NEW ZEALAND POOL INDUSTRY ASSOCIATION INCORPORATED

POOL BUYER'S GUIDE and OWNER'S MANUAL

The Essential Guide to understanding the differences, correct operation, and maintenance of various

Home Swimming Pools

Applicable to:

Plastered interior finish sprayed concrete pools
Gel-Coat interior Fibreglass Pools
Pool Structures with PVC (Vinyl) Liners

SWIMMING POOL CONSTRUCTION TECHNOLOGY & MAINTENANCE

NOTE THIS MEANS THE INFORMATION APPLIES TO ALL POOL TYPES

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Revision II - December 2021

INTRODUCTION:

The NZ Pool Industry Association Inc. is a Guild of NZ Pool professionals, tradesmen and Industry Associated tradespeople with many up to five decades of experience, and that must follow strict rules of behaviour and service to the general public. We are an Associate Member of the New Zealand Registered Master Builders. You would be wise to consider using a Guild Builder Member in your choice of a pool.

"The Pool Guild was formed to sort out the less reputable and poorer quality builders, to promote excellence in its reputable Builder Members, and to recommend a choice of pool type and style which will enable the public to make a choice they will not regret"

http://www.poolguild.org.nz/MembersAreaR1.html

Guild Members whose names are listed on the web page (above) must meet our "ethical and quality standards" and support (i.e. Not Critical) of their fellow members. Check the Membership list for Guild Members near your location.

The NZPIA Inc. also has a safety net for pool buyers, in the role of Disputes Investigation and Resolution that offers unbiased assistance in sorting out disputes or misunderstandings between yourselves and the pool company you dealt with – not necessarily a Member of our Association.

We strongly advise that you deal with Guild Members of the Pool Association when considering the pool of your choice, as we have confidence that you will be dealing with pool professionals that contribute to the Swimming Pool industry of New Zealand, many of whom have the NZ Diploma in Swimming Pool Construction technology and Maintenance.

We assume that you may not be very familiar with purchasing or owning a home swimming pool, or familiar with their delivery, construction or maintenance, so let's start by defining what we will be dealing with:

Quote*:*
"A home swimming pool is basically a hole in the ground filled with water" – LE Ogden Dip Pool Tech

It's what surrounds the water that determines what kind of pool it is.

Definition: A home swimming pool is a water-retaining recreational structure, large enough for swimming, filtered and treated to provide clear sterile and safe water, and hopefully pleasing to look at while providing a durable asset to the owner's family, backyard, and property value - but you must also be aware that there are a number of ways of creating the 'ideal home swimming pool' you desire.

Quote*:*
"All home swimming pools sold in New Zealand must comply with (a.) The Fair Trading Act 1986 and (b.) the Consumer Guarantees Act" – LE Ogden Dip Pool Tech

This means that (a.) The seller must not make any comments that are either untrue or unsubstantiated - either about ***their product, or the product of a competitor***, and (b.) All pools sold in New Zealand must be ***suitable for the intended purpose***, and provide an ***acceptable useful lifetime***.
One indication of product lifetime may be determined by the price paid (i.e. cheaper items may have a shorter life expectancy). Any company proposing a Lifetime Guarantee should identify the actual anticipated lifetime of the product, not play with misleading words, such as "the product has a lifetime

guarantee" – when the lifetime is known to be ten or fifteen years, whereas the reality is disguised and should be more realistic "The lifetime of the product is fifteen years" etc.

New Zealanders general expect a "lifetime" guarantee to be on a level with "forever"

And who is giving the "Guarantee"? A leading Auckland Law Firm states "A guarantee will only be enforceable if the document signed by the person is the guarantor" so if a guarantee given to you is not signed by the person who is standing behind the guarantee, it's a waste of paper. Generally, a Guarantee signed by the company owner is necessary if any enforcement is to be expected.

One sign of a good company to buy your pool from is: how long have they been in business? Many new companies have sprung up in the past decade, so their experience in building pools in New Zealand is not as sound as Kiwi builders who have been building pools for several decades. Check their history.

Sometimes you might encounter pool salespeople who try to convince you to buy their product by "rubbishing" their opposition: either other pools of their type or other pool methods of construction. Do not fall for this sad sales trick. If that's the best they can do to convince you to buy their product, it's because their product is probably "not as good' as their supposed competition.

All pools on the NZ market are OK: Otherwise they wouldn't last in business. It's what you think about the benefits of a product that will persuade which one to buy – not by listening to "all the supposed bad points" of the other's products by a bad salesperson!

Swimming pool types differ in several ways - and must be treated accordingly. Some pools are manufactured "on-site" whilst others are factory pre-fabricated and assembled on-site and others like moulded fibreglass are made in a factory and shipped to you – some made locally and others imported from overseas. There are many shape and size – and water depth - options for each of these types.

However, the three ***main pool types*** found in New Zealand are commonly defined by their 'Descriptive Name' – a **One Word Title** (or **OWT**) - which can be misleading, as the OWT may not actually describe what you are getting… as time and construction methods have evolved over the decades, an OWT description may not suffice anymore, and several pool types may combine any number of different construction materials which 'blur' the description, but let it suffice that the ***'Big Three'*** will do for this exercise.

OWT or Descriptive names

The **"Big Three"** – generally referred to by their OWT names **"Concrete, Fiberglass and Vinyl"** - are the popular names indicating the variety of construction or major feature of pool types that are being built/installed currently, so it's probable that you will come across them all (or a sub-category variation on the descriptive type) at some stage.

1. **"Concrete" pools: Check for your local Member: poolguild.org.nz/MEMBERS2022(JULY21).html**

   The **OWT** (Concrete) refers to the ***basic structural material*** (i.e. "Steel-reinforced Concrete") used in the construction of the pool shell: There are a number of different ways of manufacturing these pools: The most common being sprayed concrete pools - where a steel "cage" is installed, then "shot" with Concrete – hence "Shotcrete"?

Complex and sturdy structures taking several weeks to build that will last for decades, needing only periodic replacement of the plaster interior surface. Do not empty without advice of the Builder.

Be sure to check out our BUILDER MEMBERS page on the Guild web site
http://www.poolguild.org.nz/MembersAreaR1.html

PLUS and MINUS points for concrete pools

PLUS
(1.) A sturdy Structure that will last for decades
(2.) Any shape size and depth – concrete is very malleable and strong
(3.) Our Member Builders are tradesmen with many decades of experience
(4.) Largest range of options for interior finish and colour, waterline tiles and copings

MINUS
(1.) Engineering design required by Council adds to cost
(2.) Construction time longest of all pool types due to subtrade availability
(3.) Heating requires more power input

2. "Fiberglass" pools: Check for your local Member: poolguild.org.nz/MEMBERS2022(JULY21).html

A ***"Chlorinated Poly-Vinyl-Chloride Thermoset"*** product: The descriptive name "Fiberglass" or FG applies to the hollow glass strands encased in resin with a Gel Coat (gelatinous coating) finish on the interior (water side) sprayed over a shaped Former that creates the finished Mould or "shell" concept.

The FG pool or 'one piece' moulded shell is ready to ship from importer (or local manufacturer) to excavation on the buyer's home site – hence a "quick installation" as many FG pool resellers claim. Some are manufactured in NZ, but most are imported from the West and East coasts of Australia.

All moulded FG pools are restricted to 4.3m external width due to transportation height issues.

Fiberglass pools are offered by our Supplier Members Aquatechnics, Barrier Reef, Freedom, and Narellan, and many BUILDER MEMBERS sell and install other Brand Name FG pools.

PLUS and MINUS points for fibreglass pools

PLUS
(1.) They look good in the showroom or display, so "What You See Is What You Get"
(2.) Some may cost less than a sprayed Shotcrete or Vinyl Lined pool
(3.) They may be installed in one or two days (plus excavation, paving and fencing as all pools need).

MINUS
(1.) Transportation and access to the site is critical
(2.) Copings around the top is an optional extra for some FG companies
(3.) There is minimal choice of size depth or shape
(4.) Pool surfaces are very smooth and prone to slipping
(5.) Refurbishment is a difficult option, so replacement may be required.

3. Vinyl Pools: Check for your local Member: poolguild.org.nz/MEMBERS2022.html

The **OWT** does not describe the construction of these pools – only the interiors (the flexible interior waterproofing membrane) and ***not the structure*** (which can vary considerably). These liners are technically cousins to FG pools: a ***Chlorinated Poly-Vinyl-Chloride Thermoflex*** product:

Low cost low quality vinyl lined swimming - and splashing - pools are very common, due mainly to the "kiddy" pools available in department stores. We are not concerned with these pools in this book – as they

are usually quite “temporary, and are set up only over the summer season, and taken down and stored once the weather turns cooler.

We are concerned only with “Permanent” pools that have a PVC Vinyl interior (instead of Gel-Coat, Plaster or Painted finish). A good example is the ***Cascade*** Range of hybrid design pools

Hybrid In-ground Vinyl pools: Engineer-designed hybrid Steel and Concrete structures using PVC interiors. There are more than ten thousand examples of CASCADE pools - originals of which were introduced into New Zealand from the USA & Europe in the early 1970's and which have updated and evolved into today’s 21st Century AquaCrete Hybrid-Concrete, Chemical-free, Insulated, Solar Heat–retention structures purpose-built for vacuum-formed, tightly fitting and durable, heavy-duty VinylFlex liner.

Cascade Pools are predominately “Chlorine-Free” Freshwater swimming pools, with hybrid-concrete structure that has a life expectancy of fifty (50) plus years. The VinylFlex interior has a lifetime expectancy of thirty (30) years or more – and the VinylFlex can be changed easily in a day or two with a replacement for another 30 years of use.

PLUS and MINUS points for Cascade VinylFlex pools

PLUS

(1.) A sturdy steel & concrete structure that withstands earth movement that other pools may not.
(2.) Any ***Shape Size and Depth*** – You’re not forced to choose a shape: We will make what YOU want!
(3.) Longest–lasting pool ***Lifetime*** Expectancy of 50 years and 30 years for the VinylFlex interior
(4.) Non-Slip embossed, soft-to-the-touch “Child Friendly” interior finishes
(5.) Large range of colour options for interior - including matching colour copings
(6.) FRESHWATER Chemical and Chlorine-Free swimming – Water so good, “You can drink it!”
(7.) Solar Powered Heat-Retention thick insulated pool walls and Solar Cover – for free heating!
(8.) DOLPHIN Automatic Pool Sweep and Quality Heat Pump included with FRESHWATER + pools
(9.) Rapid installation of (usually) one week (plus excavation, paving and fencing as all pools need).

MINUS

(1.) Engineering Design required by Council on our bigger pools adds to cost
(2.) Interior Refurbishment needed every 25 to 30 years
(3.) Your Local Pool Shop will not like you – you won’t go there much!

NOTE: You may find some low cost ‘Above Ground’ (AG) vinyl liner pools that have been sold as, and installed ‘below ground’. As the wall structure of the usual AG pool is not designed to withstand the ‘loading’ of backfilled sand or plain dirt, these pools may have a shorter lifetime and may be at catastrophic risk if ever emptied.

THINGS TO BE AWARE OF WHEN PLANNING A HOME POOL

1. You have looked at brochures, gone to Display Centres, talked to friends with pools, talked to several “Pool Sales People” and the Bank Manager: and will have on hand – or be soon getting - a ***comprehensive written quotation*** for everything you desire in your Own Dream pool.
   Are there any “Hidden” extras?
   Yes, there are a few. Here are a few (but not all) things to think about …

   a. A Building Approval may be required: Who’s going to provide the plans? Are they included?
   b. Who will be completing the complex Council Building Approval documents?

c. Who is organising Quotes and presenting Pool Fencing Plans to Council for Permission?
d. Who is going to take into and present these to Council? Is this cost included?
e. Who is going to respond to the many possible Council RFI "Returned for Info" requests?
f. Is the pool Shell (FG Pool) and Filtration & Heating component delivery included?
g. Is the cost of a Crane (FG Pool only) included?
h. Is a full recirculation system (Filtration) and Sterile Unit included?
i. Is the Filtration Back wash and/or Soak Pit handled correctly & legally?
j. Are Rainwater Soak Pits required by Council? Who does these?
k. Is the pool a Chlorine Pool? (a Salt pool is a Chlorine pool so needs bags of salt)
l. Who is paying for the pool fill-up water? Fire Hydrant outlets are now disallowed by Council
m. Is a comprehensive Pool Owner's Manual with clear operational instructions included?
n. Who's going reinstate the boundary fence once Excavation and Deliveries are completed?
o. Is a Heating system (Gas-Electric Heat Pump-Solar) included in the quotation price?
p. Are the Pool Company liable for damage to the road/footpath? (Take photos beforehand)
q. Does the Excavation Company have insurance for site, pavement and road damage?
r. Who is organising and paying for the Soil Removal (and any Tip Fees)?
s. Do the Truckies have 3rd Party Insurance?
t. Does the Builder/Installer have 3rd Party Insurance against all claims (Inc. your Neighbours)
u. Do you have an All Trades insurance policy for the duration of the installation? Get one!
v. Are the Guarantees "Genuine" – don't be fooled by "Lifetime" guarantees! Who's Lifetime?
w. Is the Seller available if things go "wrong" (on-line or by 'phone) at all reasonable times?
x. Are they providing a Pool Owner's Manual, and the first year of Service Calls free of charge?
y. Have you checked the NZ Companies Office web page for the Seller's history?
z. Is a comprehensive "Handover" training session (inc. pool chemicals) given on completion?

Looks like a long list, but (Murphy's Law) there is bound to be more!

THE POOL IS INSTALLED:
REASON FOR - AND PURPOSE OF - POOL WATER TREATMENT

Starting with the assumption that you know nothing …

Residential swimming pool water treatment is based on a system of "Continuous Dilution" or **CD** The contaminated (dirty) pool water is drawn from the pool and circulated through a Filter, which cleans it and pumps it back as clear and pure water – i.e. continuous supply of clean fresh water into a contaminated pool, so that eventually the pool becomes cleaned of contaminants by dilution with fresh water.

Home swimming pool water should be safe and enjoyable, without any sore eyes, irritations to the skin, nose or throat and sore or bleeding toes from sandpaper like finishes – or premature deterioration of internal finishes and equipment due to incorrect or no – correct maintenance procedures!.

You need to destroy the "Nasties" that allow this situation. We do this by oxidisation or disinfection - adding chlorine in one form or another or introducing Ozone to the pool water. The use of SALT production of chlorine is widespread in home swimming pools, yet Ozone is the most powerful Oxidant available, with the ability to destroy algae and bacteria, inactive viruses and oxidize many organic and inorganic contaminants. You need to protect your swimmers and children from unclean water.

Both Auckland University and NZ Health Department surveys that only 50% of pools chosen on a random basis had a correct level of free available chlorine (FAC) in their pool. Only 25% had a correct pH balance

and just over 15% had no free chlorine present at all. Pool Builders can freely relate to this fact because most of their “complaining customers” have had problems relating to 'insufficient oxidisers'.

It must be remembered that swimming pool water should meet the same bacteriological and turbidity criteria as drinking water. It is these incorrectly maintained pools that are suspected of spreading many of the summertime "Nasties" that we hear have from time to time. The cure:

1. Sterilisation, (Chlorine, Ozone)
2. pH control and
3. Adequate Filtration

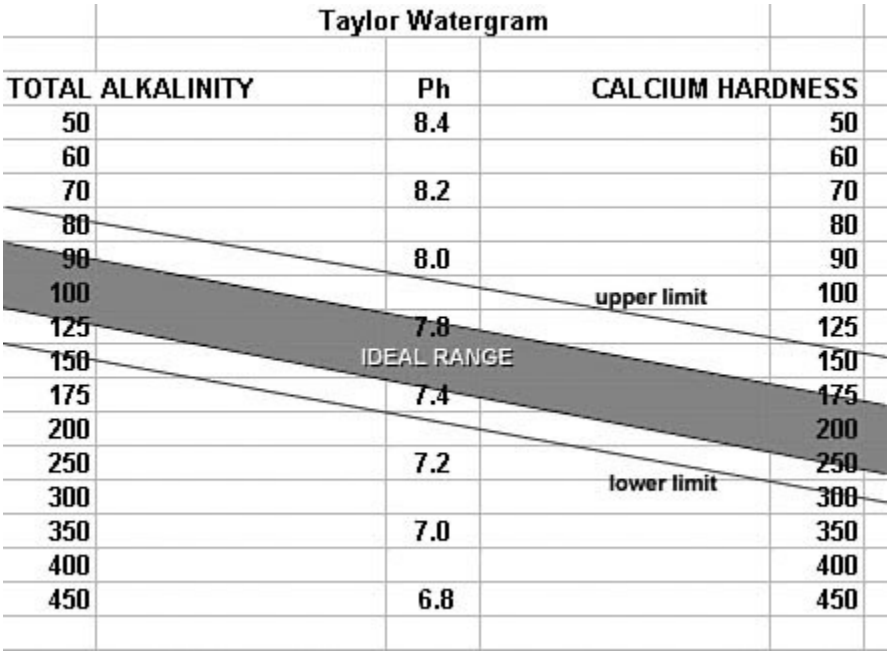
pH IS KING!

Auckland’s Tap water has a pH of 7.9. We think your home pool water should be slightly more acidic – and 7.6 is recommended as the World Standard for chlorinated home pool water.

WATER BALANCE

There is a relationship between pH and other water balancing indexes: the main other factors are Total Alkalinity and Calcium Hardness – measured in parts per million (aka milligrams per cubic meter)

ALKALINE WATER pH 14



ACIDIC WATER pH 1

i.e. ***100 & 7.6 & 200 - is as good as - 90 & 7.4 & 300***

IF YOU CAN MAINTAIN THESE LEVELS, ALL SHOULD BE WELL WITH YOUR SWIMMING POOL

GEEK STUFF: There is a relationship between the levels of **Calcium Hardness** and the **Total Alkalinity** of your pool called the “Water Balance”. The pool is termed “Balanced” if the above values shown are true.

The Watergram above shows TA 100, pH 7.6 and CH 200 as being ideal. The two elements CH & TA may vary, so long as the crossover point on the Taylor Watergram is within the specified pH range - the preferred pH value of home pools = 7.6 This “Balanced” pool will maintain the pH due to the “buffering” effects of the two compounds which are added to the pool Calcium Hypochlorite - which are related to “Baking Soda” and “Chalk”. Maintaining the pH at the recommended level is the most important factor in keeping the pool clean and sterile, so always keep an eye on the pH of your swimming pool.

SEVEN SIMPLE STEPS TO CARING FOR YOUR HOME SWIMMING POOL

1. **NEVER EMPTY YOUR SWIMMING POOL WITHOUT PRIOR ADVICE!**
   If it MUST be emptied, ASK THE SUPPLIER as it's NOT USUAL to empty a pool - especially in the rainy season - as flotation damage may occur

2. **DON'T LOWER THE WATER LEVEL IF IT "FILLS UP" in WINTER**
   The pool will not suffer any damage if it gets too full - but lowering it might!

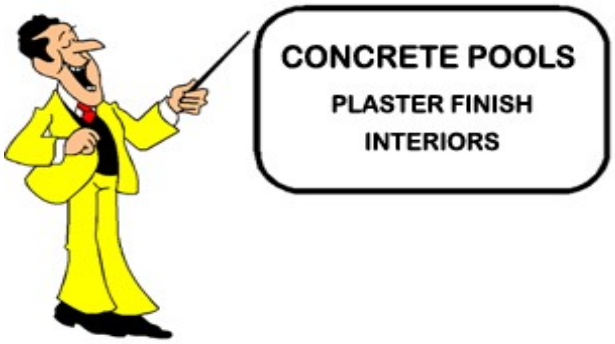
3. **AN OZONE POOL IS NOT A "CHLORINE" POOL**
   OZONE replaces 95% of Chlorine - so there may be NO CHLORINE reading if you get the water tested at a pool shop, and they want to sell you some!

4. **FILTER 10-12 Hrs SUMMER, 6-8 Hrs SPRING & AUTUMN, 2-4 Hrs WINTER**
   Your pool may need different settings - experience will tell you!

5. **NEVER THROW POOL CHEMICALS DIRECTLY INTO THE POOL WATER**
   All chemicals go in the SKIMMER while pool is running – NOT mixed in a bucket!

6. **BACKWASH the FILTER for ONE to TWO MINUTES at least once EVERY MONTH in the high summer SWIMMING SEASON**

7. **KEEP THE pH at 7.4, CALCIUM HARDNESS and TOTAL ALKALINITY LEVELS UP to recommended levels. Check the right levels in YOUR POOL Section**



BE FAMILIAR WITH THESE BASIC PRINCIPLES FOR CONCRETE POOLS!

NEVER empty your swimming pool without notifying the BUILDER of the pool of your intentions and reasons for doing so – and LISTEN to what they say!

… STRUCTURAL DAMAGE TO YOUR POOL COULD RESULT

1. ***When the pool is first filled operate the filtration unit 24 hours per day.*** We recommend 24 hours a day until the surrounds have been completed, and at any future time when the water gets out of balance or goes green. Once the pool stabilises, cut the filtration to the times recommended at the front of this manual.

2. ***The 1-2-3-4-5 Chemical Routine!*** Correct chlorination is based On a properly Balanced Pool.

(1.) Maintain the pH at 7.4 to 7.8 (7.6 is Ideal!)
(2.) (I) With SALT CHLORINATOR fitted) - Residual Chlorine levels 2.0 to 3.0 ppm
(II) With OZONE fitted) - Residual Chlorine 0.5 to 1.0 ppm with ozone off.
(3.) Superchlorinate (aka Shocking) to with 10 ppm twice monthly in the 'high season'.
Turn OZONATOR OFF when shocking the swimming pool. Don't swim for two hours after Shocking.
(4.) Maintain Calcium Hardness of 200 TO 300 parts per million.
(5.) Maintain Total Alkalinity of 120 parts per million.

The pH (Like the Richter) scale, each 1/10$_{th}$ is 10 times the previous measurement!
(10-100-1000- 10000 etc.)

By maintaining these values, and you will have a "happy" swimming pool!

If you have a Tri-Chlor feeder fitted such as the Aquagenie NEVER break up large (3" or 75 mm size) generic TriChlor tablets with a hammer as an explosion and burn injury may result, and DON'T put these generic TriChlor tabs in the skimmer basket as they will erode too quickly and rapidly lower the pH to unsafe levels!

3. **Salt Chlorinators will tend to make the pH RISE to 10 or more. The sterilising effectiveness of the chlorine is severely depleted when the pH goes above 8.0, so ADD ACID regularly to maintain an effective killing range against micro bacteria and algae.**

4. **Powder & Liquid chlorine have a pH of 11 so follow the regime in 3 (above) to keep your pool sterile.**

"Little kids" create more work for the pool disinfectant. Rule of thumb is: SHOCK DOSE the pool! Tip **one to two litres of Liquid Chlorine or one to two coffee-size cups** of Granular Chlorine into ***the skimmer water flow*** while filtration is running. Don't let anyone swim for 20 minutes or so after shock dosing the pool.

5. ***Winterise your pool after the summer season is over.*** See WINTERISE Section in this Manual

BE FAMILIAR WITH THESE BASIC PRINCIPLES FOR FIBREGLASS POOLS!

NEVER empty your swimming pool without contacting the SUPPLIER of the pool and advise them of your intentions and reasons for doing so! Follow their advice! Or else …. STRUCTURAL DAMAGE TO YOUR POOL COULD RESULT

1. ***When the pool is first filled operate the filtration unit 24 hours per day.*** We recommend 24 hours a day until the surrounds have been completed, and at any future time when the water gets out of balance or goes green. Once the pool stabilises, cut the filtration to the times recommended at the front of this manual.

2. ***The 1-2-3-4-5 Chemical Routine!*** Correct chlorination is based on a properly Balanced Pool.

(1.) pH 7.2 to 7.4 (7.4 is Ideal!)
(2.) (I) With SALT CHLORINATOR fitted) - Residual Chlorine 2.0 to 3.0 ppm
Add ACID (Sodium Bisulphate - powder acid - or Hydrochloric Acid liquid form)
Acid will be regularly required to maintain the pH at an acceptable level for pool water Hygiene as the killing power of chlorine tapers off sharply above pH 8.0
(II) With OZONE GENERATOR fitted) - Residual Chlorine 0.5 to 1.0 ppm
(3.) Superchlorinate (Shock) twice monthly in the 'high season' with 10 ppm chlorine.
Turn OZONATOR OFF when Shocking the swimming pool. Don't swim for two hours after Shock Dosing the pool.
(3.) Maintain Calcium Hardness of 200 parts per million.
(4.) Maintain Total Alkalinity of 120 parts per million.

The pH (Like the Richter) scale, each 1/10$_{th}$ is 10 times the previous measurement!

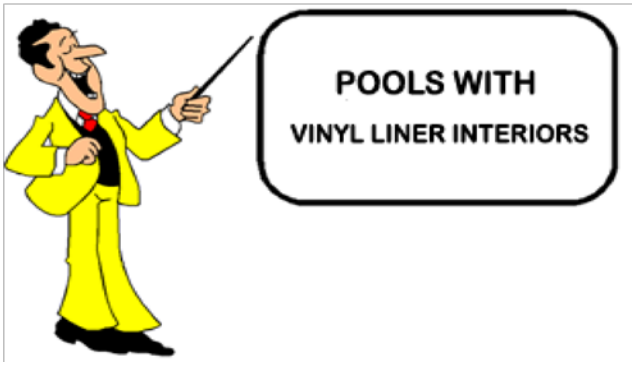
If you have a Tri-Chlor feeder using pH3 Tablets fitted NEVER break up large (3" or 75 mm size) generic TriChlor tablets with a hammer as an explosion and burn injury may result, and DON'T put these generic TriChlor tabs in the skimmer basket as they will erode too quickly and rapidly lower the pH to unsafe levels!

3. **Salt Chlorinators tend to make the pH RISE to 10.0 or higher. The effectiveness of chlorine is severely depleted when the pH goes above 8.0, so ADD ACID regularly to maintain an effective killing range against microbacteria and algae. Equal amounts of sodium hypochlorite (Liquid chlorine pH 11.0) and sodium hydroxide (Caustic Soda - pH 14.0) will create a continual high pH in the pool, so measures must be taken to reduce the pH.**

4. **Powder & Liquid chlorine have a pH of 11 so follow the regime in 3 (above) to keep your pool sterile.**

"Little kids" create more work for the pool disinfectant. Rule of thumb is: SHOCK the pool! Tip **one to two litres of Liquid Chlorine or one to two coffee-size cups** of Granular Chlorine into ***the skimmer water flow*** while filtration is running. Don't let anyone swim for 20 minutes or so after shock dosing the pool.

5. ***Winterise your pool after the summer season is over.*** See WINTERISE Section in this Manual



BE FAMILIAR WITH THESE BASIC PRINCIPLES for CASCADE POOLS!

NEVER empty your swimming pool without notifying the SUPPLIER of the pool of your intentions and reasons for doing so!

DAMAGE TO YOUR POOL LINER COULD RESULT

1. ***When the pool is first filled operate the filtration unit 24 hours per day.*** We recommend 24 hours a day until the surrounds have been completed, and at any future time when the water gets out of balance or goes green. Once the pool stabilises, cut the filtration to the times recommended at the front of this manual.

2. ***The 1-2-3-4-5 Chemical Routine!*** Correct chlorination is based on a properly Balanced Pool.

(1.) pH 7.4 to 7.8 (7.6 is Ideal!)
(2.) (I) (With SALT CHLORINATOR fitted) - Residual Chlorine 2.0 to 3.0 ppm
(II) (With OZONE fitted) - Residual Chlorine 0.5 ppm to nil
(3.) Superchlorinate (Shock) monthly in the 'high season' with two coffee-cups granular chlorine. Turn OZONATOR OFF before Shocking the swimming pool. Don't swim for two hours after Shock Dosing the pool. Turn the OZONATOR on the following morning.
(4.) Calcium Hardness of 200 ppm. (Irrelevant with Ozone fitted)
(5.) Maintain Total Alkalinity of 120 ppm. (Irrelevant with Ozone fitted)

The pH (Like the Richter) scale, each 1/10$_{th}$ is 10 times the previous measurement!

If you have a Tri-Chlor feeder fitted NEVER break up large (3" or 75 mm size) generic TriChlor tablets with a hammer as an explosion and burn injury may result, and DON'T put these generic TriChlor tabs in the skimmer basket as they will erode too quickly and rapidly lower the pH to unsafe levels!

3. **DO NOT USE MORE THAN THE RECOMMENDED QUANTITY OF AQUAGENIE TRI-SUPER-90 TABS FOR YOUR POOL!** With Ozone fitted, this is usually 2-3 for smaller pools to 4-6 for larger pools - depending on pool capacity.

4. **SOME CHLORINE IS NECESSARY!**

"Shock Dose" every four weeks during high season or two weeks if the pool is experiencing heavy bather use.

"Little kids" create more work for the Aquagenie and Ozone. Rule of thumb is: tip **one to two litres of Liquid Chlorine or one to two coffee-size cups** of Granular Chlorine MONTHLY into ***the Aquagenie water flow*** while filtration is running. Don't let anyone swim for 20 minutes or so after shock dosing the pool.

5. ***Winterise your pool after the summer season is over.*** See WINTERISE Section in this Manual

TYPICAL ELECTRICAL REQUIREMENTS for SWIMMING POOLS

All electrical connections must be protected from weather, unless they are in a shed or under the house.

Typical Filtration Pump

The pool filtration is powered by a 230 volt 50 Hz electrically powered self-priming water pump. The motor size may vary in power requirements depending on the pool size and/or water capacity. In larger pools two pumps/filters may be installed. The pump(s) require a standard 3 pin outlet. All outdoor 3-pin-plugs should be of the "weatherproof" type and housed in a weatherproof box.

Small size pools	up to 30 kilolitres	1 x 550 watt pump motor
Large size pools	30 kl & up to 80 kl	1 x 750 watt pump motors
Larger pools	80 to 120 kl	2 x 750 watt pump motors (or more)
Larger pools	over 120 kl	2 x 1150 watt pump motors (or more)

Time Clock

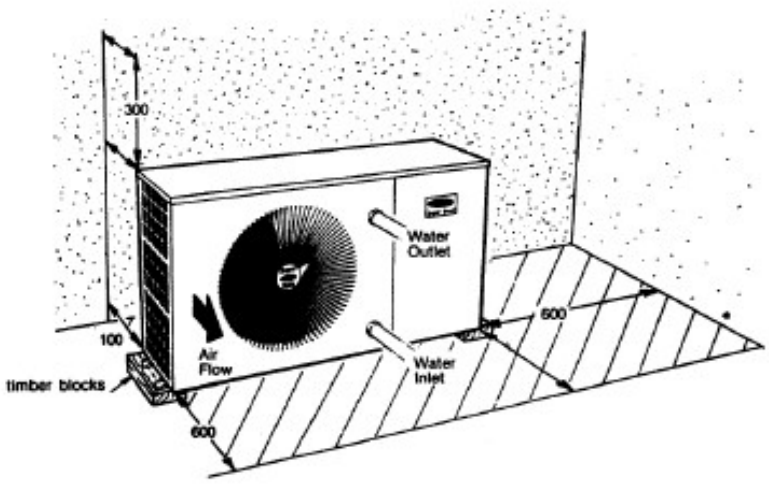
A Hard Wired filtration timer clock may be included with your pool for each filter system supplied, and *you will want a bypass fitted* for pool vacuuming during "power off" times, so ask the Electrician about fitting one for each time clock. The time clock feeds the 3 pin outlet that the pool pump(s) are plugged into.

SALINE CHLORINATORS Check the manufacturer's data sheet as there is a wide variance in power use.

OZONE units Activated Oxygen Passive Ozone production units use 40 watt power UV tubes similar to fluorescent lighting tubes. Please note: WARRANTY ON BULBS IN VOIDED IF THE OZONE UNIT IS CAPABLE OF BEING OPERATED INDEPENDENTLY of the pool pump! The Ozone Unit MUST NOT BE OPERATED without the pump running! Make sure your "Sparky" knows this please!

Pool Light LED (Light Emitting Diodes) LED lights provide bright output at low power consumption but cost more initially. One transformer is sufficient for two LED lights, but check your local Electrical Law for this as one transformer can power multiple lights, but the Law denies this capability for pool lights. The lights come with matching lengths of cable, which if altered, means the lights may not function as intended due to voltage variation. The Electrician will calculate the correct cable matching wire gauge should any additional lights be required, which will be at your cost. People like to switch the pool lights on and off from inside their homes, so inform the Electrician if you want to do this.

Heat Pumps Heat pumps vary in power requirements depending on the model. Although not strictly necessary for the smaller models, it is usual to hardwire the Heat Pump into the electrical supply. There are many options for Heat Pumps on the New Zealand market. You will have evaluated the market and made a choice, so the documentation for your Heat Pump will provide the appropriate values.



The heat pump is interlocked to a water pressure switch which prevents operation when water flow is too low or non-existent, or when the pool is being backwashed.

To avoid recirculation exhausted (cold) air back into the intake side, the intake and exhaust sides of the heat pump must be separated by ducting or the unit must be installed open air without physical barrier or restriction to air flows.

If the heat pump is to be installed inside a shed or closed room, care must be taken to ensure a steady flow of intake air via a grill or vent, and the cold exhaust vented out to avoid being drawn back into the intake side of the unit.

WINTERISING: COMPLETE INSTRUCTIONS

Give pool a good vacuum then backwash the filter for 3 to 4 minutes or until the backwash discharge is clean and clear. Reduce the daily filtration time to 2 to 3 hours depending on whether your pool is less than 30 kl or more than 30 kl. For pool >100 kl set timer for 8 hours. Add 1 litre Algaecide (HOTZONE is one) for all pools up to 50 kl, 2 litres for larger pools. (Repeat this in 6 weeks' time). Using the "Chemistry Set" (not the test strips) water test kit, check the pool balance and ensure the levels are correct for calcium hardness of 200 ppm and total alkalinity of 120ppm. If they need to be adjusted, recheck after adding Calcium Chloride and/or Sodium Bicarbonate, and adjust the pH as required to maintain a level of 7.6. Superchlorinate the pool to 5.0 ppm of residual chlorine (test chlorine levels again after four hours). ALWAYS Remove the Pool Cover when Shock Dosing the pool, and over
Wintertime as Algae will form underneath and a chlorine build-up with no sunlight exposure could damage the pool liner. Turn off the Heat Pump at the main switch,

Every few weeks glance at the pool to see if any algae is forming. If there is, repeat the instructions for using Algaecide (above).

If there is a chance the pool might freeze over, throw a few beach balls in for the winter (The water won't freeze under them, and the hole under them will allow the frozen water to expand without damaging the pool).

USE ONLY GOOD QUALITY POOL CHEMICALS!

Don't worry about lowering your pool water when it fills with rainwater. Pools may "overfill" without any problem, so it is not necessary to manually lower the pool.

THE QUICK VERSION of the FIVE STEP PLAN:

1. Backwash the filter thoroughly, being careful not to lower the pool too far.

2. Reset your time clock to 2 to 3 hours daily depending on your pool size and water capacity.

3. Superchlorinate (Shock Dose) to 5.0 ppm, balance pool, correcting the pH is the last thing you do.

4. Remove the pool cover and store it for winter.

5. Switch off the Heat pump or Gas Heater off at the wall.

EMAIL US info@poolguild.org.nz IF YOU HAVE ANY QUESTIONS!

DON'T LOWER YOUR POOL DOWN IF IT FILLS WITH RAINWATER, AS HYDROSTATIC DAMAGE MAY OCCUR TO YOUR POOL IF GROUNDWATER BUILDS UP BEHIND THE POOL WALL!

SPRING OPENING: COMPLETE INSTRUCTIONS

Backwash the pool filter thoroughly for 3 - 5 minutes (don't lower the pool too far!) Increase Filtration time, initially to 6 - 8 hours, then 8 to 12 hours in the height of summer (experiment!). Increase Chlorine levels by adding manually or increasing the automatic dosing device on your pool. Add 1 litre of Algaecide per 50 kl pool water, Water may turn bright blue or green initially. Repeat in one month's time and each month add 500 ml top up. As Algaecide brands may have different instructions, read the label on the bottle and follow the instructions. Balance pool water by adding Calcium Chloride hardness to 200 ppm and Total Alkalinity by adding sodium Bicarbonate to 120ppm and pH UP or pH DOWN (as needed for your pool type). Adjust the pH LAST! Re-install the Pool Cover and Switch on the Heat Pump or other pool heating device. If you have a THERMAL Heat Retention cover, and leaving it off in the initial stages will delay the pool heating up to your required temperature. Run the pool filtration system 24/7 on time clock override if possible, to bring the pool water up to the required temperature. Heat Pumps are "maintenance heaters" and will take a full week to reach optimum pool temperature.

The FIVE BASIC Principles section of this Pool Owner's Manual will indicate how to correctly maintain the correct Pool Water Balance values and relationship between pH and buffering agents in the water.

USE ONLY QUALITY POOL CHEMICALS!

Don't worry about lowering your pool water when it fills with spring rainwater, as pools have a self-adjusting level and need no intervention from you and may "overfill" without any problem, so it is not necessary to manually lower the pool.

Every few weeks glance at the pool to see if any algae is forming. If there is, repeat the instructions for using Algaecide (above).

THE QUICK VERSION of the FIVE STEP PLAN:

1. Backwash the filter thoroughly, then reset your time clock to SPRING TIME (6-8 hours).

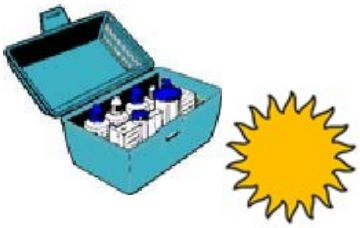
2. Increase any Auto Chlorine Dosing device fitted to maintain a residual chlorine level of 2.0 ppm to 3.0 ppm. If you have OZONE fitted, switch the Ozone Generator on.

3. Add 1 litre of Algaecide per 50 Kl of pool water, dumped into skimmer while pool is operational.

4. Replace the pool cover.

5. Switch on the Heat pump or Gas Heater at the wall.

EMAIL US info@poolguild.org.nz IF YOU HAVE ANY QUESTIONS!



READ AND UNDERSTAND THIS PAGE

YOU NEED TO KNOW HOW TO TEST THE WATER to KEEP YOUR POOL SAFE & CLEAN

HOW TO USE YOUR "CHEMISTRY SET" TEST KIT!

We encourage you to keep the Total Alkalinity & Calcium Hardness levels up in your pool - even if you dissolve powder chlorine in a bucket; tip all the resulting mixture (residue and all) into the skimmer while the pool filter is running.

If you don't have a 4-in-1 test kit (The Blue one) you may need a local pool shop to test for calcium hardness - which should be between 200 and 500 ppm depending on your type of swimming pool. Follow these instructions for a Mk IV kit.

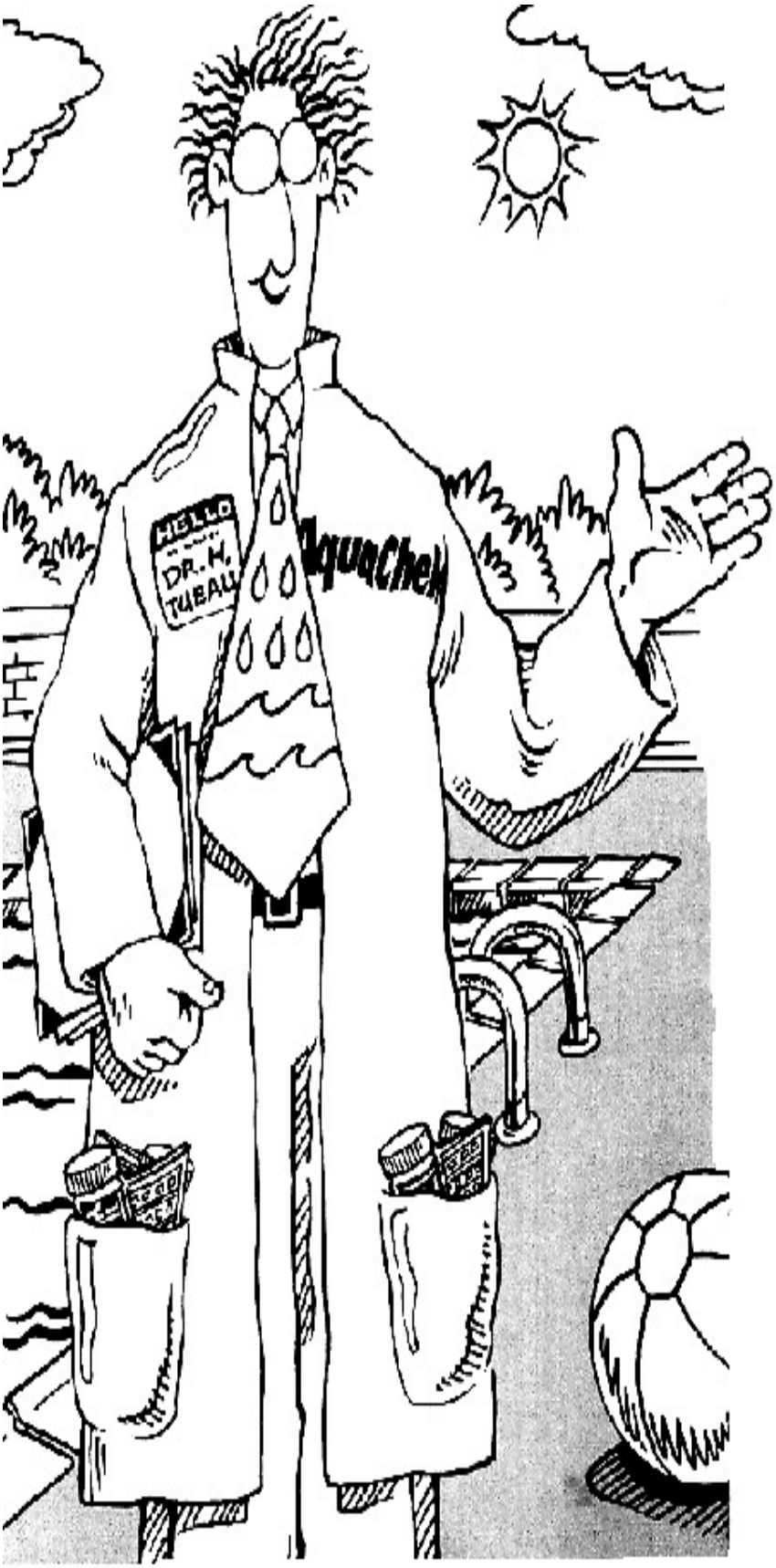
TESTING INSTRUCTIONS

CHLORINE/BROMINE TEST DPD METHOD	pH TEST	ACID DEMAND TEST	TOTAL ALKALINITY TEST
1. Fill CL tube to the mark with pool or spa water. 2. Drop one DPD tablet into tube (Avoid touching the tablet) 3. Place cap on tube and shake until the tablet dissolves. **4. Free Chlorine Reading** Compare tube color with adjacent color standard **5. Bromine Reading** Compare color in vial with bromine standards and determine TOTAL Active Bromine.	1. Fill large tube to pH mark with pool or spa water. 2. Add 1 drop of solution #4, and swirl to mix. 3. Add 5 drops of solution #2, and swirl to mix. 4. Compare the tube color with the adjacent color standard to obtain the pH reading. **NOTE:** Should the pH reading exceed 7.6, save the test sample and proceed to the Acid Demand Test.	1. Using water sample from pH test, add solution #3 ,one drop at a time, swirling between drops. 2. Count drops needed to change color to nearly match pH color standards. Do not count drops which give a 7.2 reading or below. 3. Using the number of drops needed, refer to the acid demand chart in the test kit to determine the quantity of liquid acid required. **NOTE:** A. Never add acid and chlorine at the same time **B.** Add acid with filter running.	1. Fill large tube to total alkalinity with pool or spa water. 2. Add I drop of solution #4 and swirl to mix. 3. Add 2 drops of solution #5 and swirl to mix. 4. Add solution #3 one drop at a time, swirl between drops. 5. Count drops needed to change color from blue to clear. 6. Multiply the number of drops by 10 to obtain ppm (parts per million) . Ideal total alkalinity is 80-120 ppm for plaster finish pools or 120-150 ppm for vinyl, painted or fiberglass pools. If your reading is less than desired, add sodium bicarbonate. If more than desired, acid is usually needed.

Refer to the recommended levels of pH TA & CH for your swimming pool type!

How to change the levels: Raise levels with		Lower levels with
• **Chlorine Test**	**Granular or Liquid chlorine**	**Time will dissipate levels**
• **pH Test**	**Soda Ash**	**Sodium Bisulphate** **Hydrochloric Acid**
• **Total Alkalinity**	**Sodium Bicarbonate**	**Sodium Bisulphate** **Hydrochloric Acid**
• **Calcium Hardness**	**Calcium Chloride**	**Add water to pool**

If you have OZONE fitted to your pool system, the RESIDUAL CHLORINE level should be low: between .5 and .7 mg/kl (ppm) and MAY NOT SHOW A READING on the chlorine test kit. If you take a water sample to a pool shop, ensure THEY KNOW you have a non-chlorine swimming pool, or they will try to sell you some!



AQUACHEK 5-in-1 test strips

… because, We're all busy these days

The 5-in-1 test strip is the answer to busy people.

No longer do you have to:

Go to pool and get a water sample
Sit down
and gently
pour the
water into
the testing
container
Add one
chemical
...

Then another ...
Shake the solution ...
Compare the result with chart

Now, with the 5-in-1 test strip it's a whole new ball game.

Simply dip a strip into the pool, and you're almost done! hold the strip level with the comparator, and that's it!

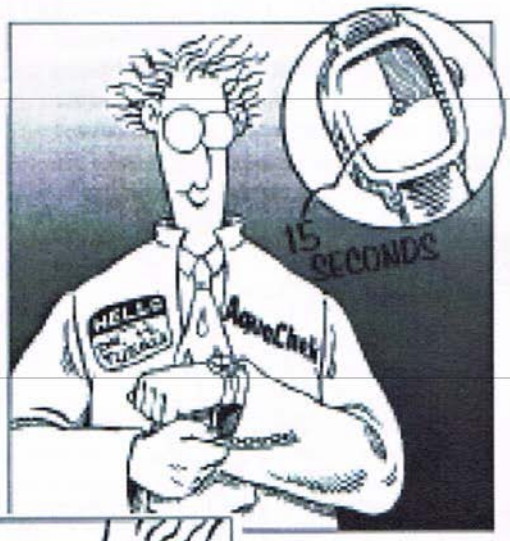
A Quick and simple way to check your pool

Note: Test Strips are NOT as accurate as the "Chemistry Set" that

may have come with the pool.

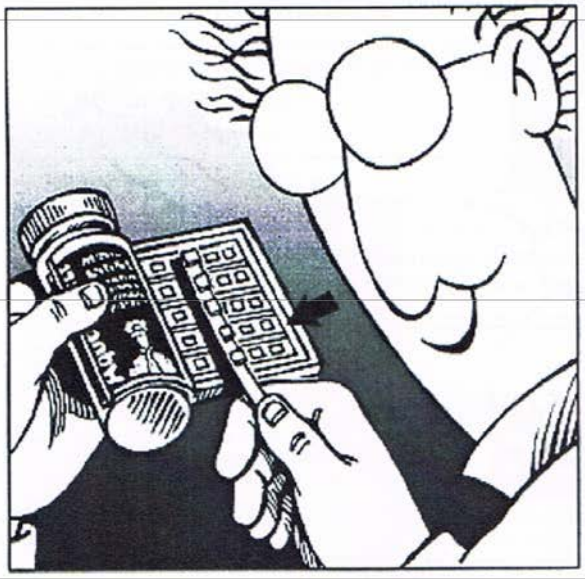
Dip the Strip, then .....

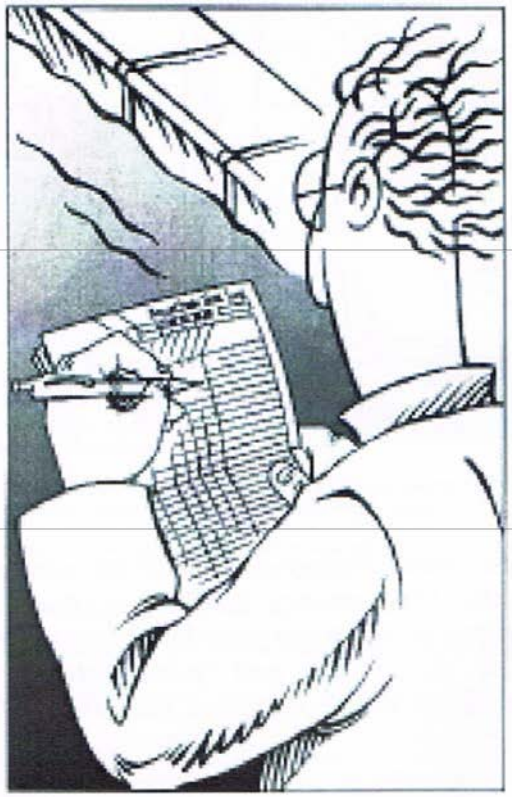
Hold flat
for 15 seconds.....



FAST · EASY
SELECT
ACCURATE

Compare colors to sample





Log the results!

Easy, isn't it!
Remember that the recommendations in the US AquaChek manual may differ from ours. **Use ours!**

Spare copies of this page are available to download from the pool owner's club - www.cascade.co.nz

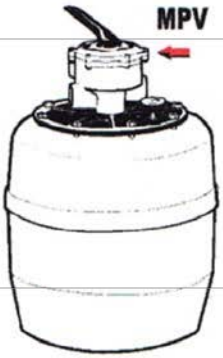
DATE	TIM E	FILTER HOURS	TOTAL ALKALINITY	pH	FREE CHLORINE	TOTAL CHLORINE	CALCIUM HARDNESS	WATER QUALITY	TREATMENT	NOTES

1. Using the "Chemistry Set" pool water test kit - Please refer to page 10 of this Generic Pool Owner's Manual.

2. Checking the Pool Filter pressure gauge to see if it needs a backwash.

Note the initial reading on your pressure gauge when the filter is first started by YOUR POOL BUILDER/INSTALLER!

When first started, the pressure gauge will read the optimum pressure for your pool (usually from Zero to 2.5 Kpa) When the pressure ***increases*** by 1.0 kpa or goes into the RED ZONE it's time to **BACK-WASH** your pool filter.



If you have Electrostatic Glass Bead filtration, backwash the Filtration Tank periodically - say twice a year. Regular Sand media may need backwashing more often, perhaps three times a year or more.

(a.) Turn OFF the power, rotate the MPV Handle (on top of the tank) to the Backwash position
(b.) Turn ON the power.
(c.) Wait (1 - 3 minutes) until the water through the sight glass provided runs clear
(d.) Turn the power OFF
(e.) Turn handle to RINSE, power ON for 5 seconds, power OFF
(f.) Turn handle to FILTER position, power ON! Congtatulations: you have just backwashed your filter!

3. Checking and emptying the Hair & Lint Strainer.

The "Hair & Lint Strainer" is located at the front end of the pool pump. (See RED Arrow at left) It has a clear PVC lid that means you can see if it needs emptying or not. Unless it "looks" more than half full, it may not be necessary to do anything. If you have to empty it, remove the clear lid carefully. If it has been put on too tight, you may need a tool or length of wood that fits the casting to add leverage, but do not re-tighten it too much when you replace it. Hand-tight is generally OK. It will have a round neoprene "O" ring inder the lid, so be sure to give this a wipe clean and replace it carefully or the pump many not "prime" if air gets sucked into the bowl. Using a little Vaseline helps to make the O ring air-tight!

4. Checking the OZONE unit: (FM MOG60/120 UV Unit)
If the GREEN LIGHT is ON and there are BUBBLES in front of the water return: It's Working! Check the position of the suction gauge.

5. Salt Chlorinator Cell Maintenence:
Eventually a surface film will build up on the electrode thus reducing device efficiency. Use Liquid Hydrochloric acid (diluted 1:12 in water solution) soaking electrode briefly to acid wash. Use a PVC container (an old CLEAN 1 litre milk container with the top cut off is a useful container) Add 2/3 WATER FIRST, topping up with ACID to avoid spills. Observed cleaning action (bubbles & foam efferves-cence) and discontinue treatment when efferevescence starts to decline, so as to not damage the electrode surface

*** CAUTION! OBSERVE SAFETY PRECAUTIONS WHILE HANDLING HYDROCHLORIC ACID**

1. **Wear latex or rubber Safety Gloves, safety glasses, protective apron, gumboots or other foot protection**
2. **3/4 fill intended container with water - ADD ACID TO WATER (NOT the other way around)**
3. **Avoid contact with skin - if accidentally exposed, IMMEDIATELY flush with cold water**
4. **Dispose of used acid solution safely (NOT in stormwater drain) - it is still potent and may cause harm!**
5. **Store unused Hydrochloric Acid in secure location - away from children, pets, motor vehicles etc.**

5. Vacuuming the swimming pool:
Often, if the pool "looks like" it may need a vacuum, you can simply give it a good brush using the blue Pool Brush (shown at right). This will swirl any floor debris up into the pool water, and the Aquagenie might be able to do the job for you. Check if the pool is still in need of a vacuum the following day: If so, here is what you do:


Vac Head

(a.) Connect the 2.4m extendable Vacuum Handle to the Vacuum Head and click into place
(b.) Connect the flexible blue Vac Hose onto the 40 mm male fitting on the top of the Vac Head
(c.) Place and seal the Vacuum Plate (it's the dinner-plate size thing with a hole in the middle) into the skimmer water on top of the Skimmer Basket . You may want to turn off the pool pump first, and you certainly WILL have to when removing it
(d.) Lower the Vac Head (and vac pole) into the pool, and feed the Vac Hose down into the pool so it fills with water. When you are sure it's full, plug it into the hole in the Vac Plate. Turn the pump back on if it's off. The MPV must be set to FILTER. Slowly "hoover" the pool floor, trying not to stir up the debis. If the suction stops after a while you may have to halt awhile to backwash the filter (if the pool is REAL dirty the Pressure Gauge will be in the **RED** zone). Backwash to WASTE until the discharge runs clean, then rotate the lever back to FILTER to continue. Remember to always **TURN THE PUMP OFF** when changing the MPV lever position.
(e.) When you are satisfied with the job, unplug the vac hose etc. and store out of the sun.

www.poolguild.org.nz

SAFETY WITH POOL CHEMICALS

Pool chemicals can be injurious and damaging if not handled correctly and in particular if not kept out of the reach of children. It is very important to familiarise yourself with the following guidelines.

(a.) **Never mix any pool chemicals together**, not different types or even, brands of a "similar" product - particularly granular chlorines, or granular chlorine with ANY OTHER chemical.
(b.) Never use pool chemicals in conjunction with household cleaners and detergents.
(c.) Never roll or violently agitate containers of granular chlorine. Always keep them tightly closed and away from naked flame (cigarette ash and motor oil will ignite this product).

Failure to observe these simple precautions can lead to fire, explosion, production of noxious poisonous gases and potential personal injury.

(d.) Keep all pool chemicals in a locked dry area out of reach of children. Always use clean dry utensils for measuring pool chemicals. Note: it is recommended practice to reserve a measuring device specifically for each different type of chemical.
(e.) When adding chemical and water solutions to the pool do so carefully holding the liquid container close to the surface of the pool to avoid splashing skin or clothing.
(f.) Always wash hands thoroughly with soap and water after using all chemicals.
(g.) Acids should be handled with great care. Always add acid to water NEVER water to acid.
(h.) Always check labels thoroughly before use. Similar looking labels can lead to the use of the wrong chemical with resultant harmful conditions.
(i.) Change test kit reagents every 12 months or sooner. The use of old reagents can lead to inaccurate tests and wrong dosages.
(j.) Familiarise your family with antidote treatment and first aid procedures in case of chemical Accidents. You should become familiar with some first aid procedures… "Just in case."

Remember that when pool chemicals are treated with respect there are beneficial product results, which will ensure healthy water conditions and the health and safety of swimmers.

POOL CHEMICAL DEFINITE DON'TS!

NEVER MIX ANY TWO DIFFERENT POOL CHEMICALS TOGETHER! EXPLOSION AND SEVERE BURN INJURY MAY RESULT!
DO NOT ADD ANY CHEMICALS DIRECTLY INTO THE SWIMMING POOL WATER!
INTRODUCE CHEMICALS SEPARATELY INTO THE SKIMMER WHILE FILTER IS RUNNING.
ONE EXCEPTION: DO NOT PUT TRI-CHLOR TABLETS INTO YOUR SKIMMER BASKET AS DAMAGE TO THE FILTRATION SYSTEM MAY RESULT!
DO NOT ALLOW OVERCHLORINATION WITH POOL COVER ON POOL!
THE BUILD-UP OF CHLORINE MAY DAMAGE THE COVER
DO NOT STORE POOL CHEMICALS NEAR PETROLEUM BASED PRODUCTS EXPLOSION AND/OR FIRE MAY RESULT!
DO NOT SMOKE, OR ALLOW FLAME OR FIRE IN THE VICINITY OF CHEMICALS
A SPARK FROM A CIGARETTE WILL IGNITE POWDER CHLORINE!
DO NOT STORE POOL CHEMICALS WHERE CHILDREN MAY ACCESS THEM!
THESE ARE HAZARDOUS GOODS AND CHILDREN MUST BE PROTECTED FROM HARM

NEW ZEALAND
POOL INDUSTRY
ASSOCIATION
INCORPORATED

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