backwards through the filter and flushes the trapped dirt out. Backwashing is an easy process:

- Normal filter pressure is 20 PSI. When pressure rises to 30 PSI, it's time to backwash the filter.
- **IMPORTANT:** Always turn off wall switch before moving multi-valve on the filter.
- To backwash filter...
 - Pull the end of the flat blue hose outside the pool shed
 - Turn the pump OFF at wall switch
 - Open cover - water will pour out.
 - Leave the following valves in whatever position they are currently in: Return valve, Skimmer valve, Bottom Drain valve. When backwashing, it doesn't matter if these valves are open or closed.
 - Turn the Filter Multi-valve (round black valve on filter dome) around to BACKWASH. You'll need to lift the lever a bit to rotate the valve.
 - Turn the pump ON and run for 2 or 3 minutes
 - Turn the pump OFF
 - Turn the Filter Multi-valve to RINSE
 - Turn the pump ON and run for
 - about 30 seconds
 - Turn the pump OFF
 - Turn the Filter Multi-valve to FILTER
 - Turn the pump ON
 - Pull blue hose back inside
- A flyer with these instructions is at the end of this manual. These instruction are also posted in the pool shed.

WATER LEVEL

The water level in the pool should not be allowed to go lower than the bottom of the tiles as this means water will not be going into the skimmer which could result in damage to the pump. To top off the water in the pool:

- Uncoil hose and drop then entire length into the pool. The hose tends to kink and this will prevent that from happening.
- Go inside the pool shed to turn the water on. You can see the water hose coming into the pool shed.
- Leave the top round green hose faucet full open.
- Use the bottom round green hose faucet to turn the water on and off.
- Generally the pool fills at a rate of about 1" in 1 ½ hours.

SHOCKING THE POOL

Shock the pool on a regular basis - about every two weeks - to get rid of water-soluble bather waste.

- Purchase pool-shock products for a sand filtration system and a chlorinated pool.
- Use the proper amount of the shocker by reading the manufacturer's specifications. How much you use depends on the size of the pool. Most brands come in a quick-dissolving powder that is broadcast in the deep end of the pool.
- Use the pool skimmer to help mix and distribute the shocker treatment and speed the oxidization process.

CHECKING THE ALKALINITY

Alkaline substances dissolved in the pool water help balance the pH and make the pH levels more resistant to change.

- The alkalinity levels should be between 80 and 150 ppm (**parts per million**).
- If the alkalinity levels are too low, you'll see that the pool water reels from low to high pH levels - which can wreak havoc on the equipment. If the alkalinity level is too high, you'll have a very hard time adjusting pH levels when they need to be changed.

CHECKING THE CALCIUM HARDNESS

Check the Calcium Hardness once a year – when the pool is opened or bring a sample of the water to a professional.

- Calcium can cause corrosion, cloudiness, and unsightly buildup in the pool.
- The calcium levels should be between 175 and 225 ppm.
- It's usually not difficult to change the calcium levels if they are off.

DIAGNOSING AND CLEARING CLOUDY POOL WATER

- Test the swimming pool water for Combined Chlorine, pH, Alkalinity and Calcium Hardness. The two areas that are most likely to cause cloudy pool water are the pH and the Calcium Hardness.
- If the pool chemical levels are not within the following suggested ranges, adjust and run the pool filter system for 12-24 hours before re-testing. Free Chlorine: 1-3 ppm, pH: 7.2 – 7.6, Alkalinity: 90 – 120 ppm and Calcium Hardness: 200 – 350 ppm.
- If all the pool chemical levels test in range, the cloudy pool water is caused by fine debris suspended in the pool water. You should backwash or clean the pool filter following the manufacturer's instructions, and run the pool filter system continuously for 24 to 48 hours.
- If the water conditions have not significantly improved you should add a clarifier pool chemical to the pool water to help the pool filter remove the fine debris from the water. Continue filtering for 12 to 24 hours.
- If the water conditions have not significantly improved you should add a second dose of clarifier, or a stronger clarifier chemical and continue to run the filtration system.
- It is important that you continuously filter the pool water until the water is clear, and closely monitor the pool filter pressure. Backwash or clean the pool filter as needed, following the pool filter manufacturer's instructions.
- It is common for pool water to become cloudy immediately after adding products to adjust the pool pH or Alkalinity. If the pool water became cloudy within 6-8 hours of adjusting the pH or Alkalinity, continue circulating the water and it should clear within 24 hours as the water adjusts to the changes you've made.

TROUBLESHOOTING THE POOL

- Listen for excessive pump noise as a warning of possible problems in that area. Today's newer pumps are sealed units that don't require any maintenance, but rubber or composition pump seals can go bad and result in bearing failure or electrical shorts.
- Replace any pump that's more than 7 or 8 years old and is in need of repair. The newer models are more efficient at moving larger volumes of water with less energy, saving you money on many fronts: You'll need a smaller, less expensive pump; you'll have lower monthly utility bills; and better circulation means better filtration and fewer chemical requirements.
- Keep a close eye on the pressure gauge. An inoperative pressure gauge means you can't tell when water pressure begins to build from the normal levels indicated by a clean, efficient filter and the higher pressure of a filter in need of cleaning. High pressure means unnecessary strain on the pool pump and a less efficient filtering system.
- Know what kind of filter you have (as of 2008 it's a Sand Filter) and keep it clean.

SAND POOL FILTERS

There are three main types of swimming pool filters, Sand, Cartridge and D.E. (which stands for Diatomaceous Earth). Different regions of the country seem to have different preferences. However, the suitability of a filter to a pool can have more to do with size, than with type. Always go at least one size larger than you think you need - it's money well spent.

Many filters installed in the 70's and 80's were much too small for the size of pool they filter, and with the deterioration of age are just barely operating. So once again, filter size is more important than brand, name, type, color, etc.

Sand filters - The sand in a sand filter (#20 silica sand; 45 - 55 mm) is specially graded to trap particles in the 20 - 100 micron range. As a sand filter collects dirt, its efficiency increases, trapping more dirt. When the pressure gauge reads 8 - 10 lbs. over the normal clean, start-up reading, it is time to backwash the captured dirt out of the filter.



Sand Filter

It's been recommended that a sand bed should be replaced after seven years. Gradual loss of efficiency may be hard to notice. If the filter requires frequent backwashing, every weeks or two, the sand bed may be "mudballed", or it may be "channeled". It may also "calcify" with calcium deposits. Other water balance problems may also contribute to sand deterioration, but a properly sized filter could go over 10 years between sand changes.

Use of Biguanide chemicals, i.e., Soft Swim or Baquacil require annual cleaning of the sand to prevent it from "gumming-up". High amounts of bather oils can gum-up a sand bed. And just the years of a pump forcing water over the grains wears away the sharp edges of the sand. Such sand becomes more circular, and traps dirt less efficiently.

For sparkling water, you need the trio of sanitation, filtration and circulation. If one of these areas is lacking, the water won't be clean. If you've kept very good chemical maintenance and your circulation is good, you may have a filter problem. Is the filter sized properly?

Adding a small amount of aluminum sulfate or "alum", through the skimmer will form a gelatinous layer on top of the sand bed, which is useful in cleaning up an undesirable water condition. You can also add a small amount of D.E. powder or other filter media.



Backwashing the Sand Filter - When the pressure gauge is reading 8 - 10 lbs above the clean, starting pressure, it's time to backwash the filter.

This process involves turning a valve so that the water will flow through the filter backwards, flushing out the dirt... "back-washing." Sand filters can have either a push-pull valve (also known as a slide valve) or a multiport valve. The multiport valve has multi-ports on the valve, usually 6 positions:

- **FILTER:** Keep it here 99%, except when backwashing, rinsing or wasting
- **RINSE:** Use this setting for at least 30 seconds after backwashing to rinse tank
- **RECIRCULATE:** Use this if the filter's broken; at least you're circulating.
- **BACKWASH:** Use this setting to reverse the flow in the filter and send water out of the waste line. Make sure valves are open or hoses rolled out
- **CLOSED:** Put here to close off flow from the pool, usually to work on the equipment. Do not operate pump with valve in closed position

- **WASTE/DRAIN:** Another filter bypass setting, but this setting sends the water out of the waste pipe (hose), instead of returning it to the pool. This setting is used to lower pool water level or to vacuum to waste.

*So, to backwash a **sand filter** with a **multiport valve**;*

- Shut off pump motor
- Press down on valve handle, rotate valve from FILTER to BACKWASH position
- Roll out any backwash hose or open any waste line valves
- Open air bleeder assembly on filter, and turn pump on.
- Watch pressure gauge for backpressure and hose for kinks. Be prepared to shut off pump quickly
- After hose fills with water, run for 2 - 3 minutes or until water runs clear
- Shut off pump motor and move multiport valve handle to RINSE position. Run on rinse for 30 seconds or until water runs clear.
- Shut off pump motor and move multiport valve handle to FILTER position
- Turn pump back on and note lower pressure. Roll up backwash hose

A properly sized sand filter should, in most cases, be able to operate continuously for a period of 4 weeks between backwashings. A "Filter Run" of less than 4 weeks may indicate sand problems (or sizing problems).

Sand in the pool - If it hasn't blown in, it's likely coming from the filter. A broken lateral or standpipe may be the cause. You'll need to empty the tank, locate and make the repair, refill with fresh sand and test.

Sand bed replacement - To replace filter sand, you'll first need to empty out the existing sand. One method is to spread a tarp out beneath the filter drain assembly. Then remove the entire assembly, turn on the pump, and step back! The water pumping through the filter will remove most of the sand out the drain hole. Another method is to remove the drain plug only and allow the filter to drain for several hours or days. Then, remove the top dome or multiport valve.

If you have the Triton style dome on the top of the filter, you'll need the octagonal dome wrench to remove the dome. Once the dome is removed, gently twist the baffle/pipe out of the way so you can get a scoop to the sand.

If you have a Top Mount Multiport, you may need to cut some pipes to remove the valve. You can reconnect them later with unions or couplings. Once these pipes are cut, the clamp band connecting the valve to the filter is removed, and the valve pulls straight up and off. Plug or tape or cover the standpipe so you don't spill sand in it. Then you can use a shop vacuum to suck out the sand, or you can use a small cup to scoop out the sand.

Be very careful as you scoop or suck, not to knock or break the laterals at the bottom of the tank. They can be brittle when they get older, and it may be wise to replace laterals at the time you replace the filter sand. Use a hose to wash out the sand beneath the laterals. When the tank is empty of sand, replace the drain assembly, using silicone sealant on the threads. Then add enough water to cover the laterals, so the new sand pouring in won't crack them.

Again, if you have the top mounted multiport, cover the standpipe opening. If you have a side mounted filter valve, gently push the intake baffle to one side, or wrap the baffle with a small plastic bag to keep the sand from entering the pipe as you pour it in.

Pour it in! Use only specially graded pool filter sand; #20 silica sand, 45 55 mm. On top mounted multiport filters, use care to keep the lateral/ hub assembly in the center, and on the bottom of the tank. After each bag of sand is added, make sure it is still centered. It may be useful to have a helper hold the standpipe in place while the sand is added.

Add the recommended amount of sand only; more is not better! If you don't know this info, contact the dealer or manufacturer. Most tanks are filled only about 2/3 of the way full, to leave enough "freeboard" space on top. When full, lube the o-rings and reassemble the filter top. Make sure lid is very secure, lids that blow off can be very dangerous. It's a good idea to replace the o-ring on the filter domes.

When the filter is started up, start up on "RINSE" setting first (if you have a multiport valve). Then backwash and rinse again. If you have a push-pull valve, backwash first. This final step will prevent putting a lot of "sand dust" into the pool after a sand change.

Leaking filter - Sand filter tanks rarely leak themselves, however leaks often occur in and around the multiport interface. A common complaint is that water is leaking out of the backwash port of the multiport (six position) valve. Slight adjustments of the handle may temporarily solve this problem. A more permanent repair may necessitate replacement of the spider gasket inside of the multiport. You may also have leakage up around the middle of the handle on the valve, which external adjustments rarely fix. This usually requires replacement of a Teflon washer and sometimes the spring as well.

You may have a push-pull valve, or slide valve as it is sometimes called, instead of a multiport valve. Leaks can occur through the top of the index plate, or out of the backwash line. This is a easy inspection to determine what o-rings need to be replaced. Leaks can also occur at the bulkhead unions where the valve attaches to the side of the filter, or around the threads on a top-mounted multiport. The drain plug can leak if not secured tightly or properly sealed.

Leaking valve repair – This is usually a one hour job, plus internal valve components; gaskets or springs.

Filter replacement - A new filter may be in order if your current filter is outdated (15 - 20 yrs old) and difficult to use or get parts for. If the filter tank has cracked, usually from freeze damage or possibly from closing off return valves while the pump is running, a new filter is in order. Replacement is usually fairly simple, with just a few plumbing fittings needed.

Sand filter replacement - Price is size dependent, however, as an example, we sell the Pentair Tagelus TA-60D filter for \$282.

OTHER TYPES OF POOL FILTERS

Cartridge filters - The cartridge swimming pool filter is the most popular choice among pool owners because it's easy to maintain, change, and clean. This type of filter is the most practical choice for private backyard swimming pools.



Cartridge Filter

Cartridge filters catch particles with a polyester or paper type material trapping dirt and particles of 25 - 100 *microns* in size. Debris that enters this kind of filter latches on to a cartridge that can be hosed off with a high pressure hose and reused when dirty. Each time the filter is cleaned, some of its filtering ability is reduced. At minimum, the cartridge should be replaced every 2 - 5 yrs, depending on the work it was asked to do. Nicely sized cartridge filters can operate for 6 months between cleanings.

There is no backwash valve on a cartridge filter because it isn't built for backwards flow. Instead, the pump is shut off, air bleeder opened, lid removed, cartridge removed, hosed thoroughly top to bottom, and replaced. Another advantage is that cartridge cleaning doesn't waste as much water as backwashing.



These filters are not recommended for use in most larger swimming pools, but for pools under 30,000 gals., there are some good filters available like the Hayward C-4000.

Filter Cartridge Replacement – Purchase right off the shelf for \$40-\$100, depending on its size. No professional is labor needed.

Diatomaceous Earth (D.E.) filters - The D.E. filter is the most efficient type of pool filter on the market. It can trap particles down to 3 - 5 microns; well below what the naked eye can see. As with sand filters, the pressure gauge indicates a need for backwashing when it reads 8 - 10 lbs. higher than its clean reading. After backwashing a D.E. filter, a new application of D.E. filter powder is added to the filter by pouring into the skimmer. An annual breakdown of the filter is necessary to thoroughly clean D.E. filter grids.



D.E. Filter

Additional information about Cartridge and D.E. filters is available online at <http://www.poolcenter.com/filter.htm>

Additional references:

- <http://www.backyardcitypools.com/Pool-Filters-Types.htm>
- <http://www.backyardcitypools.com/FAQs/FAQ-Cat-Swimming-Pool-Filter-5.htm>

CLOSING THE POOL

Inground Pool Closing (Winterizing)

- Several days prior to closing the pool, test the water for pH, total alkalinity, calcium hardness and chlorine. Adjust levels if necessary. It's important to get the water balanced to protect the pool from corrosion or scale buildup that can occur during the period the pool is shut down. Use a water test kit to test for: PH 7.2 - 7.6 Alkalinity 80 - 120 ppm Calcium Hardness 175 - 250 ppm Chlorine 1 - 3 ppm
- The pool needs to be clean before winterizing. Brush and vacuum sides and bottom. Use Super Shimmer or a Clarifier to get water crystal clear. Lower water level while vacuuming (set filter to waste bypassing sand). Clean the tile line with Tile & Vinyl Cleaner to remove oil and scum line. This will be easier to get off now before it sets on during winter months.
- Gather all your winterizing supplies. This should include the cover, the water tubes, the plugs for the skimmers (gizzmos) and return jets and your winterizing chemicals. You will also need an air compressor or a powerful shop vac for proper winterization. If using the green Gizzmos to plug your skimmers, check them out and make sure that they are not cracked. This is very important –gizzmos with holes or cracks will not work.
- Backwash the filter well to clean it out. On sand filter, unplug the filter drain plug and leave off. Put drain plug with other removed items in the pump basket. Make sure multiport valve has no water in it. Blow it out with compressor or shop vac if necessary.
- Disconnect the pump and filter. Make sure pump is totally drained out of any water. Turn pump upside down once to make sure. Remove any drain plugs from the pump. It is a good idea to store any small plugs or parts in the pump basket so you will be able to find them easily in the Spring.
- Unscrew and loosen any quick disconnect fittings or unions at the pump and filter system. The objective is "no freeze cracks". If the water is all drained out of the pipes and fittings, it cannot freeze and expand and crack.
- Remove all return jet fittings (the entire fitting). If you crack a fitting while removing it, don't worry, you can get a replacement in the Spring. Remove all skimmer baskets. Put fittings and any other items that you remove in one of the skimmer baskets or the pump basket to avoid loss.
- Blow out all return jet pipes using air compressor or shop vac. Hook up air compressor or shop vac to the return lines at the filter system - *or* - some people prefer to screw the compressor fitting into the drain plug of the pump. This will give a good seal and allow you to blow out the entire system from that one spot - this is up to you. Keep the air blowing until the air bubbles start to become visible from the return jets in the pool. Put a plug in the fitting under the water when you see the bubbles blowing at full force. This will mean that 99% of the water is out of the pipe. Make sure plug is in tight. This is most important.
- Blow out all skimmer (suction side) pipes in a similar fashion. Put a gizzmo-type screw in plug in the skimmer when bubbles start to become visible. Proper gizzmo installation is important. Make sure that you put PTFE tape on the gizzmo threads before installing. This insures a tight seal. If you don't want to use Gizzmo plugs and want to use black rubber-type plugs instead, that's OK as long as there is something in the skimmer to allow for water expansion when it freezes. Usually a closed plastic empty soda-type bottle will work. This is very important! Do not just plug the skimmer lines and forget about them. Water can easily freeze in a skimmer and crack the plastic - which would be bad. Do not put anti-freeze type products in the pipes. You will not need it if the

lines are properly blown out. The anti-freeze can cause a mess in the Spring when you go to start your system and it gets sucked into your filter and blown back into the pool. Avoid antifreeze by properly evacuating all the water from the pipes.

- Blow out main drain line (if any). No, you don't have to dive down and plug the drain pipe. When you see bubbles coming out of the drain, plug the pipe on your end or close the gate valve. This is as much protection as you can give to a main drain line. By doing this you will cause an "air lock" in the line and no more water should enter the pipe from the pool side.
- Put duct tape on all exposed pipes to prevent anything from getting into them. Use a lot of tape.
- Remove ladder. Put in the shed. Put the pump and filter in the shed as well. If the sand filter is outside, it can be left there. Remember – so you don't lose any bolts or ladder bumpers, put them in the skimmer or pump baskets.
- Mix any granular winterizing chemicals in a bucket so that they are totally dissolved. Dump mixture into the pool. You want to avoid any undissolved granules from settling on the pool floor. This is very important. If you are using any liquid winterizing chemicals, pour them in the pool as well. Test the pool for pH and Total Alkalinity. Adjust to normal levels using pH PLUS or MINUS and ALKALINITY PLUS. pH should be between 7.2 - 7.6 and Alkalinity between 100-150 ppm. Make sure one of your winterizer chemicals consists of a SHOCK-type product. You want the chlorine level in the pool to be rather high (over 3.0 for wintertime).
- Water level. You do not have to drain a lot of water out of the pool provided you have properly blown out and plugged all the underground pipes as outlined above. You only have to drain the water down to just below the tiles. This is because in a pool that has tile at the water level, the surface water will freeze and expand over the winter which could crack the tiles.

Some people are used to their pool being drained down past the skimmer. This is usually done instead of blowing out the pipes and using gizmos. The higher their water level is through the winter, the better it is for the pool cover. Pools that are drained down low cause a lot of undue stress on the pool cover thereby shortening its life - as well as exposing the pool liner to the air and causing it to prematurely dry out. The use of gizmos prevents the skimmers from cracking, plugs the pipes and allows the water level to remain high for the cover so that rain water does not cause a lake on top of the pool cover - possibly causing it to fall in.

- Place the cover on the pool. If there are rips or tears in the cover that are repairable, patch them with either vinyl pool patch (for vinyl covers) or with pool cover patch tape (for lightweight covers) or with a heavy duty duct-type tape. If there are sharp points that extend into the pool, like steps, then it is a good idea to put rags or cardboard between the cover and the points on the pool which extend out. Otherwise the cover may rip on those stress points.

If you use water tubes, lay out the water tubes, placing them through loops on cover. Fill tubes with water to approx. 85% and tightly seal all tubes. Do not overfill the tubes - when they freeze you do not want them to expand and split. Tubes should ideally be touching each other end to end. However spacing them one (1) foot apart is OK. If you find that tubes are leaking do not fill them. Replace them with new. It is not a good idea to patch the old tubes unless you absolutely have to. Remember...do not overfill tubes. They should not be totally filled with water. Allow enough slack in the tube for water expansion!

WINTER POOL CARE INSTRUCTIONS - Now that the pool has been properly closed, don't totally forget about it. With a minimum of care and maintenance throughout the winter months, the cover will last longer and the pool will open up with less problems in the spring. Follow these instructions for best results.

Water Tube Type Covers – Be sure to replace any water tubes that break over the winter. It's a good idea to have a few extra tubes handy so that you can replace them as needed. Remember, the tubes not only hold the cover on the pool, but also prevent wind from blowing the cover up. Any areas that are not properly covered with tubes could cause the cover to fall in or blow up. Do not use cinder blocks, bricks, flower pots, lawn furniture or other heavy items to keep your cover in place. If the cover starts to fall into the pool, it could drag any of those objects into the pool causing damage to the pool cover and/or liner.

Excess water and leaf weight can cause undue stress on the cover and could cause the cover to rip or fall in. Pump the rain water off the cover a few times throughout the winter. Also remove any leaf accumulation that may occur on the cover. Check the water level in the pool every month. If you notice the water level dropping, refill with a hose and keep it as high as possible to prevent damage to the cover. If you notice part of the cover falling into the pool, pull it up and properly reset it right away to prevent damage.

"Loop Loc" Mesh - Spring Type Covers -

- **Tightness:** The springs and straps on the cover will need to be adjusted from time to time, especially during the first few seasons of use. The cover material, as well as the straps, will start to stretch as soon as the cover is initially installed. THIS IS NORMAL. Check cover periodically over the first few seasons of use, and retighten the straps as necessary.
- **Water Level:** The water level in the pool should not be lower than 18" from the top of the pool. If the water level goes down further than 18", the cover could stretch out too much and either rip or cause anchors to pull out of the deck. If there is a lot of precipitation over the winter months when the cover is in use, it's possible that the pool could fill up, no longer allowing the water from the cover to drain into the pool. Check pool water level periodically over the winter, adding or removing water when necessary with the hose or cover pump.
- **Water Clarity:** Remember, this is a mesh pool cover. Sunlight and rain water will get through the cover to the pool water. Most pools covered with this type of cover will remain clear until April or May, depending on the weather. It is strongly recommended that you open your pool early to avoid the green "swampy" water that occurs when strong sunlight and temperatures over 80 degrees are present. As a rule of thumb, you should open the pool prior to May 15 to avoid a green water situation. It is also a good idea to add 2 or 3 gallons of chlorine shock to the pool in the beginning of April to ensure good water clarity at opening time.

"Solid" - Spring Type Winter Covers -

- **Tightness:** The springs and straps on the cover will need to be adjusted from time to time, especially during the first few seasons of use. The cover material, as well as the straps, will start to stretch as soon as the cover is initially installed. THIS IS NORMAL. Check cover periodically over the first few seasons of use, and retighten the straps as necessary.
- **Water Level:** The water level in the pool should not be lower than 18" from the top of the pool. If the water level goes down further than 18", the cover could stretch out too

much and either rip or cause anchors to pull out of the deck. For most manufacturers of Solid Spring type pool covers, this could void the warranty. If there is a lot of precipitation over the winter months when the cover is in use, it's possible that the pool could fill up, no longer allowing the water from the cover to drain into the pool. Check pool water level periodically over the winter, adding or removing water when necessary with the hose or cover pump.

- **Cover Draining:** Although the mesh center drain panels of the cover will allow rain water to drain into the pool, they are not designed to drain off every drop of water from the cover. Because of the way that the cover straps are situated, some water will puddle in areas of your cover. **THIS IS NORMAL AND THERE IS NO WAY TO STOP THIS FROM HAPPENING.** Do not try to over - tighten the cover straps in an attempt to get all the cover water to drain into the mesh panels. It will not work, and you run the risk of over - stretching the straps and springs. For most manufacturers of Solid Spring type pool covers, this could void the warranty. The center mesh drain panels are primarily designed to let most of the water drain off the cover.
- **Mesh Panel:** To ensure proper drainage, make certain the mesh center drain panels are clear of leaves and debris. Check cover periodically over the winter and remove debris from panels as it accumulates using a pool leaf net, vacuum pole or broom. This is especially important for pools located in heavily wooded or treed areas. If you walk on the cover to get to the panels, make sure you are not wearing shoes with spikes or heels, as this could puncture the cover. Failure to keep the mesh panel free from leaves and debris will result in improper water drainage from the surface of the pool cover and will cause too much water weight on the pool cover. This could cause the cover material, straps and/or hardware to stretch or break. For most manufacturers of Solid Spring type pool covers, this could void your warranty.
- **Water Clarity:** Remember, this cover has mesh drainage panels. Some sunlight and rain water will get through the cover to the pool water. Most pools covered with this type of cover will remain clear until April or May, depending on the weather. It is strongly recommended that you open the pool early to avoid the green "swampy" water that occurs when strong sunlight and temperatures over 80 degrees are present. As a rule of thumb, you should open the pool prior to May 15 to avoid a green water situation. It is also a good idea to add 2 or 3 gallons of chlorine shock to the pool in the beginning of April to ensure good water clarity at opening time.

OPENING THE POOL

A pool properly maintained during the winter months can be prepared for a new season of swimming with a minimum of effort.

Opening the Pool (General): The reopening process begins the moment the pool is closed. By keeping an eye on the pool over the winter, the reopening process becomes that much easier. Snow or rain can raise the water level or sink the cover. Since heavy debris can fall in, it is better to remove it immediately than waiting till the spring. Reopening the pool entails reversing the instructions for closing it. The following is a handy checklist:

- Supplies. Take the supplies (chemicals) out of storage and replace those that have exceeded the expiration date.
- Clean off debris from the cover and deck
- Remove the cover and plugs from all openings. If the water was in good shape at the end of last season, proper cover removal will ensure that your pool opens relatively clear.
- Clean the cover and allow it to dry (to prevent mildew) before folding and storing it for the summer.
- Equipment - reinstall or reassemble the pump, filter, and other removed items.
- Deck - reinstall ladder and other deck fittings. If used at closing time, most of the petroleum jelly used to coat exposed metal fittings will have weathered off. Use a dry towel to wipe off the remainder if necessary.
- Plumbing - remove the plugs and replace return outlet fittings.
- Refilling the Pool - bring the water level up to normal.
- Electrical - restore circuit breakers, switches, and time clock trippers to normal operating positions.
- Cleaning - restart the circulation equipment and clean the pool.
- Chemistry - balance the water chemistry and check the levels frequently during the first few days (until they stabilize).
- Run the circulation system 24 hours straight for three days or until the water has cleared completely. Depending on how dirty the pool became over the winter, the filter should be backwashed frequently during this period.

Opening the Pool (Detailed):

- Remove the leaves and debris from the pool cover with a leaf net and/or skimmer net. Pump off any excess rain water with a submersible pump.
- Remove cover. Try to minimize the amount of water and/or debris that gets into the pool water. Some dirty water will always manage to get in - don't worry about it. You will be adding shock to the water and filtering it soon, so a little dirty water will not hurt anyone !
- Lay out pool cover and sweep or brush off any remaining debris. Properly fan-fold cover and store away.
- Empty the water out of any water tubes you may have. Clean off items and fold properly and store away.
- Unplug all piping, both in the pool and at the filter system area.
- Re-attach any deck equipment such as ladders, etc. Make sure to reconnect any grounding wires or straps that may have been attached to the metal parts last year.

- Lubricate all bolts on the dive board, ladders and/or rails. This will prevent them from rusting over the summer. Remember, you are probably the one who will be closing the pool, so you want the bolts to come off easy at closing time.
- Re-install the skimmer baskets and any return jet eyeball fittings.
- Hook up pump, filter and any other additional equipment you might have (booster pumps, heaters, etc.).
- Turn on the power to the pool system if needed. Start and check system. Check for leaks or drips. Make sure any grounding straps or wires are properly connected to the pump and any other components that need them. Make sure pump primes properly. Check for proper flow. Backwash the filter thoroughly. If you cannot repair the problem yourself, contact the pool service professional for assistance.
- Shock the pool with any chlorine shock product - available in liquid or granular form. You want to add enough to raise the chlorine level of the pool to at least 3.0 ppm (darker yellow color in most liquid test kits). If you use granular shock, do not throw it directly into the pool. It's best to mix the granular shock chlorine in a bucket and then add that mixture into the skimmer while the system is running.
- If your pool is a "green swamp" when you open it, see the Green Algae section on page #6.
- If your pool water is relatively clear, accurately test the water for chlorine, PH and Alkalinity levels. If available, also test for Stabilizer (cyanuric acid). Adjust these chemicals to the proper levels. Add a high quality algaecide to the water.
- Let pool run for at least 24 hours. Vacuum any debris out of the bottom. Retest water. Do not go into pool until water is crystal clear and chlorine level is under 2.0 ppm (medium yellow color on most test kits).

Problems - Sometimes things don't go so smoothly after you open your pool. Here are some common problems and what actions you should take:

- Obvious drips coming from filter tank, pump or visible pipes: Try tightening the fittings. If you cannot get leaks to stop, contact a pool professional.
- Sand in pool under or near the return jets: This may mean the pool has an underground pipe leak or, if you have a sand filter, it could mean that something in the sand filter is cracked. If you are losing water as well, contact a pool professional. If you are not losing water, then take apart the sand filter and look for a cracked part.
- Sand filter isn't putting out enough water pressure and/or isn't effectively filtering the pool: Backwash the filter immediately. If problem persists, filter may be in need of a sand change. If you do not know how to do this, contact a pool professional.
- Many air bubbles mixing with the water coming out of the return jets: Probably means that there is a suction line leak, usually under or by the skimmers. Contact a pool professional to repair this.
- Pump makes loud squealing noise, heats up or is not running at full capability: The pump is in need of professional service. Repair or replace the pump.
- Pool is losing water: If the pool water level goes down to the bottom of the skimmer and stops, this usually means that it is a suction line leak, most likely directly under the skimmer. If the pool water level goes down to the bottom of the return jets and then stops, this usually means that it is a return line leak, most likely directly by the wall jet return fitting - but it could be anywhere in the return line. Contact a pool professional to repair this.

CNPOA Community Pool - Summer Care & Maintenance

POOL SHED LOCK COMBINATION: Contact Pool Coordinator for combination

OPENING AND CLOSING VALVES: The following pertains to the four pipes that have valve handles on top of them. Starting from the pipe closest to the filter, going left to right...

- The first is the "Return" valve (black pipe) – it returns water to the pool
- Next is the "Skimmer" valve (white pipe) – it sucks water from the 4 skimmers
- Next is the "Bottom" valve (white pipe) – it sucks water from the bottom drain
- Next is the "Vacuum" valve (white pipe) – it sucks water from the vacuum port in the pool
 - When the handle is going same direction as pipe, valve is open => ||
 - When the handle is turned at 90 degree angle to pipe, valve is closed => +

THREE TIMES A WEEK

- **Test pH level of water:**
 - Put 5 drops of reagent in each side of tester to check chlorine & pH – instructions are included in test kit
 - If too alkaline, add acid
 - If too basic, add soda/alkali
- **Clean debris** out of pool with net
- **Check water level:** it should be at least up to the middle of the tiles

ONCE A WEEK

- **Algicide:** Add 4 ounces of algae killer to deep end of pool
- **Brushing:** Brush the sides and bottom of the pool – do this before vacuuming
- **Check chlorine canister:** Usually on Sunday – more frequently in hot weather
 - Turn off all valves before opening chlorine canister
 - Add chlorine tablets (or granules) to fill
 - With valves still off, check leaf catcher
 - Leave vacuum line closed when doing this
- **Vacuumping:** At the end or near the end of your turn, give the pool a good vacuuming.
 - Instructions for vacuuming are posted in pool shed
- **Leaf Trap:** Always clean out leaf trap after vacuuming
 - Instructions for cleaning leaf trap are posted in pool shed
- **Backwash filter:** (after vacuuming pool) - Normal filter pressure is 20 PSI. When pressure rises to 30 PSI, it's time to backwash the filter.
 - IMPORTANT: Always turn off wall switch before moving multi-valve on the filter.
 - Instructions for backwashing filter are posted in pool shed

LAST LOOK BEFORE YOU LEAVE

- Make sure **Return** and **Skimmer** valves are both open (||), and **Vacuum** is closed (+)
- **Bottom** valve should be open at about 50% - which means you need to turn the valve handle at about a 45 degree angle to the pipe (|/)
- The multi-valve on the filter should be set to **Filter** setting.

HOW TO TURN PUMP ON & OFF **AND ADJUST PUMP RUN TIME**

- The timer is in a grey metal box located on the wall of the pool shed. It looks like the photo below.
- The pump can be turned off by flipping the small metal tab just below the timer wheel in the timer box.
- Turn the pump back on by flipping it back again.
- To adjust the time the pump is running, loosen the appropriate screws on the timer wheel and move to preferred location.



OPENING AND CLOSING VALVES

The following pertains to the four pipes that have valve handles on top of them. Starting from the pipe closest to the filter, going left to right...

- The first is the “Return” valve (black pipe) it returns water to the pool
- Next is the “Skimmer” valve (white pipe) it sucks water from the four skimmers around the side of the pool
- Next is the “Bottom” valve (white pipe) it sucks water from the bottom drain
- Next is the “Vacuum” valve (white pipe) it sucks water from the vacuum port in the pool
- When the handle is going same direction as pipe, the valve is open => ||
- When the handle is turned at 90 degree angle to pipe, the valve is closed => +

The Filter Multi-valve is another valve to be concerned about. It's the round black valve on the filter dome - which can be placed in a number of different positions. 

When the pool is in its normal filtration cycle, the following has been recommended by our Pool Service person:

- Filter Multi-valve should be turned to Filter 
- Return valve should be in OPEN position ||
- Skimmer valve should be in OPEN position ||
- Bottom valve should be in 50% of OPEN position |/
- Vacuum valve should be in CLOSED position +

**Filter
Multi-valve**



**Pipe
Valve**



HOW TO ADJUST THE PH LEVEL

Knowing the pH of pool water is essential for properly controlling all the water chemistry parameters. pH is the measure of how acid/alkaline the pool water is. pH should be tested and corrected at least every week. A pH level of 7.0 is neutral - below 7.0 is acidic, above 7.0 is alkaline. The pH of your eyes is 7.2 which is also the ideal pH for the pool. The pH should be kept within the range of 7.2 to 7.6.



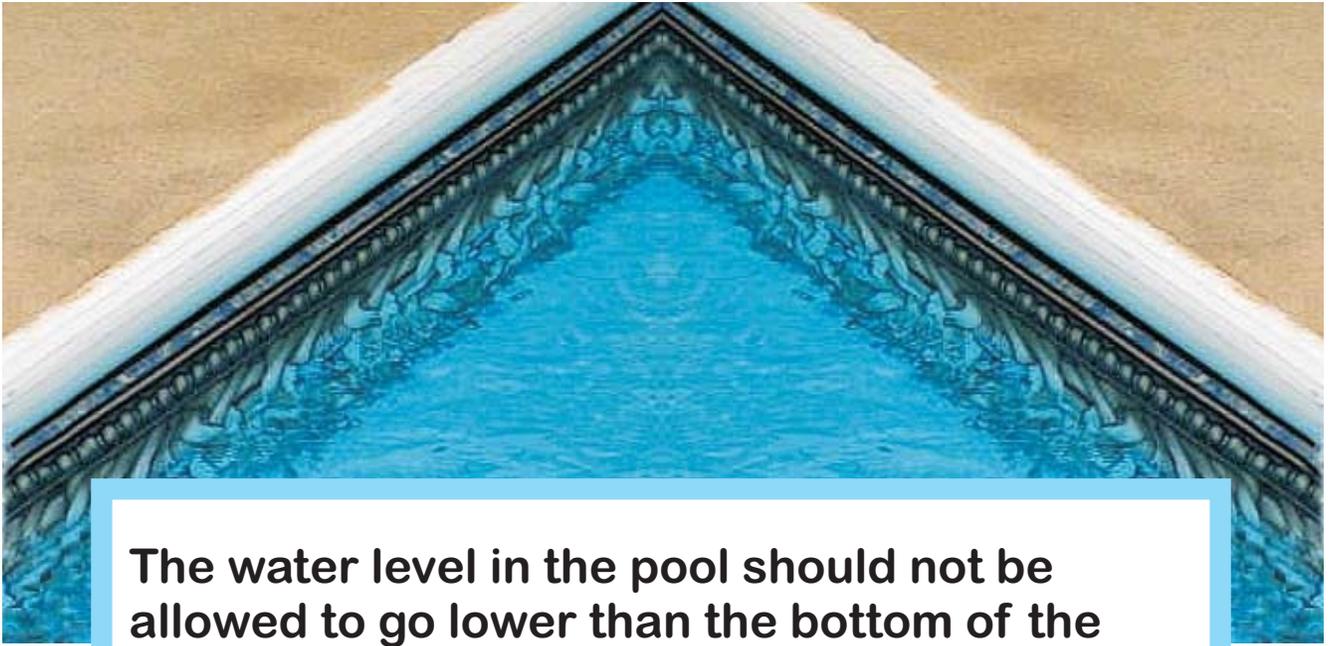
When using the test kit with liquid reagents, add the required amount stated on the kit and immediately recap the dropper bottle.

- The test kit has instructions for use printed inside the lid.
- Never interchange the caps of reagent containers.
- The test tubes or cells used in test kits should be furnished with caps to avoid contact between the test sample and the fingers. After the test results have been recorded, discard the test sample and thoroughly wash the test tubes or cell.
- The first step to proper water testing is to make certain that the test sample is representative of the entire body of water. Take the samples from as far below the surface as is convenient. Do not take a sample adjacent to the inlet pipe unless it is for the express purpose of checking the water being introduced or returned to the pool or spa.
- Rinse the collection container or the comparison tube several times with the water to be tested. The water sample should be tested promptly after being collected.
- Carefully measure the sample of water to be tested. Water in a tube will form a meniscus (curved top surface) that is higher around the edges and lower in the center. The tube should be filled so that the bottom of the meniscus is level with (sitting upon) the graduated line.



- Use a pH increaser to adjust and maintain correct levels if the water is acidic. (Acidic water causes burning eyes, corrodes metals and eats away at plastic and rubber.)
- Add a pH deceiver to adjust and maintain correct levels if the water is alkaline. (Alkaline water leaves a dry feeling on the skin, looks cloudy and causes a scale to form on any surfaces that it contacts.)

HOW TO ADJUST THE WATER LEVEL



The water level in the pool should not be allowed to go lower than the bottom of the tiles as this means water will not be going into the skimmer which could result in damage to the pump. To top off the water in the pool:

- Uncoil hose and drop then entire length into the pool. The hose tends to kink and this will prevent that from happening.
- Go inside the pool shed to turn the water on. You can see the water hose coming into the pool shed.
- Leave the top round green hose faucet full open.
- Use the bottom round green hose faucet to turn the water on and off.
- Generally the pool fills at a rate of about 1" in 1 ½ hours.

HOW TO VACUUM THE POOL

Before vacuuming...

- With the net, remove all large debris like leaves, twigs, etc.
- Brush down sides of the pool and all loose debris towards the bottom of the pool

To vacuum...

- OPEN Vacuum valve
- CLOSE Skimmer valve
- CLOSE Bottom Drain valve
- Attach vacuum head to long pole
- Attach one end of the vacuum hose to the vacuum head and put it into the pool
- Carefully feed the rest of the hose into the pool to fill it with water - check free end of hose to be sure it's filled with water - you don't want to be feeding air into the line
- Once the hose is full of water, put the free end of the vacuum hose into the vacuum port located in the side of the pool near the ladder
- Vacuum starting from one point working your way all around the pool back to where you started

After vacuuming...

- CLOSE Vacuum valve
- OPEN Skimmer valve
- OPEN Bottom Drain valve



HOW TO CLEAN THE LEAF TRAP

Before cleaning leaf trap...

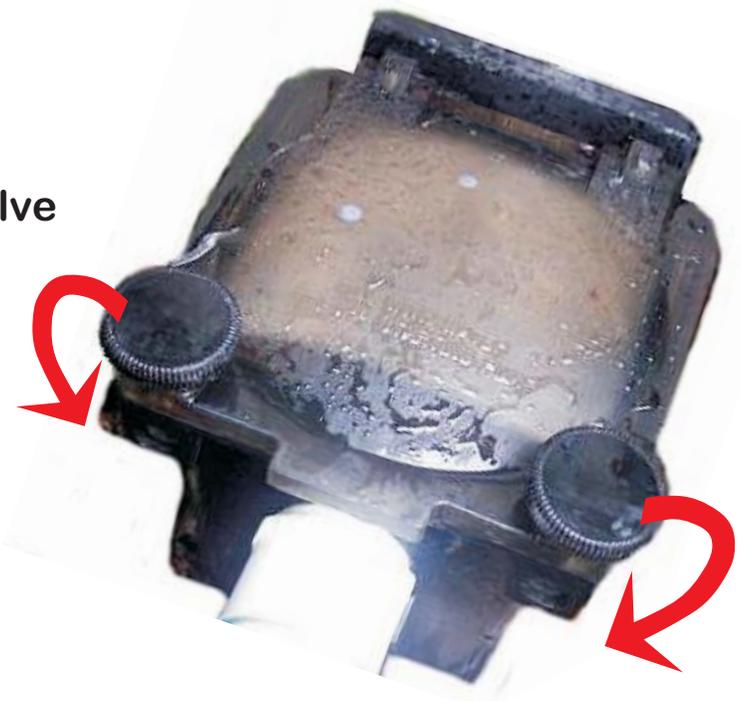
- Turn pump OFF
- CLOSE ALL valves... Bottom Drain, Skimmer, Return, Vacuum, Filter

To open leaf trap...

- Partially unscrew two top black corner screws - just enough to loosen them - DO NOT completely unscrew
- Rotate each screw out and downward to release front of leaf trap cover
- Open cover - water will pour out.
- Take white leaf basket out and close cover, rotate corner screws back up and tighten
- Clean out leaf trap completely of all debris
- Open lid again and return basket to leaf trap
- Close lid being careful to seat properly
- Rotate screws back up and tighten securely

After cleaning leaf trap...

- OPEN Return valve
- OPEN Filter valve
- OPEN Skimmer valve
- OPEN Bottom Drain valve
- Vacuum valve remains CLOSED
- Turn pump ON
- Check to see that no water is leaking from leaf trap lid



HOW TO BACKWASH THE FILTER

Normal filter pressure is 20 PSI. When pressure rises to 30 PSI, it's time to backwash the filter.

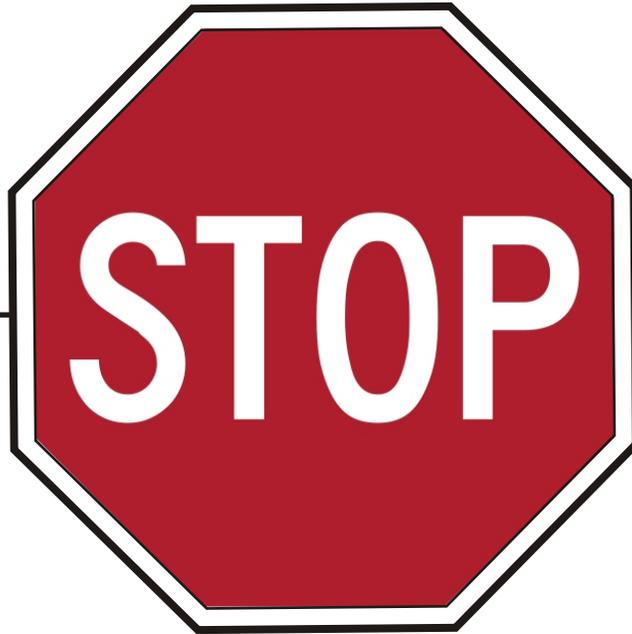
IMPORTANT: Always turn off wall switch before moving multi-valve on the filter.



To backwash filter...

- Pull the end of the flat blue hose outside the pool shed
- Turn the pump OFF at wall switch
- Leave the following valves OPEN when backwashing the filter: Return valve, Skimmer valve. The Vacuum valve and Bottom Drain valve can be open or closed.
- Turn the Filter Multi-valve (round black valve on filter dome) around to BACKWASH. You'll need to lift the lever a bit to rotate the valve.
- Turn the pump ON and run for 2 or 3 minutes - until water in viewer (just behind Multi-valve) runs clear
- Turn the pump OFF
- Turn the Filter Multi-valve to RINSE
- Turn the pump ON and run for about 30 seconds - until water in viewer (just behind Multi-valve) runs clear
- Turn the pump OFF
- Turn the Filter Multi-valve to FILTER
- Turn the pump ON
- Pull blue hose back inside





Take One Last Look Before You Leave

Make sure the valves are in the following positions:

- Filter Multi-valve should be turned to Filter 
- Return valve should be in OPEN position 
- Skimmer valve should be in OPEN position 
- Bottom valve should be in 50% of OPEN position 
- Vacuum valve should be in CLOSED position 

Turn around, go back, and be SURE that ALL valves are set to their correct positions.

Failure to do this could result in damage to the equipment or serious injury to yourself and others.