



Pool School

A (nearly) complete guide to owning a San Juan Pool

2023 Edition

You finally did it! You’ve invested in your own private backyard paradise. Whether you kept it simple or you’ve installed a no holds barred inground spectacle you no doubt have a little learning to do. How do I treat the water? What do they call this part? How do I clean the filter? Your list of questions is no doubt lengthy. Some pool builders do a better job than others in helping to prepare you for pool ownership. There are so many now things to learn and nuances to understand that it can be overwhelming and even when a pool builder does a good job at preparing you there’s just too much information to absorb at once. Our goal is to provide you with a little cheat sheet for pool ownership. This is a place you can reference for answers to questions you didn’t know you had, or were too embarrassed to ask.

How To Use This Book

Our goal here is to start with the most basic principles and help you to build a good understanding of how your pool works. This process will help you as the end user to understand some of the “why” behind the way things are done and provide a good foundation to build on as we begin to tackle some of the more advanced or difficult issues you may encounter as a pool owner. We encourage you to go through this little book step by step for the first time. It is laid out in such a way that each section builds on knowledge we’ve already covered.

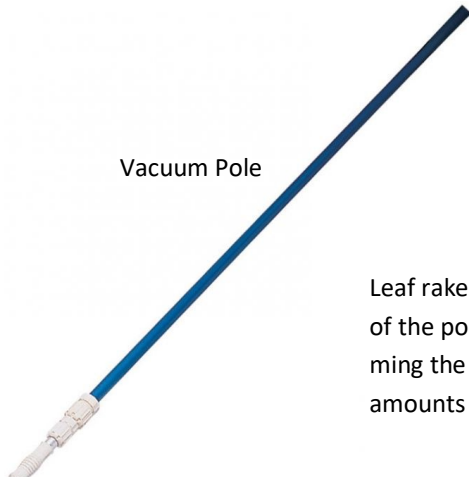
Any product that is pictured throughout this book will also have a link embedded. These links will take you straight to that product page on our web store. Where applicable we’ve also linked to manufacturer’s YouTube channels for demonstration videos.

We’d love your feedback. This is our first foray into this type of thing, so we have some growing to do. Have we left out something that you’d like to know? Do we need to cover a particular topic better? This is not meant to be the final solution to all pool questions, and we don’t want it to get too lengthy, but we do want to make sure to cover the big issues. Please let us know how we can improve.

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What is this?

Pools come with all sorts of new equipment and paraphernalia. Before you can understand how a pool works and how to take care of one it will be easier if you know what things are and what they are called. First, we'll go over the maintenance equipment you may have received.



Vacuum Pole

A vacuum pole can attach to a leaf rake, leaf net, vacuum head, or brush. This pole allows you to reach out to the middle or down to the bottom of the pool for maintenance or debris retrieval.

Leaf rakes allow you to remove debris from the pool cover, surface of the pool or bottom of the pool. Flat leaf nets are good for skimming the surface of the water, but not so hot for removing large amounts of leaves.



Leaf Rake



Brush

Pool brushes come in a few shapes and sizes. They are great for scrubbing down pool surfaces whether for stain or algae removal. They can also help with cover cleaning.

A vacuum head and hose work together. The head attaches to the pole and the hose attaches to the head. Once the hose is filled with water and connected to your pool skimmer you have created a moveable suction port that allows you to pick up debris all over the pool. Any debris collected will be trapped in the pump basket. (more on that later.)



Vacuum head & hose



Robotic Cleaner

A robotic cleaner is not necessarily part of your pool package, but is certainly worth considering. These cleaners are controlled by a power unit that plugs into a regular electrical outlet. An internal motor moves the unit around the pool while it scrubs and vacuums up debris. Everything it picks up gets trapped in its own filter basket so it doesn't go through your pool filter. Some models have timers built in. Others can allow you to steer the unit around the pool with your phone for spot cleaning. We have several models to choose from.

While there are many other items that you may have in your pool maintenance arsenal, these are the basics. (except for the robot) With these tools you'll be able to clean all of the surfaces of your pool.

Filtration System Components

A typical inground pool equipment pad can be seen in figure 1. In this section we'll get to know the name of each piece of equipment and talk a little about its role in your pool. Each item will be described in detail in later sections.

1. Three way valves, or as we commonly refer to them, Jandy valves, direct water flow. In this case it is located on the suction side of the pump and is used to select where the pump draws its water from. Users can select for water to come from the main drain or the skimmer of the pool. In normal use it is best to leave this valve in a position where it allows water to be drawn equally from both.



Figure 1

2. Filter Pump—this is the heart of the filtration system. The filter pump pulls the water from the pool and pushes it through the filter, heater and then back to the pool. A strainer pot on the front of the pump catches any large debris that gets past the skimmer basket.

3. Filter—In this picture we see a cartridge filter. Whether your pool utilizes a sand, cartridge or DE filter they all perform the same function which is to remove particles from the pool water.

4. Heater—If you have a heater it should be located directly after the filter and before any chemical dispensing systems. This ensures that the heater is getting the cleanest water possible and not getting any concentrated chemical solutions that could cause damage.

5. Check Valve—When a chlorinator or other sanitizer dispenser is located after the heater it is good practice to install a spring loaded, chemical resistant check valve. This ensures that when the pump is turned off none of the chemicals can back up into the heater and damage the exchanger.

6. Chlorinator—Your chlorinator may look different than the one pictured, but it's purpose is to create or inject sanitizer into the system to kill bacteria and other harmful organisms.

Poolside Components

Let's take a look at the pool and go through some of the components on this end of the system.

Skimmer - figure 2 - The skimmer is the rectangular opening on the side of the pool. Your pump will draw water in from here. Thanks to the surface tension of the water a "skimming" action is created which draws small debris and contaminants that float on the top of the water into the basket inside the skimmer. This basket should be checked and emptied regularly.

Main Drain – These are located in the deepest part of the pool. Depending on when your pool was built it may look like any of the drain covers in figure 3. This fitting is not a place where you can dive down and pull out a plug to drain your pool. Rather, this is another point from which the filter pump can draw water. Allowing suction from the main drain, if you have one, helps encourage more even circulation and water temperature throughout the pool.

Return—Often referred to as the jet(s) this is where the water returns to the pool after it has been filtered, heated and treated. Figure 4

Water features—This can include any number of items: slides, fountains, waterfalls, additional jets, etc.



Figure 2



Figure 4



Figure 3

How Does It All Work

Now that we know what all of the pieces are lets take a more detailed look at their purpose and how to use each one. We'll go through each one in the direction that the water flows through them.

Our pool waters journey begins at the skimmer and/or the main drain. Water is pulled into each of these openings and drawn through the underground plumbing back to the pump. Inside of the skimmer is a basket. This basket is designed to catch large debris such as bugs and leaves. Main drain covers are grated or perforated in such a way that large debris can't be pulled in.

In figure 5 you'll see arrows that indicate the direction of water flow. As the water approaches the pump it enters a Jandy valve or 3-way valve. As we learned earlier this valve can allow the pump to pull water from either or both the skimmer and main drain lines. Once water passes through this valve it enters the strainer basket of the pump. This basket is here to catch debris missed by the skimmer, or to catch debris from vacuuming with the skimmer basket out.

As the water exits the pump it is pushed through the filter, then the heater and chlorinator. After the chlorinator there may be additional Jandy valves to direct water to different water features, or it may go straight back to the pool through the return line.

Additional pumps for swim jets or water features will work in the same manner but without the filter or heater.

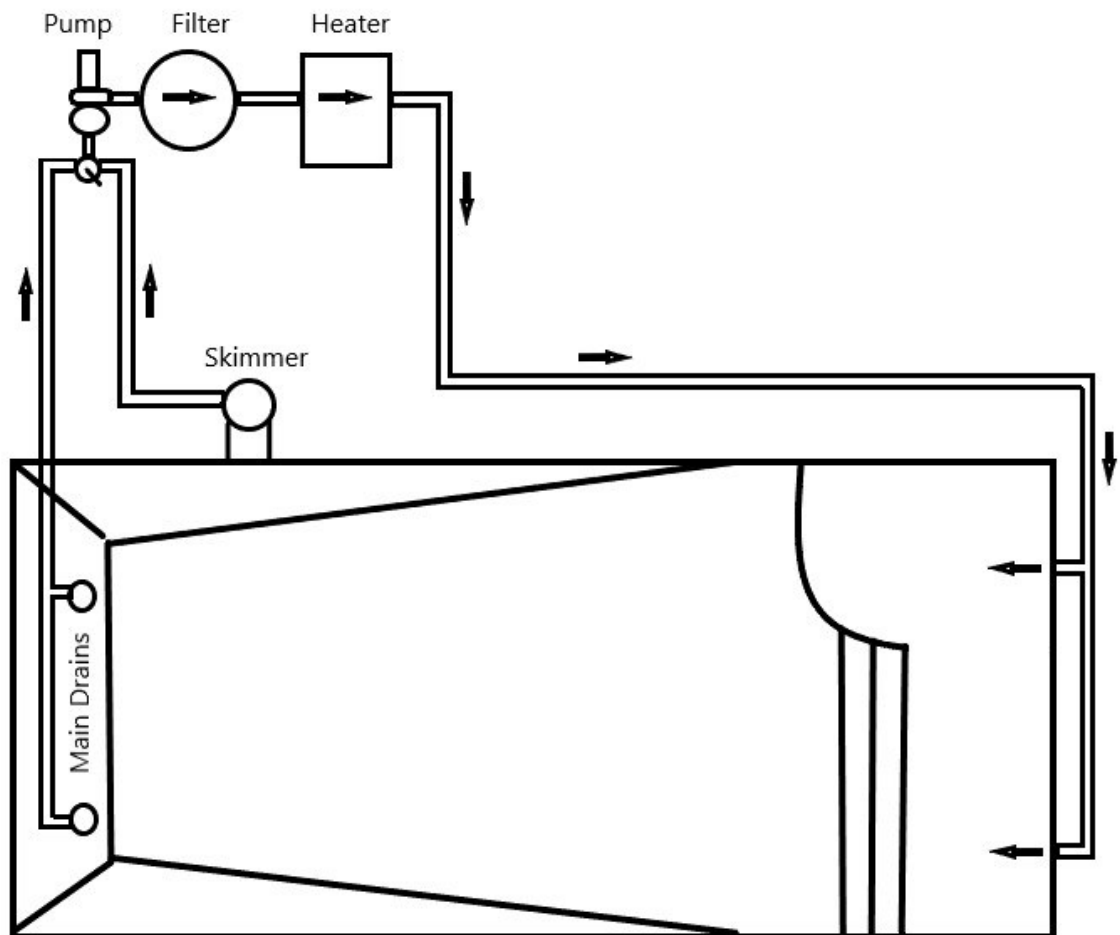


Figure 5

Components

In this section we'll break down each component in detail and explain how to use and care for it. We strive to use products that need as little maintenance as possible so that you have more time to enjoy your pool. Around the house a little preventive maintenance goes a long ways. When it comes to your pool, preventive maintenance is VITAL! It can mean the difference between a great weekend pool party or opening up a swamp on Saturday morning when you have guests on the way.

Jandy Valve



Figure 6

When a valve is located in front of your pump basket the water coming from the pool enters from the pipes on the left and the right. In figure 6 we see the valve in its normal operating configuration. Water enters from the left and the right and exits toward the pump. Each of the pipes are labeled in this picture. Your pool may be different. We often mark the lines with an "SK" for skimmer and an "MD" for main drain. When you grasp the handle of the valve you'll notice that the opposite end has "OFF" embossed onto the plastic. (figure 7)

Inside, the valve is shaped much like the handle portion. Directly under the curved end of the handle is a matching curved piece inside the valve body. As the valve is turned and the "OFF" covers all or a portion of one of the incoming pipes we are shutting off the water flow from that pipe. Figure 8 shows the main drain shut off. This is the direction that the valve would be turned to create more suction for vacuuming through the skimmer. In figure 9 we've shut off the skimmer so that the pump can run even if the water is below the skimmer. These valves are designed to make it difficult to shut off the port facing the pump since this would cause damage to the pump.

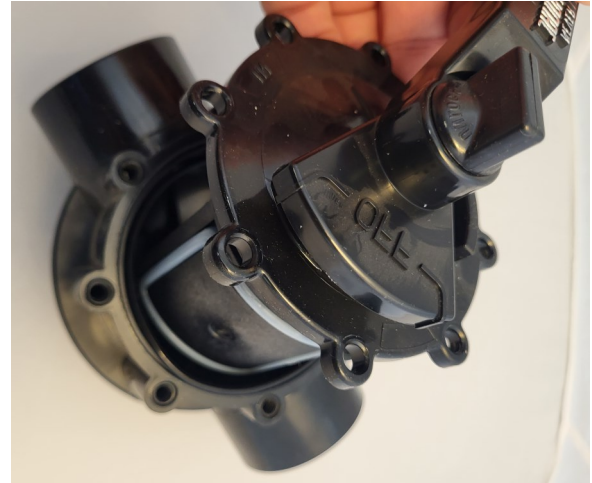


Figure 7



Figure 8



Figure 9

Filter Pump

A filter pump will have a strainer basket of some type under a clear lid. The lid allows you to see any debris that may have made its way to the pump. It is wise to at least visually check this basket weekly. If there is debris in the basket it should be removed.

Your filter pump may be operated by a pool control system or a simple on / off switch. In either case, simply shut off your pump and remove the lid and basket. Clean the basket and install the lid. **Caution!** It is important to put the basket back in correctly. If the basket is not in properly in place the pump will not move water and can cause damage.



Figure 10



Figure 11

Take note of the notch in the yellow circle in figure 11. This notch in the basket corresponds with the small nub on the back of the pump pot as seen in figure 12. These must align for the basket to go down into the pump to the correct depth. If these are not aligned the lid will not seal down.

When preparing to start the pump back up always make sure there is water in the pot. When in doubt, grab the hose or a bucket and fill the pot up before putting the lid on. This will help to ensure that the pump primes and begins moving water correctly.

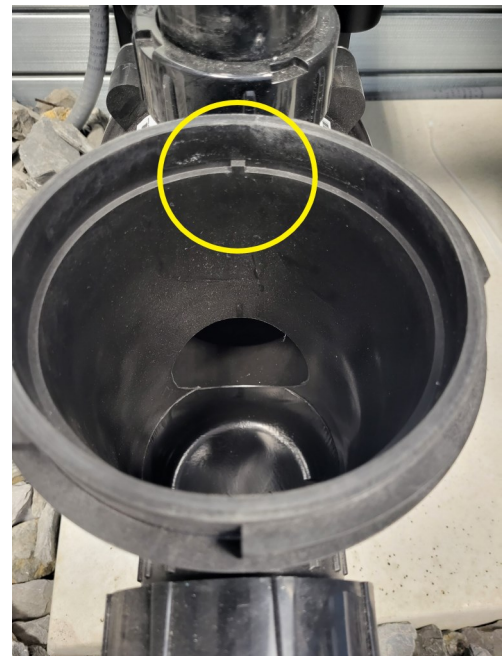


Figure 12

Filtration

Pool filters come in many shapes and sizes. You may have one of three types of filters: Sand, Cartridge, or D.E. Each type has its pros and cons. We'll take a look at each of these filter types.

Sand filters are by far the most prevalent filter in use today. These filters employ anywhere from 100-900 pounds of specifically sized sand to filter out particles in your pool water. Once water fills the tank, the only way out is for through a series of "fingers" or laterals at the bottom of the filter. These keep the sand in the filter but allow the water to pass through.

Water is filtered as it passes through the sand, then it exits up through the center pipe and back out to the pool. As with all filters, when dirt accumulates the pressure reading on the gauge will increase and the water flow to the pool will diminish. Figure 13

INCREASED pressure reading or LOW FLOW are signs that it's time to clean the filter. In a sand filter this is called "backwashing". Water flow for backwash can be seen in figure 14. Notice the difference? We're using the water to flush dirt out of the sand and out to waste.

Step 1. Turn off the pump

Step 2. Rotate the multi-port valve on top of the filter to "backwash"

Step 3. Turn pump on. We'll let the pump run until the water exiting the backwash line runs clear (or nearly). This could take several minutes.

Step 4. Turn off pump and rotate valve to rinse.

Step 5. Turn pump on and rinse the valve for 10-15 seconds.

Step 6. Turn the pump off and put valve back to filter, then turn pump on.

Pros:

- User friendly
- Easy to clean
- Cheap(er)

Cons:

- Sand needs changed ever 2-3 years and it's a messy job.
- Doesn't filter as small of particles out as the other filter varieties.
- Every time you backwash you waste water.
- When internal parts fail you end up with sand in the pool.
- Only capable of filtering down to 20 microns at best.

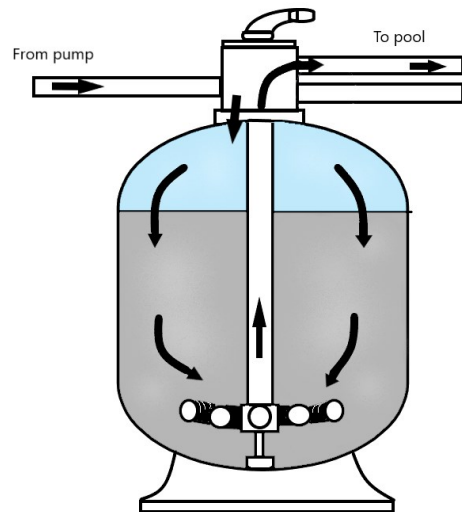


Figure 13

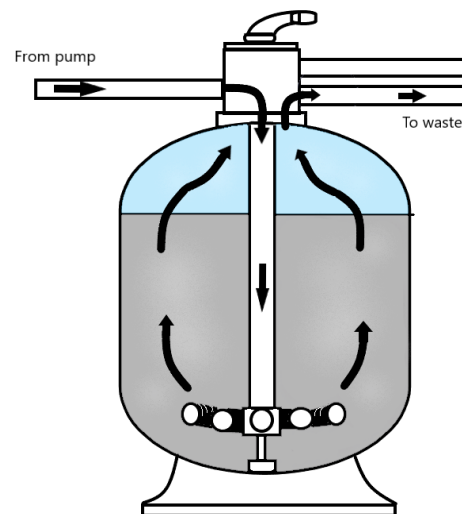


Figure 14

Cartridge Filter

A cartridge type filter employs a fabric element(s) to trap dirt and debris. Much the same as a sand filter, water enters the filter from the pump and is pushed through a media which traps the contaminants. These filters are sized in square feet. This measurement is the actual area of the filter material if you unfolded it all. We typically employ a CV340 filter which has 340 square feet of filter area. Compare that to a sand filter which normally has 2-6 sq. ft. of filter area! Not only does a cartridge filter employ a much larger area, but it can filter down to 10 microns.

Water enters the filter from the pump and fills the tank. As the tank fills and the pressure builds the water has only one path to escape. In order to exit back to the pool the water must pass through the filter fabric and upward through the manifold, then out the discharge. You can see how the water moves in figures 15 & 16.

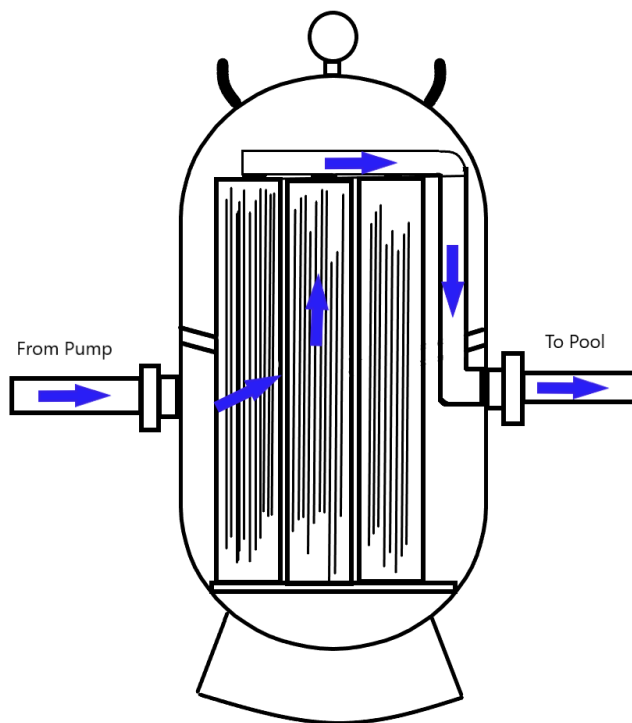


Figure 16

On the right you can see a new filter cartridge. Dirt is trapped inside the pleats and on the outer surface of the fabric. It will be necessary throughout the season to remove these filters and clean them from time to time. If you notice the pressure gauge is 10 # or more over the starting point or you're experiencing diminished flow from the returns or jets these are all indications that the filters need cleaned or replaced.

Cleaning the filters is not a difficult process, but it will take you some time. We strongly recommend having a second set of filters on hand so that you can swap out for a clean set. This will allow you to clean your dirty filters well without the pressure of getting the pool back up and running. Let's look at what it takes to get this job done.



Figure 15



Figure 17

Cleaning Your Filter

What you'll need: 9/16" wrench or deep socket

Garden hose with spray nozzle

Large trash can

Filter cleaner or chlorine

Step 1. Shut off the filter pump. Not only should you shut off the pump from your pool control system, but it's a good idea to turn off the breaker as well. This will ensure that the pump stays off even if a timer in your control system tells it to turn back on while you're working.



Step 2. If your filter has a bleeder valve, open it. This will allow for air to enter the system which will make disassembly easier. See figure 18

Step 3. Remove the clamp that holds the two halves of the filter tank together. Loosen the clamping bolt. For Jandy filters this will require a 9/16" wrench. Remove the clamp assembly and set it aside.



Figure 18



Figure 19



Figure 20



Figure 21

Step 5. Remove the manifold from the top of the filters. It is tight fitting and may take some rocking back and forth to break it loose. Figure 22



Figure 22

Step 6. Remove each filter for cleaning. In a pinch this can be done with just a garden hose and a spray nozzle. If the filter is heavily soiled it may require a dip into a garbage can with super chlorinated water. Even if your filter looks clean it is a good idea to use a filter cleaning solution a couple times a year. These chemicals help to break down the oils and grease that clog the pores of the filter fabric.

Spray at a downward angle while moving up and down all the way from top to bottom. Debris will be flushed out the bottom. Do this around the perimeter or each filter.



These filters are soaking in a chlorine solution before being sprayed off.

Figure 23

Step 7. After filters are suitably clean, check to make sure the bottom half of the filter canister is clean before re-installing the filters. You can remove the drain cap and hose it out or simply wipe it down. Place the filter holder back in place at the bottom of the tank as shown in figure 24.

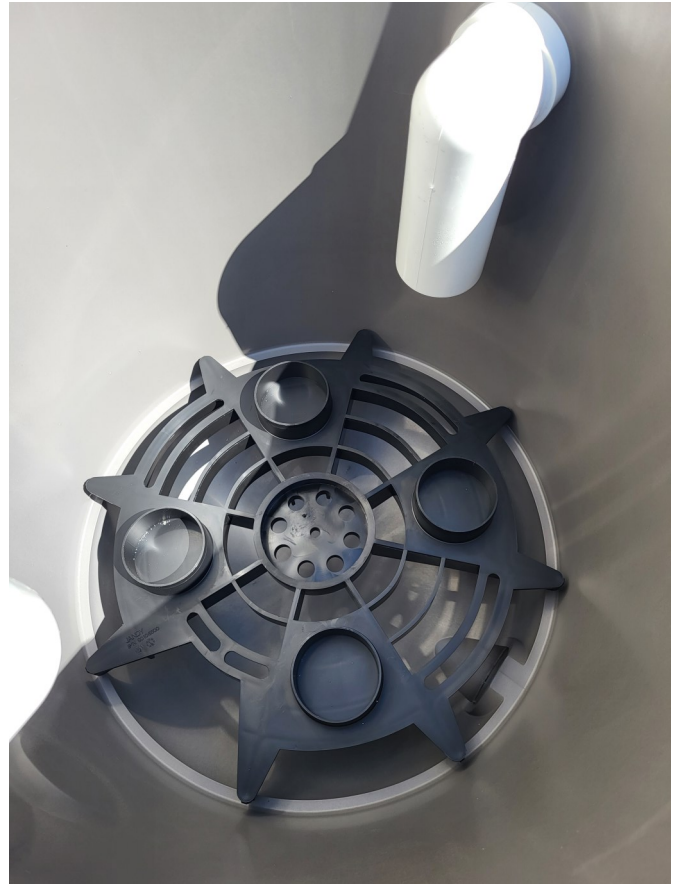


Figure 24

Step 8. Ensure that the filters and manifold are in place. The filters will fit over the round knobs on the bottom stand. Align the manifold and insert the air breather tube down the INSIDE of the pipe. Press the manifold down over the pipe and align the filters. Be sure to seat the manifold all the way down onto the filters or the lid will not seat all the way.



Figure 25



Figure 26

Step 9. Wipe off any sand or grit that is on the tank o-ring. Make sure that the o-ring is sitting in place on the "shelf" all the way around the tank. Failure to have the o-ring in place properly will result in leakage when the pump is turned on. Figure 29



Figure 29

Step 10. Install the filter tank top and place the clamp around the middle ribs. Pay attention when inserting the clamp bolt. (figure 28) The brass knob aligns vertically in the slot. This allows it to sit in place better and allows extra length to attach the nut. Tighten the clamp bolt until the ends of the clamp are nearly touching. See figure 30.



Figure 27



Figure 30



Figure 28

Step 11. Turn pump back on and check to make sure you have no leaks.

Filter Care And Replacement

Filter cartridges, just like sand in a sand filter have a finite life. With proper care and cleaning a set of filters can last 2-3 years.

How do you know when it's time to replace filters? Figure 31 shows us a closeup of a brand new filter cartridge. Notice how the fabric is nice and white, the pleats are separated, folds are crisp, and the nylon bands are in place and holding the pleats evenly spaced? Compare that with the filter in figure 32. This is an extreme example, but you can see how the fabric is fraying and breaking down. The nylon bands are broken or missing. This allows the pleats to collapse which diminishes the filter area. If your filters look even remotely as bad as these it's time for replacement.



Figure 31



Figure 32

Cracked filters, while still functional will allow dirt and debris to pass through that would otherwise be captured by the filter.

Missing/ broken air breather screens or tubes will also allow particles through the filter system.



Figure 33

D.E Filters

We won't spend a lot of time or effort here. Diatomaceous Earth, or DE filters are no longer terribly common. They are nearly a cross between a sand filter and a cartridge filter. Inside the filter compartment there are "grids" or elements. With the pump running you add a pre-measured amount of DE through the skimmer. DE coats and sticks to the grids. As water passes through the filter it is forced through these coated grids. While these filters can trap particles as small as 2 microns they are very labor intensive and DE powder is bulky and dangerous if inhaled. There are alternatives on the market, but they don't make these filters any less labor intense.

When a DE filter gets dirty, just like a sand filter, we backwash the filter. This expels most of the DE to waste, but to really clean the filter we have to remove the top and take each grid out and clean it. Reassemble the unit, then re-coat the grids. While these filters do a great job they are not for your typical homeowner.

Pros:

Filters out very small particles which results in clearer water.

Cons:

Labor intensive to clean
DE is dangerous and bulky

Heater

As we move through our plumbing system the next item we come across is our heater. Most pool heaters ALWAYS have water running through them. By-pass systems can be plumbed in to allow water supply to the heater to be shut off, but they involve three valves that must be turned to the correct orientation to prevent damage to the heater, pump, or even the plumbing system.

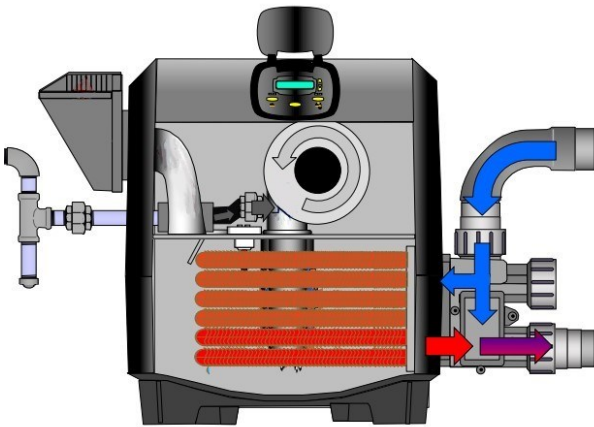


Figure 34

Put simply, cold water enters the heater as illustrated by the blue arrows. A heat exchanger carries the water around or over the flame. Warm water exits the heater and goes back to the pool. Only a portion of the water gets heated each time through the heater. Any water that cannot fit through the heat exchanger bypasses and gets mixed back with the warm water and sent back to the pool.

Heater Care

Modern heaters don't require much in the way of preventive maintenance, but **proper pool water chemistry is vital** to the life of a heater. Our service department works on dozens of heater each year and the most common failure is due to poor water chemistry. How does my

Water chemistry affect my heater? Water is always flowing through your heater. In salt water pools we already start out handicapped since the salt makes the water a little more corrosive. As we'll see later when we talk about water chemistry, the chlorine we create in salt water pools has a very high pH. This high pH can promote scaling inside of the heater which reduces the water flow and causes overheating.

On the opposite end of the spectrum we have pools that employ chlorine tablets to sanitize the water. This type of chlorine has a very low pH. Low pH means the water is more acidic and can erode the copper away inside of the heater and cause leaks. High sanitizer levels are also hard on the copper inside of the heater. Since a new heater costs upwards of \$4,000 it is well worth the time spent to test and balance your water regularly to prolong the life of your heater.

Heater Diagnostics

Let's go over some quick things to check before you place a call for service. Your heater display will show you an error message in most cases when the heater won't work. Please take note of exactly what this message says. Some of them are covered below with possible remedies, but knowing exactly what the error is will help your pool servicer know how best to help you.

Under normal operating conditions your heater may display a message like the one in figure 35.

At the top it says that the heater is set to heat. On the bottom left it shows the current water temp, and on the right it shows us the set temperature. If your heater is being remotely controlled you may see this message alternate with "Remote T-stat enabled".



Figure 35

Modern heaters normally have two buttons "Pool" and "Spa". This has no bearing on whether you have both of these bodies of water. Each button just represents a different set point for the thermostat. You could set the "pool" button to 75° and the "spa" button to 85°. When you activate a particular mode the heater will heat to that set point. If your pool employs a remote control system it is best to leave the heater active in the "pool" mode and not adjust the temp at the heater after initial setup.

Remote T-stat enabled: signifies that your heater is being controlled. The heater will still display error messages, but it is being told by an outside signal when it needs to turn on and off. When this setting is enabled the set temp of the heater should always be set several degrees higher than you would normally want the water temp to allow for any variance between the reading of the control system and the heater.

Gas heater is off: This is exactly what it sounds like. Press the pool button to turn the heat on.

Check Flow: Check to ensure pump is running and filter is clean. When in doubt, remove filters or put your sand filter in "Recirculate". If this corrects your flow error, clean the filter(s).

Fault: There are a variety of fault messages. Most messages that begin with "Fault" will require professional diagnostic.

Sanitizing Systems

There are a multitude of sanitizing options and dispensers. Since chlorine tablets and Salt water chlorination are the most prevalent we'll take an in depth look at these. In all cases a chemical feeder should be the last thing in line before water returns to the pool. This is to prevent damage to the heater or other components.

Tablets

Chlorine tablets are made of a highly compressed mixture of binders and either tri-chlor or di-chlor. These can be installed in a feeder like the ones pictured below. When the pump is turned on the feeder fills with water and the tablets begin to dissolve. A feeder will have a dial that allows the user to control the flow of that concentrated chlorine solution back into the return line. This allows you to adjust your chlorine level by turning the dial to allow more or less of the solution back to the pool.



QUICK TIP:

**DON'T PUT TABLETS IN THE SKIMMER!
CONCENTRATED CHLORINE IS REALLY
HARD ON THE PUMP AND HEATER.**

Salt Water Chlorination

If I had a nickel for every time I've heard "We don't have chlorine, our pool is a salt water pool" or any of the numerous variations of this idea, I could retire. While we're going to get "out in the weeds" here shortly, we should first discuss some misconceptions about "salt water pools".

Salt water pools ARE chlorine pools. Chlorine is simply being produced rather than purchasing tablets to dissolve.

Salt water pools are not maintenance free. Salt water chlorinated pools are just like any other pool. Chlorine levels, pH, Alkalinity, and stabilizer levels all still need to be monitored.

Whether this misinformation comes from the web or simply a pool builder or servicer that cannot articulate the process clearly; the idea that salt water pools and chlorine pools are different needs to be done away with. **Salt cannot sanitize your pool!** Salt is comprised of NaCl. It is a simple 1:1 ratio of Sodium ions and Chloride ions. Water passes through the chlorinator cell as the pump runs, and a small electrical current is applied to the thin metal plates in the cell. As a result of this process Hypochlorous acid (Chlorine gas) is produced. There are other by-products of salt water chlorine generation that cause the pool pH to increase. Once this chlorine does its job and destroys an organism it can go back through the whole process over again. This provides your pool with a nearly limitless supply of chlorine.

Most electronic chlorine generators are self reversing. As part of the chlorine production process scale can build up on the plates inside of the cell. Manufacturers design a timer that reverses the polarity of the plates to help prevent scale build-up. While this is a huge help your cell should still be checked every month for scale build-up. Some manufacturers even display a reminder for you to visually inspect the cell.



Turbo Cell



Cleaning The Cell

If you notice scale build-up on the plates inside your cell hopefully it doesn't look as bad as the one to the left. You should be able to see all of the plates and see through the unit to the other end like the one below. If there are scale deposits the cell will require a mild acid wash. [Hayward provides a great video tutorial](#). We'll summarize the process below.

Tools:

[Pliers](#) (Oil filter pliers work great)
Protective eyewear
Cleaning stand
Acid or cell cleaning solution
Water
Bucket

- Shut the system off
- Remove cell from plumbing
- Install cleaning stand (figure 36)
- Fill with cleaning solution or 1:4 Acid to water mixture (don't do this on cement)
- Unit will bubble and fizz as scale is dissolved
- Rinse the cell and any solution that has spilled.
- Re-install cell and start system.

Chlorinator cells are expensive, so it pays to care for them properly. Check the cell for scale build-up regularly and maintain a proper pH balance in your pool to help limit scale build-up.

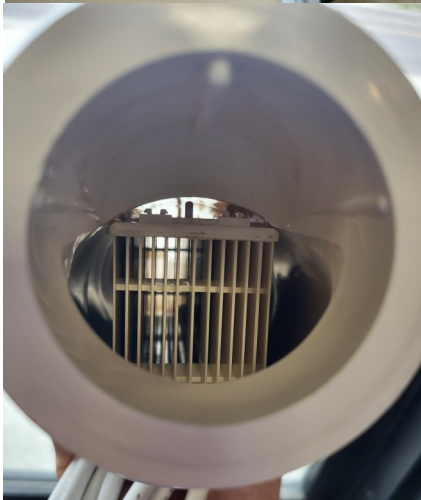


Figure 36

Chlorinator Operation—OmniLogic

While some of the controls can be intimidating we'll do our best to break things down here to show you how to operate the system properly. All of our pools are set up with one of two different control systems. Your pool may have either the Pro-Logic system or the Omni-Logic system. First, let's look at the Omni system.

Omni-Logic provides control of your pool from the palm of your hand. You can access the pump, filter, heater, and chlorinator settings from the app anywhere you have an internet connection. In figure 37 you'll see the home screen with the temperature on the left side and some option tiles on the right. This screen will look different on the mobile app vs the wired wall remote at your home. If you press the temperature you'll see the screen options change. Tiles for the filter pump, heater, chlorinator, and other

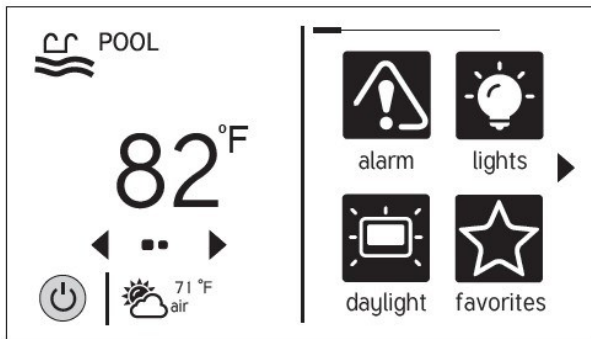


Figure 37

Accessories will appear. Press the chlorinator button and you'll see the screen located in figure 38. In the upper left there is a toggle to turn the chlorinator on/off. Output percentage slider is in the center. On the right we have a clock icon which allows us to set schedules. Just below that is the superchlorinate button (SC) and the hamburger menu with the magnifying glass is the diagnostic menu. All of these items are pretty straight forward on their own, but we'll go over some ways to make this system work the best for you. **When making adjustments be sure to hit the check mark in the bottom right to save changes.**

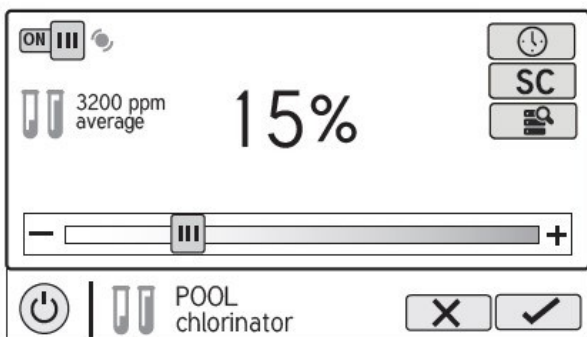


Figure 38

This system works on a time based percentage. In figure 38 you'll see the chlorinator set for 15%. Essentially this means that we are creating chlorine 15% of the time that the pump is running. This can be set anywhere from 5-100%. Running your system based strictly on percentage will work just fine, but in our experience the cell tends to scale less if the output percentage is set for 25% or higher. "That's way too much chlorine for my pool" you say? Let's look at how to work around this problem with scheduling.

Scheduling our chlorinator run time allows us to set the unit to a higher output percentage which helps prevent excess scale build up. When we think about adding chlorine to the pool we want to take into account the entire pool "picture". Pool usage is greatest in the afternoon. Sun, which is an enemy to your chlorine, is hottest in the afternoon. If we're going to schedule our chlorine production we should do it in a way that is as beneficial as possible. We prefer to set a couple of schedule times. Noon to 3 and noon to 5 work pretty well. Start with the percentage output at 30% for both of these times. You should only have one of these schedules enabled at a time. These schedules can act as "high" and "low" chlorine demand schedules. They will each generate chlorine at the same rate, but for different durations. If you find that your chlorine level is testing high simply reduce the amount of run time or reduce the percentage output. (don't drop below 25%) If you are consistently running a lower than desired chlorine reading you can simply increase the run time or output percentage.

Super Chlorinate (SC) is just like setting your percentage output to 100%, but it reverts back to your normal setting or schedule after a set number of hours. When you press the SC button you'll be given the option to adjust how many hours it runs. SC works very well for boosting chlorine levels before or immediately after a big party or high bather load event.

Diagnostics are there for when you call for service. Your pool servicer may ask you to hit that button and tell them what numbers appear on the screen. This can help with diagnosing possible failures or water issues.

Chlorinator Operation—Pro-Logic

Does your pool control look similar to the one in figure 39? Then this section is for you!

In order to adjust your chlorinator let's press the menu button until you see "settings menu". From here, hit the left or right arrow buttons until you see "Chlorinator %". You may use the up or down arrows to alter your chlorinator output. While in the settings menu you may also adjust your heater set temp, time, and activate super-chlorination.

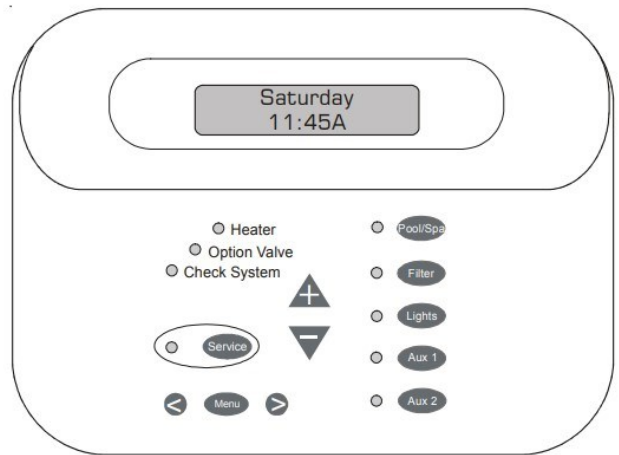


Figure 39

Pool Control Best Practices

Both types of pool controllers we employ are fairly intuitive and easy to use. They will each allow you to set timers for your pump and other auxiliary pumps as well as activate your pool lights and display diagnostic or error messages. If your screen is red or there is a red light present on your wall remote that indicates a serious issue that needs your attention. Your app or wired wall remote will scroll through the current system messages and indicate what the issue is.

Please take note of any and all error messages before calling in for service.

Timers—If your pool has a two speed filter pump it is best to set your system to run the pump on low speed for nearly 24 hours a day. Our standard is for the low speed to run for 22 hours and the high speed to run for 2 hours. You may run your pool for less than 24 hours, but keep in mind that the more times we pass the water through the filter, the easier it is to care for. If you wish to cut your run time, make sure that the pump is running through the heat of the day when pool use and UV rays are at their highest.

Auxiliary Pumps— If you have swim jet pumps we encourage them to be set on a timer as well. This will help prevent water from sitting stagnant in the pump and lines. With an Omni system you can set this timer for 5 minutes or less. On the Pro-Logic system the minimum is 15 minutes.

Common Messages

Freeze Protection— You may see this message early in the spring or late in the fall. Your system is designed to turn on pumps to prevent freeze damage. Pumps will return to normal operation once the outdoor temp warms above the threshold. If you see a message about freeze control in the summer please call for service.

Inspect cell— This message is normally followed immediately by "press + to reset" this is a timed reminder that goes off every 500 hours of operating time. When this message appears you should follow the steps on page 10 and do a visual inspection of the turbo cell and clean it if necessary. After confirming the cell is clean wait until the message appears "press + to reset". Press and hold the + button and the timer will reset.

Chlorinator off low temp— Your generator has certain parameters that must be met in order for it to operate. Water temp must be above 55° for the salt calculations to work correctly. Once the water is heated above 55° this message will disappear. If you see this message mid-season with warm water you should call for service.

Water Care 101

To most new pool owners this is the most intimidating aspect of pool ownership. We'll do our best to break it down and make it as simple to understand as possible.

Safe, comfortable water is our goal. We accomplish this through proper sanitization and balance of the water. Figure 40 shows the ideal range for each test parameter as well as testing frequency. We'll examine each parameter, how to adjust, and how they interact in the following pages.

	Test	Range	Adjustment
W E E K L Y	Free Chlorine	1.0—3.0 ppm	Adjust output setting on chlorinator up or down to achieve a reading in range.
	pH	7.2-7.6	Add ph increaser to increase level. Muriatic acid or ph decreaser to lower reading.
	Total Alkalinity (TA)	80-120 ppm	Alkalinity increaser Muriatic Acid to decrease
Q U A R T E R L Y	Calcium Hardness (CH)	200-400 ppm	Increase with Calcium Hardness increaser. Decrease = partial drain
	Cyanuric Acid (CYA) Stabilizer	60-80 ppm	Add stabilizer / conditioner to increase. Decrease = partial drain
	Salt	2700-3400 ppm	Never add salt without a third party test. *
	Metals	0 ppm	

Figure 40

While most literature and lots of other folks will start this conversation with testing your chlorine we'll save that for later. We want to start with the most important test / reading, and that is your pool pH. This is a measure of how acidic or basic your water is. When we go down the pH scale this means our water is more acidic. Acidic water is more corrosive and harmful to pool equipment and can be uncomfortable to swim in. If your pH is too high it will increase the likelihood of scale formation and reduce the effectiveness of your sanitizer. **The most important thing to understand is the relationship between your pH and your chlorine.** Once you grasp this it will make a world of difference in your approach to water chemistry. Your chlorine has an inverse relationship with pH. This means that as pH increases the effectiveness of the chlorine decreases and as pH decreases the effectiveness of the chlorine increases. The graph in figure 41 depicts how this works.

Let's say you test the pH of your pool and it is 8.0. This means that your CL has only 24% of its killing power! After looking at this graph you may ask "why don't we keep the pH at 6 so that the chlorine is more effective?" Mostly, because we still want our skin to stay attached. Seriously, since the pH of the human eye is near 7.0, we need to stay close to that to prevent skin and eye irritation. In essence, we are playing a balancing act where our pH is in a range that is suitable for our bodies, but still allows for fairly effective chlorine.

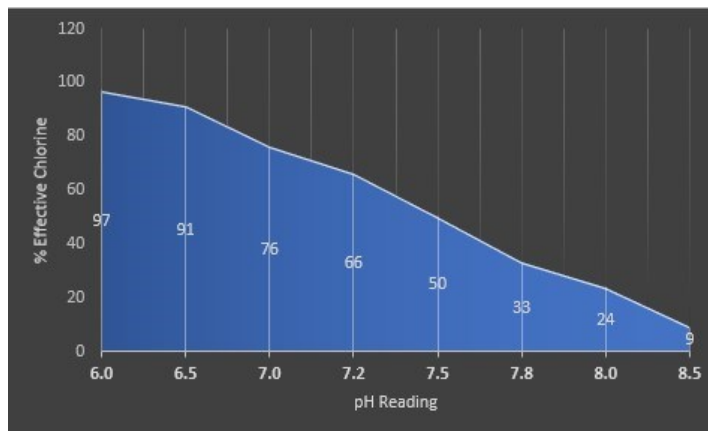


Figure 41

How should this information affect your water treatment? Well, when we test the water and see that we have very little chlorine and that the pH is 7.8. Most of the time our first instinct is to add chlorine or shock the pool. When we do that without addressing the pH we're putting in chlorine that is only going to have 33% of its killing power. If we first adjust the pH down to 7.2 we can add the chlorine and it will have 66% effectiveness. That's a 100% increase in its potential to kill algae and other harmful contaminants. Adjusting the pH first makes your chlorine go "further" and saves you \$\$.

Adjusting the pH is fairly simple. With salt water chlorinated pools the pH tends to run high, so having to decrease it is very normal. We'll need to know the volume of your pool in gallons. (see figure 42) 16 oz. of muriatic acid will lower the pH by .3 in a 10,000 gallon pool. [Here is a handy calculator](#) that may help. **Simply pour the dose in to the pool as you walk around the deep end.** We generally find that the calculators are a little conservative, so you may add the dose and test again in 30 minutes or so and add more if necessary.

Raising the pH will involve "pH increaser" or soda ash. The dosage is identical. 1lb of soda ash per 10,000 gallons. Just like with reducing the reading we'll want to give water time to circulate and then test again to ensure our adjustment was adequate. Low pH is normally only an issue in pools that are sanitized with tablet or powdered chlorine.

Volume Calculator

Length x Width x
Average depth x 7.5 = Gallons

Figure 42

What things affect the pH? A pool's pH is affected by a lot of factors.

Type of sanitizer, bather load, rain, aeration and other chemicals can all change the pH of your pool. This is why it's important to monitor pH levels routinely.

Tips: Don't be surprised if you use nearly a quart of acid per week to keep your pH in the correct range.

Aeration increases the pH of a pool. If your pool has bubblers or swim jets keep in mind that they will contribute to higher pH.

pH increaser and acid are two of the cheapest pool chemicals you'll buy. Using them to keep your pH balanced will increase the effectiveness of the expensive chemicals.

Total Alkalinity

TA is the measure of water's ability to neutralize acids or to resist changes in pH. A dog on a leash is a great analogy to help illustrate this relationship. Think of pH as the dog and TA as the leash. When TA is in the correct range (80-120ppm) it's similar to shortening the leash to keep the dog (pH) in a desired area.

How do I adjust TA?

Low alkalinity is a pretty straightforward fix. You'll find Alkalinity increaser at pool supply stores. Follow the dosage instructions on the package.

Reducing alkalinity is a little more difficult. It involves the same muriatic acid we use to lower pH, but a slightly different method. **Start by shutting the pump off** and letting the water still completely. Late evening after swimming is done would be a great time for this. Once the water is still, **add the prescribed amount of acid in one spot in the deep end** of the pool. 26 oz. of acid will drop TA by 10 ppm in a 10K gallon pool. If you need to make a larger adjustment (20+ ppm) it would be best to make that in two different doses on separate days. After you dose the pool **let the pump remain off for 1 hour**. Test again after the water has circulated for several hours before determining whether another dose is needed.

After making TA adjustments it's a good idea to check the pH to make sure we haven't altered it too much. In rare cases where you have very high TA and low pH it is best to raise the pH before adjusting TA. Likewise if you have very high pH and low TA it's best to adjust pH to within range first. These are rare circumstances that normally derive from the source water rather than pool care.

Chlorine

Sanitizing your pool water is a must and chlorine is the easiest, most available product to perform this task. There are three types of chlorine readings we need to understand. They are free chlorine, combined chlorine, and total chlorine.

Free chlorine (FCL) represents the amount of chlorine that is available to kill harmful organisms in your water.

Combined chlorine is a measure of chlorine that has already "combined" with some contaminant in the water. This creates a chloramine. This is typically what produces the chlorine smell when you walk into a hotel pool. That's an indication that there is an elevated level of combined chlorine.

Total chlorine (TCL) is the sum of the other two readings. (FCL + Combined = TCL) ideally, this reading should only be .5 ppm higher than FCL.

Most test strips will only have one pad for reading your chlorine. This pad shows the FCL (free chlorine) reading. In figure 40 we learned that this reading should be between 1-3 ppm. In a clean, clear pool this reading is normally sufficient. If you need to



Figure 43

Increase or decrease your chlorine output refer to pages 9-12 and follow the steps to change the settings on your particular chlorinator or feeder.

If you are fighting water clarity or chlorine demand issues, a 6 way test strip may be useful. This strip will test for FCL as well as TCL. When TCL is more than .5 ppm higher than FCL this means we need to "shock" the pool. Shocking a pool refers to the process of breaking used chlorine free from it's bond with a contaminant. **How do I shock my pool?** There are several types of pool shock. (Liquid chlorine, sodium dichlor, calcium hypochlorite, and potassium monopersulfate) We'll look at the benefits of each.



Liquid Chlorine is the most rapidly available shock. Since it is already in liquid form it does not have to dissolve to do its job. However, since the pH of liquid chlorine is 13 it is best to only use it if your pH is already low.

Sodium Dichlor shock typically comes in one pound bags which is convenient since a normal dose is 1# per 10K gallons. Dichlor is pH balanced and can be found in formulas that do not require users to pre-dissolve the powder. While it is pH balanced it provides only 50-60% available chlorine per pound. It may be the more expensive shock, but it dissolves quickly with little cloudiness and does not affect the pH. Di-chlor also contains stabilizer (CYA) which may be a good thing or bad depending on your current stabilizer level. Clean shock is our current dichlor shock.



Calcium Hypochlorite is cheap, and very effective. Some formulations do not require users to pre-dissolve. While this shock has a pH of 10.4-10.8 it boasts an effective 70+% active chlorine per pound. Cal-Hypo takes longer to dissolve in the pool than di-chlor, but can cause cloudiness due to the calcium content. This is the most widely used form of shock / oxidizer. Turboshock comes in 1# bags and 5# tubs.



Potassium Monopersulfate does NOT contain any chlorine. Typically referred to as a non-chlorine oxidizer (NCO), this product uses active oxygen to break down contaminants in the water. It dissolves very quickly, and since it contains no chlorine it cannot create additional combined chlorine. NCO does not contain stabilizer and has a fairly neutral pH, so there are few side affects. This product should be the choice when you already have 1-3 ppm of free chlorine in the water, but still need to shock the pool due to a higher TCL reading.

Stabilizer

On a test strip this could be labeled as cyanuric acid, CYA, or stabilizer. All of these terms refer to the same reading. Stabilizer can act as a pH buffer much like total alkalinity, but it's primary purpose is to act as sunscreen for your chlorine. Ideally, we want a stabilizer level between 60-80 ppm. A low stabilizer level will allow the UV rays of the sun to destroy your chlorine. High stabilizer levels can be very problematic. Think of stabilizer as a cocoon for your chlorine. It's there for protection, but if that cocoon is too thick the chlorine cannot "bust out" and do it's job. This is the effect that high stabilizer levels have.

You should test your stabilizer level at the beginning and maybe once or twice throughout the swimming season. If your stabilizer level is just a little low at the beginning of the season it is possible that you'll achieve a proper level simply through using stabilized shock (dichlor) In the event that your stabilizer level is very low or non-existent simply purchase stabilizer (Conditionier) and install it according to the label directions. If using a powdered conditioner be sure to add it VERY VERY slowly through the skimmer with the pump running.

To remedy a high stabilizer level there is only one option. Dilution. There are products on the market that claim to lower your stabilizer (CYA) levels, but they don't work well. As one of the largest pool chemical manufacturers in the world told us at a training seminar, "if there was a product that did that we would be making it". With the use of cartridge filters and the lack of a backwash valve the easiest way to accomplish this it to set your pool cover pump on a step and pump water out of the pool in order to add fresh water back in.



Calcium Hardness

Seen as CH on most test strips this reading is exactly what it sounds like. It tells us how hard our water is. This is another test that can be done just a couple times a year. Ideally, it should be between 200-400 ppm. In our area this usually is not a problem. If anything, our water errs on the high side. Should it be too high there are really only two options. Drain water out and add softer water to the pool, or try a pool [floculant](#) to bind the calcium together and drop it to the bottom of the pool where it can be vacuumed up.

Metals

These normally include copper, iron, and manganese. While in most cases these minerals are not visible in your pool, they can cause staining and discoloration. We recommend the use of a [CuLator](#) to eliminate metals in your pool.

Culator is a device that stays in your pump basket. They are available in two sizes. The 1.0 is good for 1 month, while the 4.0 is good for 4 months.

In the event that you have large amount of metals in your source water there are other alternatives such as hose end activated charcoal filters and sequestering agents that can remove even more metals.



Salt (NaCl)

If your pool employs a salt water chlorine generator (SWCG) it will require a specific amount of salt in order to perform its job. Since our pools utilize Hayward SWCG we'll base our readings on their figures. If you use another brand consult your owner's manual for correct salinity levels.

What type of salt do I use? Pool salt is a food grade salt that has not additives. With the prevalence of salt water pools this quality of salt has become very readily available. Don't use water softener salt! There are anti-caking agents and stain preventers in softener salt that react with pool chemicals and cause staining and water clarity issues. It's not worth the hassle.

How do I add salt? Simply open the bag and pour it into the deep end of the pool as you walk along the pool edge. Pool salt is a fairly fine salt that will dissolve quickly, but you can also brush it around in the pool do speed up the process.

How much salt do I add? Our system requires a salt level between 2700—3400 ppm. Yours may be different, so check your owner's manual.



When do I add salt? There are two key principles you must understand when it comes to maintaining salt levels in your pool. First, producing chlorine does not use up your salt. Second, evaporation does not remove salt. **Salt can only leave your pool through splash out or water being pumped out of the pool.** Armed with this knowledge we can make better decisions on adding salt.

When your system give you an error message regarding low salt take a moment and ask a couple of questions. Have we splashed out a lot of water? Is there a hole in the cover that has allowed the cover pump to pump water out? How much water have I added recently? If you've not been losing water then we can conclude that the salt has not changed. So, what's going on?

In most cases a low salt warning is due to a dirty or malfunctioning turbo cell. After getting a low salt warning take a few minutes and test the water with a salt test strip to see what it says. Turn off the pump and remove the turbo cell to examine it for scale build-up. Even if your don't see visible scale but it has been a couple of moths since the last cleaning it would be a good idea to perform a [cell cleaning](#). If your salt test strip or an independent test says your salinity level is 2700-3400 ppm but your system displays a lower number then we can deduct that it's an issue with the cell or system.

When we test the water with an independent test (at least one) and find that we need to add salt there is a handy chart on page X that will help you determine how much to add.

Please only add salt when absolutely necessary. If you end up with too much salt in the pool the only remedy is to drain water out and add fresh water.

Pro Tips:

Always double check test results before adding salt.

Don't overestimate when adding salt. It's easy to add more later.

When in doubt, clean your turbo cell.



Salt test strips

Additional Water Care

We've covered the basics of testing and balancing your water, but what happens when there is a problem? Say your pool is cloudy, or you come back from vacation and there is a green tint, or you keep adding chlorine but you can't get any free chlorine. Let's look at a few scenarios and show how to deal with them.

Cloudy Water

There are a myriad of reasons that a pool can be cloudy. These include, but are not limited to:

Poor filtration

High pH or TA

High sanitizer level

High calcium hardness

Ammonia

Chemical imbalance

Recently added chemical treatment

High phosphate level



Anytime we're troubleshooting water issues we start with a basic water test. Make any necessary chemical adjustments. If the pool is still cloudy and ALL of the tests are within the desired range take a look at filtration. Here are some pretty simple things to check that can make a huge difference in water clarity.

Is the pump on? Check breakers, timers, and switches. If the pump isn't running it's not filtering.

Is the pump moving water? Is there debris in the skimmer or pump basket preventing proper water flow?

When was the last time you cleaned your filter(s)? Backwash your sand filter if the pressure gauge reads 10# higher than normal. Cartridge filters should be cleaned at least every 2 months. More if you've dealt with algae or other water issues.

High ammonia levels can cause cloudiness. A professional test would be needed to diagnose this condition, and it's best dealt with by a partial drain and fresh water refill.

Phosphates can contribute to cloudiness, as can treating to remove them. We'll talk about them in detail later.

Each of the other testing parameters have been covered previously. Refer to the section on each of them to make proper adjustments to get your water balanced.

If your water is now balanced properly, your filter is working, but you're still fighting with cloudy water here are a couple other things to try. We'll describe these as "rescue chemicals."

Pro Tip: Backwashing too frequently actually harms your filter performance. Backwash when the pressure gauge rises 8-10# above normal operating level.



[Pool First Aid](#) and [enzyme weekly](#) are both enzyme products that help to break down organic matter in the water. [Sparkle pills](#) and other clarifiers work by "clumping" together smaller particles so that they can be trapped in the filter rather than passing through.

In desperate cases a flocculant can be very effective, but more labor intensive. This product is designed to grab on to particles in the water and drag them to the bottom where they can be vacuumed up. Most flocs involve distribution of chemical over the water followed by a short filter cycle to distribute it evenly. The pump is then shut off for 12 or more hours so that everything can fall to the bottom. Once this occurs it is best to vacuum to waste. (the water doesn't go through the filter and back to the pool)

Phosphates

What are phosphates, and what do they have to do with my pool? Phosphates are any compound in your pool water which contains phosphorous. While phosphates do not directly affect your chlorine, they are a vital nutrient source for algae. This can lead people to understand that phosphates are destroying their chlorine, when in fact the chlorine is just not able to keep up with the rate of algae reproduction when the algae has such an available food source.

Are they bad? No, phosphates are not harmful to us. In fact they can be found in most municipal water supplies because they are helpful in treating for metals. They are, however a great nutrient source for algae. Proper sanitization and routine use of an algae-icide can be very effective in prevention of algae growth even with a moderate phosphate level.

Phosphates enter your pool through many paths. Organic matter like leaves or grass decomposes in the pool, tap water may contain phosphates, fertilizer tracked into the pool from your yard contains them as well. We can test the phosphate level with a specialized phosphate test kit. (Figure 44) This test is one that you'll use only when you are having great difficulty with chlorine production or inability to keep free chlorine. If, upon testing your phosphate level you find that it is high there are several products that are designed to help. We'll never be able to get rid of phosphates, but if we can get the level below 500 ppb it will make water care much easier.



Figure 44

Treating For Phosphates



We sell several different types of phosphate treatment. [Phosphate 9000](#) is the strongest and is designed to eliminate up to 9000 ppb of phosphates from a 10K gallon pool. [Nano-phos](#) and [phosfight](#) don't remove that high level of phosphate, but they work great as maintenance treatments or for when your phosphate level is not terribly high.

All of these should be administered according to their directions, but it's a good idea to have a clarifier such as a Sparkle Pill or Pool Blue when treating for phosphates. All of these treatments can cause a fair amount of temporary cloudiness. A clarifier will help clear the water faster as well as help the filter pick up the phosphates. **After a phosphate treatment it is necessary to clean or back-wash your filter media.**

Routine monitoring of sanitizer levels as well as regular use of a good algaeicide will normally prevent phosphates from becoming a problem.

Stains

Staining can be caused by many things. Metals are a common culprit, but leaves and other plant materials can also cause stains if they sit on the pool surface. Removal of a stain depends largely on what type of stain it is. Metal stains require different products or solutions than organic stains.

In order to treat a stain we need to know what caused it. A simple trick is to take a small amount of granular chlorine and pour it on the stain. Use your pool brush to scrub the chlorine around on the stain. If the stain dissolves this means it is an organic stain. Treatment should just involve raising the chlorine level **and scrubbing** the pool surface. If you have a fiberglass or cement pool you can apply the chlorine straight to the site and brush the stain away. With liner pools be sparing on the amount of chlorine used and ensure that it is fully dissolved. Chlorine left sitting on the liner can very easily bleach out the color and leave white spots.

Metal stains will not budge when scrubbed with chlorine. Try a vitamin C tablet instead. If this lightens the stain then it is likely due to some type of metal. Effective removal of metal staining will take a couple of steps to ensure that it works well.

High chlorine or pH levels will make stain removal difficult. Reduce the pH to the lower end of the OK range. (7.2) Allow the chlorine level to diminish to 1-2 ppm if it was high. Attempting to work on metal stains before addressing these two is like fighting an uphill battle. Since stain removal chemicals are not cheap it's best to set yourself up for success.

Once the pH and chlorine are addressed you can add your stain remover of choice. Shut the pump off and allow the water to still. This will help the product to fall straight down onto the affected areas. Either the citrus stain remover or the ascorbic + are very likely to work on metal stains. Apply the product near the stain or broadcast over the entire pool. BRUSH the pool well and allow the chemical to work. Let the water remain still for 1 hour. Turn the pump back on and add metal eliminator according to the instructions on the back. Be sure to pre-mix it with water.

After 48 hours backwash or clean the filters to remove the captured metals from the system. Since these products are acid based be sure to check and rebalance the pool after use.



Algae

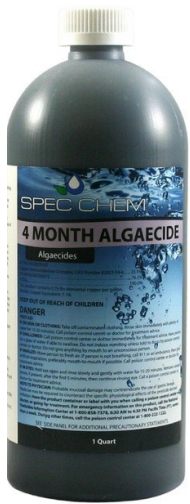
This may be the most dreaded issues in all of pool-dom. Opening your pool to find algae growing on the walls or floor. Let's be honest, when we think of algae our first mental image is a bright green growth on the surface of the pool. While that can be the case, there are other varieties of algae as well. Each of them involves a similar approach, but often require a different product in order to kill the growth effectively.

All algae growth should be attacked in a similar manner:

1. MANUALLY vacuum the pool. Robotic and automatic cleaners do not get into all of the corners and cannot trap all of the algae. Manually vacuuming utilizes your pool filter which can trap more and smaller particles than the cleaners can.
2. Scrub the pool. Swap out the vacuum head for the brush and go to town. Yes, the pool will get cloudy, but the purpose of this is to physically "break" open the algae so that we can kill it more effectively.
3. Balance the water and shock the pool. To make the best use of the shock we want the pH correct and it is best to apply the shock treatment in the evening. Also, this is a good use for Calcium Hypochlorite shock. We'll look at each type of algae and the preferred treatment in detail.
4. Clean / Backwash your filter.

Green Algae— This is the most common and thankfully most easily killed type of algae. It can be anywhere from a teal color to a dark, nearly black green color. Following the above steps will conquer a small growth of green algae, however if the growth is large or very dark in color a good copper algacide may be in order. Follow the instructions on the bottle.

Yellow / Mustard Algae—It may appear as sand or dirt on the pool floor, or even look like a metal stain. If you scrub it with a brush and it moves, then it's mustard algae. This type is more stubborn than it's green cousin. We'll still follow the same procedure, but your in this case we'll want to triple shock the pool. **Yes, 3 lbs. per 10K gallons.** This stuff is stubborn and does not want to die.



Follow up your shock treatment with a good algaecide and check your chlorine level again after 24 hours. Our goal is to maintain a higher chlorine level for 24-36 hours to ensure we've killed all of the algae.

Black Algae—This is a less common algae, and it is VERY difficult to get rid of. Black algae requires a porous surface to attach to and embed into. It is essentially sending “roots” down into the surface. Even more so than with other algae types this requires aggressive scrubbing. After a thorough scrub add 4x the normal amount of shock. This scrubbing and shocking routine will likely need to be performed 2-3 times.

Algaecides come in a two main varieties, metallic (Copper), and Polyquat. Each of these have their place in helping vanquish algae, but they don't actually kill algae. Algaecides work in one or two ways. They either destroy the reproductive capacity of the algae or they “break open” the algae to make it susceptible to be killed by the sanitizer.

Copper algaecides work by breaking the cell wall which allows the chlorine to do its job. These algaecides can cause staining if added directly in conjunction with a shock treatment or high CL level due to the copper. Always add according to the manufacturer's instructions and do not overdose! Cheap dooper algaecides and or overdosing can cause excess foaming of the water.

Polyquat algaecides work by “suffocating” the algae cells. This type of algaecide is capable of killing algae, but it takes a while. These typically come in containers with a measured % such as our algaecide 60. These can also cause foaming and should not be overdosed, but work great as a preventive measure against algae.

Water Mold

You may even hear this referred to as pink algae, pink slime, white slime, etc. It's not an algae, it's actually a bacteria. Water mold often appears as a slimy or mucous like membrane in low circulation areas such as around return jets, or inside the skimmer. This bacteria can be harmful if it enters the body, so don't swim if you have a water mold infestation. Molds can be stubborn, so it pays to be very thorough in your treatment.

1. Clean the filter— If you have noticed water mold in the pool then it's in the filter as well. For now, remove your filters and spray them down well, then re-assemble.
2. Balance the water and shock the pool at a rate of 3-4 lbs per 10K gallons. A product like Cloud-Out can greatly increase your odds of killing off a water mold.
3. Brush the pool thoroughly.
4. Run the pump for 24 hours, then brush EVERYTHING again.
5. Clean the filters again, but this time soak them in a chemical filter cleaner and/or a chlorine bath.
6. Sanitize all pool floats, toys, and swimsuits.

Algae tips:

Balance the water

Use a calcium hypochlorite shock. (High available chlorine, no added stabilizer)

Cover the pool. Normally we don't want to cover the pool after we shock, but in this case we want to kill any algae or water mold on the underside of the cover.

Chemically clean filters after collecting the algae either through filtration or vacuuming.

Sanitize swimwear, toys, floats, and equipment.



Routine Maintenance

We've gone over most of the chemical care and some troubleshooting based on specific water issues. What we want to do is make it so that your never get to a point that you need to do a rescue treatment of anything. WEEKLY care and maintenance will go a very long way in preventing any of those bad things from happening. On page 34 you'll find our water care guide with information on doses, etc. Here, we'll just take a look at each of the chemicals



Natural chemistry [Salt Water Magic](#) is a combination of chemicals designed specifically for salt water chlorinated pools. SWM contains phosphate remover, scale inhibitor, metal sequestrant, and enzymes. Each of these are provided in a maintenance dose, meaning they will not fix an issue with your water. The goal here is preventive care.

This product is designed to be used once per month. Each box contains two bottles. Be sure to **shake the bottles** well before pouring. If your pool is 15-20K gallons you'll dump the entire contents of each bottle into the skimmer with the pump running. If you have a smaller pool and your dosage sheet calls for 1/2 the kit you'll pour 1/2 of each bottle into the skimmer with the pump running. **It's that easy!**

[Serum Total Maintenance](#) is a clarifier and also helps to destroy bacteria and organic matter in the pool system. This is also just a single monthly dose. Each tub of purple goop treats up to 20K gallons for one month.

For best results **add one bag of chlorine shock** to your pool immediately preceding the addition of Serum. Simply remove the material from the container with your fingers and squish it up and drop it in the skimmer. It will dissolve within a couple of hours.



Automatic Pool Covers

Your automatic pool cover is an important tool in your pool maintenance arsenal. Besides providing a level of safety for your pool, covers keep debris and rain water out of your pool. They also save you money in chemicals and energy by protecting your chlorine from UV rays and cutting down on heat loss overnight.

Pool covers are expensive.....we understand. Here are a few tips that will help prolong the life or your cover.

1. **Well balanced water.** Your cover will spend most of it's life with sun beating down on it and chlorinated water underneath it. While we can't control the sun, we can control the water under it. High sanitizer levels and regularly covering the pool immediately after shocking the water are very hard on your cover. Maintaining balanced water and only covering your pool with a high sanitizer level when you need to ensure you're killing algae that may be on the bottom of the cover will greatly improve the life of your fabric.
2. **Cleaning the cover and cover box.** Any debris on the cover when it's rolled off of the pool gets deposited in the cover box. In there leaves decay, dirt piles up, and this debris blocks the drains so water cannot escape. When your cover sits in this nasty water it damages not only the fabric, but the mechanism as well. Lift the lid(s) and remove all debris. Pay close attention to remove debris from the drains.
3. **Spray down the tracks.** You cover slides in a track on each side of your pool. It's a good idea to spray these tracks down with the garden hose a few times each season.
4. **Use your cover pump** to keep all water removed from the cover and keep the pool water level at the correct height. These two steps will reduce stress on the fabric and the edges of the cover.



Appendix

Useful Links:

[Omni Logic Owner's Manual](#)

[Hayward Pro Logic Owner's Manual](#)

[Langelier Saturation Index Calculator](#) Calculates how likely your pool water is to form scale or damage equipment.

[Cover Pools Owner's Manual](#)

Common Error Messages / Issues

Water feature will not turn on. Your control system has a safety built in that will not allow features such as slides, deck jets, or waterfalls to turn on if the cover is not all the way back. Ensure your cover is retracted all the way. If the feature still fails to turn on it may be a matter of cover adjustment or a failure of the sensor.

Heater does not work. Always check the heater for any error codes. If the error involves flow make sure the pump is on and moving water and that the filters are clean. In some instances with Omni Logic controllers there may be a software glitch. Follow the instructions in the owner's manual to check for updates, or cycle the power to the pool control off and back on.

Chlorinator off, check salt. Always test your salt level with at least one other device before adding salt. In all likelihood your cell is in [need of cleaning](#) or is failing.

Freeze protection active. This is common if you open very early or stay open late. Anytime air temp dips below 37° the system will post this error and run any protected equipment to prevent freezing. If this message appears and it is not cold out, call for service.

Inground Salt Pool Water Care Guide



Gallons of Water: _____

Annually

1. After opening, run the pool for 24 hours.
2. Test your water with a test strip and your Waterlink Solutions app. Balance pool water according to the ranges listed in the app or at the bottom of this page.

Monthly

1. Add _____ box(s) of Salt Water Magic into skimmer.

Regular Monthly dose = 1/2 of each bottle per 10,000 gallons.

2. Add _____ containers of Pool Serum into skimmer.

Regular monthly dose = 1/2 container per 10,000 gallons.

3. Add CuLator 4.0 to the pump basket. Lasts for 4 months!
4. Check & clean cartridge filters or backwash sand filter as needed.
5. Test your water for phosphates and treat accordingly.

Weekly **Test water 2-3 Times / Week**

1. Test water and maintain within ranges listed at the bottom of this page. Scan your test strip _____ with the Waterlink Solutions app for detailed dosing instructions.
2. Set your chlorine generator to maintain 1-3 ppm of free chlorine.

As Needed

1. If pool is hazy after rain or heavy use, add _____ bag(s) of Non-Chlorine Oxidizer.
2. Use Enzyme Weekly to remove oily residue or film from the surface of the water.

Recommended Water Test Ranges

Free Chlorine: 1.0–3.0 ppm

pH: 7.2–7.6 (Always use acid to lower the pH)

Total Alkalinity: 80–180 ppm

Conditioner: 60–80 ppm

Salt: Consult your owner's manual for proper ranges

Hayward / Goldline 2700–3400 ppm

POUNDS and (Kg) OF SALT NEEDED FOR 3200 PPM

Current salt level ppm	Gallons and (Liters) of Pool/Spa water																
	8,000 (30,000)	10,000 (37,500)	12,000 (45,000)	14,000 (52,500)	16,000 (60,000)	18,000 (67,500)	20,000 (75,000)	22,000 (82,500)	24,000 (90,000)	26,000 (97,500)	28,000 (105,000)	30,000 (112,500)	32,000 (120,000)	34,000 (127,500)	36,000 (135,000)	38,000 (142,500)	40,000 (150,000)
0	213 (97)	267 (121)	320 (145)	373 (170)	427 (194)	480 (218)	533 (242)	587 (267)	640 (291)	693 (315)	747 (339)	800 (364)	854 (388)	907 (412)	960 (436)	1013 (460)	1067 (484)
200	200 (91)	250 (114)	300 (136)	350 (159)	400 (182)	450 (205)	500 (227)	550 (250)	600 (273)	650 (295)	700 (318)	750 (341)	800 (363)	850 (385)	900 (408)	950 (430)	1000 (453)
400	187 (85)	233 (106)	280 (127)	327 (148)	373 (170)	420 (191)	467 (212)	513 (233)	560 (255)	607 (276)	653 (297)	700 (318)	747 (339)	793 (360)	840 (382)	887 (403)	933 (424)
600	173 (79)	217 (98)	260 (118)	303 (138)	347 (158)	390 (177)	433 (197)	477 (217)	520 (236)	563 (256)	607 (276)	650 (297)	693 (317)	737 (337)	780 (358)	823 (378)	867 (398)
800	160 (73)	200 (91)	240 (109)	280 (127)	320 (145)	360 (164)	400 (182)	440 (200)	480 (218)	520 (236)	560 (255)	600 (273)	640 (291)	680 (310)	720 (328)	760 (346)	800 (364)
1000	147 (67)	183 (83)	220 (100)	257 (117)	293 (133)	330 (150)	367 (167)	403 (183)	440 (200)	477 (217)	513 (233)	550 (250)	587 (267)	623 (283)	660 (300)	697 (317)	733 (333)
1200	133 (61)	167 (76)	200 (91)	233 (106)	267 (121)	300 (136)	333 (152)	367 (167)	400 (182)	433 (197)	467 (212)	500 (227)	533 (243)	567 (258)	600 (274)	633 (289)	667 (304)
1400	120 (55)	150 (68)	180 (82)	210 (95)	240 (109)	270 (123)	300 (136)	330 (150)	360 (164)	390 (177)	420 (191)	450 (205)	480 (218)	510 (232)	540 (246)	570 (259)	600 (263)
1600	107 (48)	133 (61)	160 (73)	187 (85)	213 (97)	240 (109)	267 (121)	293 (133)	320 (145)	347 (158)	373 (170)	400 (182)	427 (195)	453 (207)	480 (219)	507 (231)	533 (243)
1800	93 (42)	117 (53)	140 (64)	163 (74)	187 (85)	210 (95)	233 (106)	257 (117)	280 (127)	303 (138)	327 (148)	350 (159)	373 (169)	397 (180)	420 (190)	443 (201)	467 (211)
2000	80 (36)	100 (45)	120 (55)	140 (64)	160 (73)	180 (82)	200 (91)	220 (100)	240 (109)	260 (118)	280 (127)	300 (136)	320 (145)	340 (154)	360 (163)	380 (172)	400 (181)
2200	67 (30)	83 (38)	100 (45)	117 (53)	133 (61)	150 (68)	167 (76)	183 (83)	200 (91)	217 (98)	233 (106)	250 (114)	267 (121)	283 (129)	300 (137)	317 (144)	333 (152)
2400	53 (24)	67 (30)	80 (36)	93 (42)	107 (48)	120 (55)	133 (61)	147 (67)	160 (73)	173 (79)	187 (85)	200 (91)	213 (98)	227 (104)	240 (110)	253 (117)	267 (123)
2600	40 (18)	50 (23)	60 (27)	70 (32)	80 (36)	90 (41)	100 (45)	110 (50)	120 (55)	130 (59)	140 (64)	150 (68)	160 (73)	170 (77)	180 (81)	190 (86)	200 (90)
2800	27 (12)	33 (15)	40 (18)	47 (21)	53 (24)	60 (27)	67 (30)	73 (33)	80 (36)	87 (39)	93 (42)	100 (45)	107 (48)	113 (51)	120 (54)	127 (57)	133 (60)
3000	13 (6)	17 (8)	20 (9)	23 (11)	27 (12)	30 (14)	33 (15)	37 (17)	40 (18)	43 (20)	47 (21)	50 (23)	53 (24)	57 (26)	60 (27)	63 (29)	67 (30)
3200	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal
3400	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
3600+	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute