

A woman with dark hair is lying on her back in a spa pool, wearing a black one-piece swimsuit. She has her eyes closed and a relaxed expression. The background is a soft-focus view of the pool's interior. The image is framed by purple banners at the top and bottom, which contain decorative swirls and the title text.

ESSENTIALS

Spa Water Treatment Guide



Welcome

Your spa will provide you with your own personal haven of relaxation and therapy; it will be a refuge away from the stresses and strains of everyday life and a place where you can spend quality time with loved ones and friends.

To keep your spa water healthy, clean and inviting, it is very important that you treat it correctly and regularly with chemicals that will keep the water balanced, kill and prevent bacteria growth and remove non-filterable wastes.

This guide is produced to help understand spa maintenance and in particular water treatment using chlorine or bromine based sanitisers (disinfectants) and explains the importance of establishing and maintaining the correct chemical levels.

At the back of the guide there is a section on spa and chemical safety. Please read this thoroughly before you begin using or treating your spa, and always read and follow the instructions that are printed on the chemical containers before application.

Thank you for choosing Essentials for your spa water treatment products.





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Spa Maintenance

There are seven important aspects of spa maintenance that are essential in keeping your spa water safe, healthy and inviting.

These are:

- Circulation and filtration
- Testing
- Balancing
- Sanitising
- Oxidising
- Cleaning
- Draining and refilling

Before covering each of the above important aspects we should look at what you need to do after first filling your spa with fresh water.



Initial Fill with Fresh Water

Before leaving the factory, portable spas will have been tested for leaks; this involves filling the spa with water and running it for a while before emptying and packing it ready for shipping. Although the spa has been emptied there will still be some water left in the pipework that will be there when the spa is delivered to you.

It is possible that this residual of water could have grown harmful bacteria, including Legionella, so it is important that the spa is dosed with a high level of sanitiser immediately after it is first filled with fresh water and before the electric supply to the spa is switched on.

The level of sanitiser dosed should be sufficient to achieve a level of 50 mg/L for the minimum of an hour (or 20 mg/L for a period of two hours) - see the tables below for guidance of quantities required.

Once the sanitiser has been applied, leave the spa for 10 minutes then switch the electric supply on and run all pumps for a period of 15 - 20 minutes, opening all air control valves.

If your spa is fitted with them, operate all diverter valves to ensure that the water flows through all the spa jets and pipework.

Finally, if your spa has an air blower fitted, switch it on and let it run for a few minutes.

After the one or two hour time period has passed you can reduce the sanitiser level to the normal operating levels.

Please note: The above also applies if you empty the spa and leave it empty for a period of time before refilling and re-commissioning it.

Essentials Stabilised Chlorine Granules dosing rates:

Spa volume		Introduce a level of 20mg/L	Introduce a level of 50mg/L
500L	110 gal	20g	50g
1,000L	220 gal	40g	100g
1,500L	330 gal	60g	150g

Essentials Spa Bromine Granules dosing rates:

Spa volume		Introduce a level of 20mg/L	Introduce a level of 50mg/L
500L	110gal	27g	67g
1,000L	220gal	54g	134g
1,500L	330gal	80g	200g



Circulation and Filtration

The equipment supplied with spas varies from make-to-make, but all spas have at least one pump and a filtration system. It is the pump that creates the flow (circulation) of water to and from the spa, and built into the circulation will be the filter.

As the water circulates through the filter, particles are removed and collected within the filter media. A combination of the removal of particles by the filter and good chemical water treatment is what keeps your spa water clear, clean and healthy.

Please be guided by the instructions within the manufacturers manual supplied with your spa as to the ideal circulation running times for your particular make; as it is likely that the circulation of your spa will be taken care of automatically by the spa management systems.

Cartridge Filters



Most spas are supplied with a cartridge filter which will contain a cartridge element similar to the picture above, that removes particles from the water.

The cartridge element will also collect oils and greases, and over time the collection and retention of debris will begin to impair the filter efficiency and reduce the speed at which the water flows around the circulation system.

It is therefore necessary to clean cartridge elements typically every 4 - 6 weeks using Essentials Spa Cartridge Cleaner.



Testing

Regularly testing your spa water is an essential part of spa maintenance, as without testing you will have no idea what the chlorine or bromine, pH, total alkalinity and calcium hardness levels are. For the testing of domestic spas, test strips are normally used. It is important that you test your spa water regularly, ideally every day.

Insta-Test Strips



There is a choice of two different Insta-Test strips:

- Insta-Test 3 that enable you to test free chlorine or bromine, pH and total alkalinity.
- Insta-Test 5 that enable you to test free chlorine or bromine, total chlorine, pH, total alkalinity and calcium hardness.

Although not as accurate as using a test kit, test strips are very quick and easy to use and take the 'chore' out of testing your spa water.

Simply take a test strip from the pot, dip it into your spa, swirl it round a few times, hold level (being careful not to shake off the excess water), wait for the prescribed length of time and then compare the colour of the pads with the colours printed on the test strip pot.



Balancing

Establishing and maintaining the correct water balance is important for a number of reasons:

- Chemical efficiency.
- Bather comfort.
- Protection of pool and plantroom equipment.
- Water quality and appearance.

Some people believe that keeping the right pH is all that is needed to achieve the correct water balance; this isn't the case, and although pH is important there are other factors that also need to be considered.

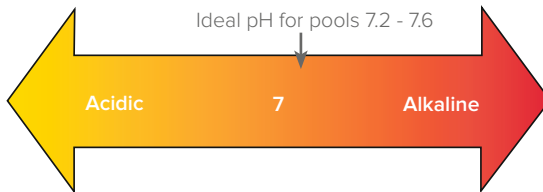
Listed below we have illustrated the properties that make up water balance and the ideal levels that should be maintained.

Ideal spa water levels:

- | | |
|---------------------------|----------------------|
| • Calcium Hardness: | 100 mg/L – 200 mg/L |
| • Total Alkalinity: | 125 mg/L – 150 mg/L |
| • pH: | 7.2 – 7.6 |
| • Total Dissolved Solids: | Less than 1,500 mg/L |

pH

pH is a measure of how acidic or how alkaline (not to be confused with total alkalinity) the water is.



As you can see from the above diagram the pH scale is 0 to 14, with 0 being very acidic and 14 very alkaline. pH 7 is neutral and for spas the pH should be maintained between 7.2 and 7.6, this being slightly alkaline protects the spa and supports equipment from aggressive, corrosive water and is comfortable for bathers.

Problems associated with incorrect pH levels

pH below 7.2:

- Corrosive water.
- Etching of surfaces.
- Staining.
- Skin and eye irritation.
- Damage to plantroom equipment.

pH above 7.6:

- Scale formation.
- Filter calcification.
- Cloudy water.
- Drying to skin.
- Reduced effectiveness of chlorine.

Total Dissolved Solids (T.D.S.)

T.D.S. is, as the name suggests, the sum of everything that is dissolved in the water including minerals, chemicals and debris.

The maximum recommended T.D.S. level is 1,500mg/L. When the level rises above this it is time to empty and refill the spa.

High T.D.S. levels lead to:

- Corrosion.
- Poor chemical efficiency.
- Increased chemical consumption.
- Dull looking water.
- Salty tasting water.

Essentials Spa Starter Packs



A convenient, easy to use pack containing the essential chemicals required for the day to day running of your spa.

Choose from either bromine or chlorine Essentials Spa Starter Packs.

Bromine Pack contents:

- Bromine Granules - 500g
- pH Increaser - 500g
- pH Decreaser - 750g
- Foam Reducer - 500g
- 2 x Spa Refresh - 35g sachets
- 50 Insta-Test 5 Strips
- Water Treatment Guide

Chlorine Pack contents:

- Chlorine Granules - 500g
- pH Increaser - 500g
- pH Decreaser - 750g
- Foam Reducer - 500g
- 2 x Spa Refresh - 35g sachets
- 50 Insta-Test 5 Strips
- Water Treatment Guide

Essentials Spa Hardness Increaser



Calcium hardness (or total hardness) is the measure of how hard or soft the water is. The level will vary depending on where your water supply comes from. For example, in some parts of Scotland the water is very soft and in parts of Kent the water can be very hard. The hardness depends upon the amount of mineral salts (mainly calcium) that are dissolved in the water and the more salts there are, the harder the water is.

Problems associated with incorrect Calcium Hardness levels

Low calcium hardness (less than 100 mg/L):

- Corrosive water.
- Etching of surfaces.
- Staining.
- Skin and eye irritation.
- Foam.

High calcium hardness (more than 200 mg/L):

- Scale formation.
- Filter calcification.
- Cloudy water.
- Skin and eye irritation.
- Reduced sanitiser effectiveness.

If the calcium hardness of your spa water is less than 100 mg/L then it should be increased using Essentials Spa Hardness Increaser, details of dose rates can be found in the table below.

Essentials Spa Hardness Increaser dosing rates:

Spa volume		Increase level by 10 mg/L	Increase level by 25 mg/L	Increase level by 50 mg/L
500L	110gal	7g	19g	38g
1,000L	220gal	15g	38g	76g
1,500L	330gal	23g	57g	114g

Essentials Spa Scale Remover



If the calcium hardness of your spa water is greater than 200mg/L then Essentials Spa Scale Remover should be used to help prevent scale deposits within the filter, heater, pipework and on spa surfaces.

Essentials Spa Scale Remover dosing rates:

Spa volume		Initial dose rates	Weekly dose rates
500L	110gal	12ml	7ml
1,000L	220gal	25ml	15ml
1,500L	330gal	38ml	23ml

Total Alkalinity



Total alkalinity is a measurement of the waters ability to resist pH change. If the total alkalinity is low then the pH can fluctuate making it difficult to control and maintain at the ideal level.

If the total alkalinity is high then the pH can be difficult to change and will keep rising. A high total alkalinity can also lead to the formation of a bicarbonate scale on spa surfaces, within pipework and support equipment.

If the total alkalinity of your spa water is below 125 mg/L it should be increased using Essentials Spa Alkalinity Increaser, the table below indicates the dosage quantities required.

If the total alkalinity of your spa water is above 150 mg/L then Essentials Spa pH Reducer can be used to lower it. When applying pH Reducer to lower total alkalinity levels, the product should be pre-dissolved and then 'slug' dosed into one area of the spa.

Essentials Spa Alkalinity Increaser dosing rates:

Spa volume		Increase level by 10mg/L	Increase level by 25mg/L	Increase level by 50mg/L
500L	110gal	9g	22g	45g
1,000L	220gal	18g	45g	90g
1,500L	330gal	27g	68g	135g

Essentials Spa pH Reducer dosing rates (for total alkalinity reduction):

Spa volume		Reduce level by 10mg/L	Reduce level by 25mg/L	Reduce level by 50mg/L
500L	110gal	12g	30g	60g
1,000L	220gal	24g	60g	120g
1,500L	330gal	36g	90g	180g

Essentials Spa pH Increaser & Essentials Spa pH Reducer



If the pH of your spa water is either low or high it should be corrected using Essentials Spa pH Increaser or Essentials Spa pH Reducer.

The tables below will help you calculate the dose rate to suit your spa.

Essentials Spa pH Increaser dosing rates:

Spa volume		Dose rate	
500L	110gal	5g	Re-check pH after a few hours and repeat dose
1,000L	220gal	11g	
1,500L	330gal	17g	

Essentials Spa pH Reducer dosing rates:

Spa volume		Dose rate	
500L	110gal	5g	Re-check pH after a few hours and repeat dose
1,000L	220gal	11g	
1,500L	330gal	17g	



Sanitising

The reason that sanitisers are used in spas is to ensure that the water is healthy by preventing and killing bacteria. This is achieved by continuously and consistently maintaining a level of sanitiser (disinfectant) in the water with either chlorine or bromine.

Chlorine

Chlorine is a commonly used chemical to achieve satisfactory bacteriological and chemical purity in spas. It must be present in the 'free' form to kill bacteria and oxidise organic matter derived from bathers.

Provided the water is balanced, chlorine levels of between 3.0mg/L to 5.0mg/L are sufficient to maintain healthy, clean water. A well managed chlorine treated spa will have no odour and levels of chloramines (combined chlorine) of less than 0.5mg/L.

Combined chlorine is created as a result of a reaction between free chlorine and organic matter and is a mixture of monochloramine, dichloramine and nitrogen trichloride. The latter is mostly produced when the water is not being treated adequately and gives rise to the 'chlorine' odour.

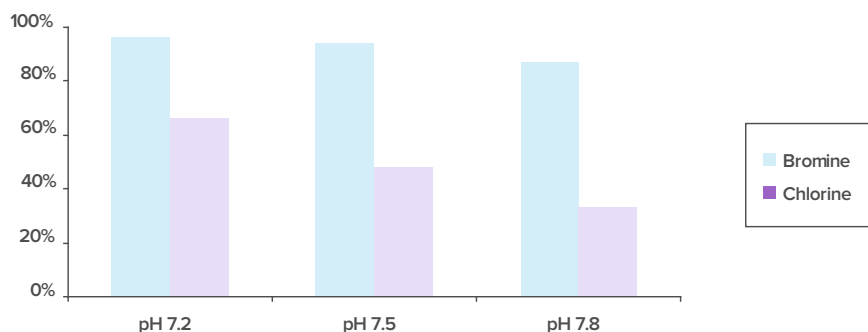
Essentials makes it easy for you to maintain your sanitiser level by giving you a choice of products to suit your spa situation, preferred dosing method and budget.

Bromine

Bromine is similar to chlorine in its effectiveness as a sanitiser but there are some important differences that make it an ideal product for using in a spa:

- Bromine should be dosed into the spa via a chemical feeder (brominator), which is usually installed in the plantroom after the filter and heater, or a floating dispenser.
- Bromine, like chlorine, combines with organic compounds to form bromamines, but unlike chloramines, bromamines cause little or no eye, skin and nasal irritation. Also there is not the pungent smell sometimes associated with certain types of chloramines.
- Bromine retains better levels of efficiency over a wider pH band than chlorine (see the chart below) which makes it ideal for spas, as the pH can fluctuate a fair amount.

Effects of pH level on sanitiser efficiency:



Essentials Stabilised Chlorine Granules



A traditional granular chlorine donor that is popular with many spa owners as it gives dose rate flexibility.

These granules are rapid dissolving which makes pre-dissolving and application easy.

The granules have a pH value of about 6.0 - 7.0, which is fairly close to the ideal spa water pH level, and so will have little effect on the pH level of your spa water.

Essentials Stabilised Chlorine Granules dosing rates:

Spa volume		Increase level by 1mg/L	Increase level by 2mg/L	Increase level by 3mg/L
500L	110gal	1g	2g	3g
1,000L	220gal	2g	4g	6g
1,500L	330gal	3g	6g	9g

Essentials Stabilised Multifunctional Small Chlorine Tablets



These smaller 20g chlorine tablets slowly release a powerful, long lasting disinfectant to kill potentially harmful bacteria and other organisms. They also contain a clarifier to help keep your water crystal clear and sparkling.

As these smaller chlorine tablets slowly erode over a period of 3 - 5 days (depending on the water flow) they should only be used with a chlorine feeder or with floating dispenser.

When set up correctly, your feeder or dispenser will release the correct amount of chlorine into the spa to maintain the ideal level between 3.0 mg/L – 5.0 mg/L, and all you need to do is top up with tablets as and when required.

If you are using a floating dispenser remember to remove it from the spa and place it on a non-bleachable surface while people are bathing.

Essentials Spa Bromine Granules



Essentials Spa Bromine Granules are a highly effective sanitiser formulated to kill and prevent bacteria and algae growth in a spa.

Being a granular product it is easy to vary the dose rate to suit requirements.

These granules have a fairly neutral pH so won't upset the water balance.

Essentials Spa Bromine Granules dosing rates:

Spa volume		Increase level by 1mg/L	Increase level by 3mg/L	Increase level by 5mg/L
500L	110gal	1g	4g	6g
1,000L	220gal	3g	9g	13g
1,500L	330gal	4g	13g	19g

Essentials Spa Bromine Tablets



Essentials Spa Bromine Tablets should be dosed via a chemical feeder (brominator), which is easy and inexpensive to install retrospectively to an existing in ground spa, or floating dispenser.

When set up correctly, your brominator or floating dispenser will dispense the correct amount of bromine into the spa to maintain the ideal level between 3.0mg/L to 5.0mg/L, and all you need to do is top up the feeder with new tablets as and when required. This makes maintaining the sanitiser level in your spa very straightforward.

If you are using a floating dispenser remember to remove it from the spa and place it on a non-bleachable surface while people are bathing.

Please note: *Essentials Spa Bromine Tablets are designed to maintain bromine levels, so before using them the correct bromine level should be established using Essentials Spa Bromine Granules.*



Oxidising

Regularly oxidising spa water (ideally weekly) will pay dividends in the prevention of water problems. Bather wastes such as perspiration, urine and cosmetics can build up in spa water providing nutrients for bacteria and algae. A weekly oxidising treatment or shock dose will destroy these wastes and help maintain comfortable bathing conditions.

Essentials Spa Non Chlorine Shock



A granular product is ideal for the regular oxidation of spa water as it will destroy organic waste and chloramines without increasing the chlorine level.

These granules can be used for chlorine or bromine treated spas. Adding Essentials Spa Non Chlorine Shock to a bromine treated spa will regenerate the bromine ions and will therefore reduce the amount of bromine needed to maintain your spa.

Because the bromine is regenerated you should test the bromine level after applying Essentials Spa Non Chlorine Shock to ensure that the level is not too high before spa bathing recommences.

Essentials Spa Non Chlorine Shock dosing rates:

Spa volume		Weekly dose
500L	110gal	5g
1,000L	220gal	11g
1,500L	330gal	17g

Spa Refresh



The ultimate product for regular oxidisation, Spa Refresh is a blended product that not only destroys bather wastes and eliminates chloramines, but also clarifies the spa water to help achieve crystal clear water that looks great and is comfortable for bathers.

Supplied in pre-measured sachets, Spa Refresh is the easiest oxidiser to apply as you simply cut the corner of the sachet with scissors and sprinkle the contents over the water surface.

No pre-dissolving is required. One sachet is sufficient to treat spas up to 1,500 litres.



Cleaning

Floating debris such as suntan lotion, cosmetics, grass and insects will collect on the water surface and spa sides, providing a source of food for bacteria and algae.

A weekly clean around the waterline using Essentials Spa Surface Cleaner or Swimmer Waterline Cleaning Paste will easily remove unsightly waterline deposits.

The regular chemical cleaning of filter media (usually a cartridge element) will keep the filtration system working efficiently, help promote sparkling spa water that is easier to maintain, and reduce chemical consumption.

Essentials Spa Surface Cleaner



Specially formulated for use in spas, this cleaner is easy to apply using a brush, sponge or cloth.

Before applying Essentials Spa Surface Cleaner ensure the area to be cleaned is wet, then dispense a little on to the brush, sponge or cloth and gently apply it to the waterline. Leave for a couple of minutes and then rinse area with plenty of water.

Rubber gloves must be worn when using this product.

After draining and before refilling the spa, Essential Spa Surface Cleaner should be used to clean all internal spa surfaces.

Swimmer Waterline Cleaning Paste



A powerful cleaner that effectively removes waterline deposits.

Use sparingly as a little goes a long way.

Essentials Spa Cartridge Cleaner



Filter media (usually a cartridge element) should be chemically cleaned regularly, and Essentials Spa Cartridge Cleaner has been designed to remove the greases and oils that impair the filters efficiency in the removal of particles from spa water.

This product can be used to clean filter cartridges and silica sand. For application details please see the product label.

When cleaning a cartridge element firstly hose the cartridge to remove and loosen deposits, then soak it in Essentials Spa Cartridge Cleaner solution for at least 8 hours. After soaking the cartridge rinse it thoroughly with fresh water and if possible allow it to dry before returning it to the spa.

Essentials Spa Filter Cleaner Powder



Filter media (usually a cartridge element) should be chemically cleaned regularly. Essentials Spa Filter Cleaner Powder has been designed to remove the grease and oils. This convenient 500g tub is the ideal product to clean filter cartridges.

Measure 100g of Essentials Spa Filter Cleaner Powder into a clean plastic bucket containing clean water and stir well. Hose the cartridge to remove any loose debris, and then soak it in the cleaning solution for at least 8 hours.

After soaking the cartridge rinse it thoroughly with fresh water and if possible allow it to dry before returning it to the spa. Use Essentials Spa Instant Filter Cleaner as part of a regular cleaning routine for your hot tub filter cartridges.

Essentials Spa Instant Filter Cleaner



Essentials Spa Instant Filter Cleaner will rapidly remove grease and oil from the filter cartridges so should be used on a fortnightly basis or more frequently if your hot tub sees heavy use.

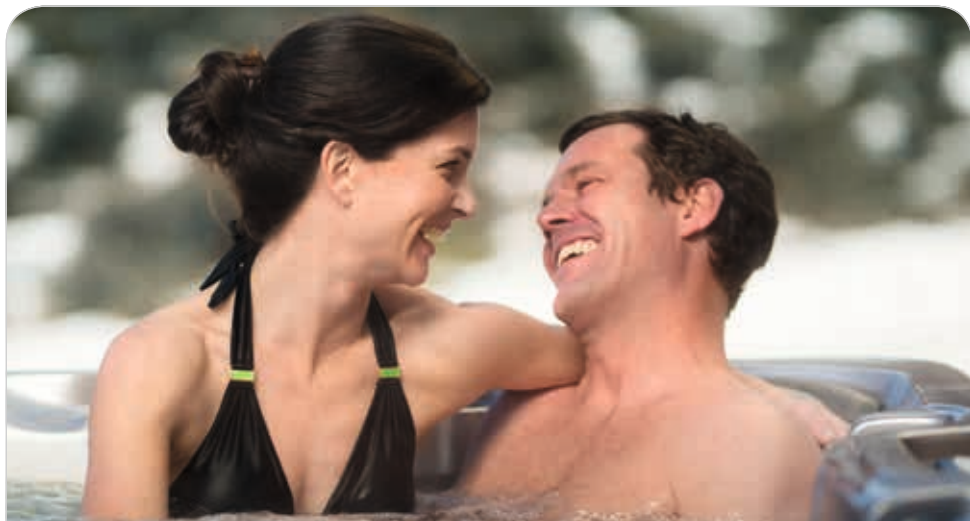
Remove filter(s) from filter compartment and hose down with fresh water to remove loose matter.

Thoroughly spray filter(s) with Essentials Spa Instant Filter Cleaner taking care to penetrate the veins with product.

Leave the filter(s) to stand for 15 minutes then hose down thoroughly with fresh water.

Always wear protective gloves and eye protection when applying this product.

The regular chemical cleaning of filter media will keep the filtration system working efficiently and help to promote sparkling water.



Speciality Treatments

In addition to the water treatments that have already been covered, there are a couple of other products that may be needed from time to time, or you can include them within your routine spa management to prevent problems.

Clarifying

Spa water can become cloudy for a number of reasons:

- Incorrect water balance.
- Poor or insufficient filtration (filter needs cleaning).
- Low levels of sanitiser.
- A build-up of bather wastes.

Essentials Spa Liquid Clarifier will quickly restore water sparkle, but before using it you should ensure that:

- The water is correctly balanced - see the Balancing section.
- The circulation and filtration system are operating correctly and the filter is clean.
- The sanitiser level is being maintained within the ideal range – see the Sanitising section.

Once you are satisfied that the above conditions have been met then the Essentials Spa Liquid Clarifier can help speed up the clarifying process.

Essentials Spa Liquid Clarifier



A clarifier in liquid form that can be used with all types of filtration systems.

Essentials Spa Liquid Clarifier is added directly to the spa water with the pump running.

Once applied it collects small particles and binds them together making larger particles that are much easier for the filter to remove.

Regular small doses of this product are all that are required to keep spa water looking crystal clear.

Essentials Spa Liquid Clarifier dosing rates:

Spa volume		Initial dose rate	Weekly dose rate
500L	110gal	25ml	12ml
1,000L	220gal	50ml	25ml
1,500L	330gal	75ml	38ml

Dealing with Foam

From time-to-time it is likely that foam will form on the water surface, this is usually caused by remnants of detergents left in bathing costumes after they have been washed.

If possible, it is always a good idea to encourage spa bathers to shower, with their costumes on, before using the spa as this will not only help in removing detergents but will also remove cosmetics and lotions from the body.

If foam does appear on the water surface it can easily be destroyed by using Essentials Spa Foam Remover.

Essentials Spa Foam Remover



Used to prevent and destroy unsightly foam on the surface of spa water this fast acting product quickly breaks the foam down.

It comes in a liquid form that can be added directly to the spa water.

Essentials Spa Foam Remover dosing rates:

Spa volume		Initial dose rate	Weekly dose rate
500L	110gal	50ml	25ml
1,000L	220gal	100ml	50ml
1,500L	330gal	150ml	75ml



Draining and Refilling

Although this is the last subject being covered within this guide, it is an important part of any spa management programme.

Over time spa water can become 'stale' as it absorbs minerals, chemicals and other soluble materials that cause the total dissolved solids level (T.D.S.) to increase.

When the T.D.S. level reaches 1,500 mg/L it is time to drain the water out of the spa and refill it with fresh new water. As a broad guide, a spa will need draining and refilling every 3 - 4 months.

After draining and before refilling it is a good idea to clean all the spas internal surfaces with Essentials Spa Surface Cleaner and clean the cartridge element with Essentials Spa Cartridge Cleaner.

Remember, if the spa is going to be left empty for a period of time before being refilled it should be treated with a high dose of sanitiser before being switched back on.

Enjoy your spa!



Safety

General Spa Safety

- Do not allow water temperatures to exceed 40°C (lower for children).
- Never leave children unattended in the spa.
- Do not overload the spa.
- Never use inappropriate electrical equipment in the spa or close to the spas edge.
- Never allow diving or jumping into the spa.
- Don't allow horseplay in or around the spa.
- Never allow glass objects in the spa.
- Do not drink alcoholic beverages before or during spa use.
- Always remove cover completely before using the spa.

General Chemical Safety

- Always read the instruction label on chemical products.
- Always adhere to the instructions printed on the product label.
- Always handle chemicals in a well ventilated area, preferably outdoors.
- Always keep chemicals out of the reach of children.
- Always wash hands after handling chemicals.
- Always store chemicals in a cool, dry place.
- Always put the lids back on chemical containers.
- When pre-dissolving products always use a clean container.
- Never use chemicals that don't have an instruction label.
- Never mix chemicals.
- Never dose chemicals when there are bathers in the spa.



