SPATA™

THE HOME OWNERS'
SWIMMING POOL HANDBOOK

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This guide is the 2019 version, and all information is correct at the time of publishing. For the latest updates please see the SPATA factsheets in the online Knowledge Hub at www.spata.co.uk

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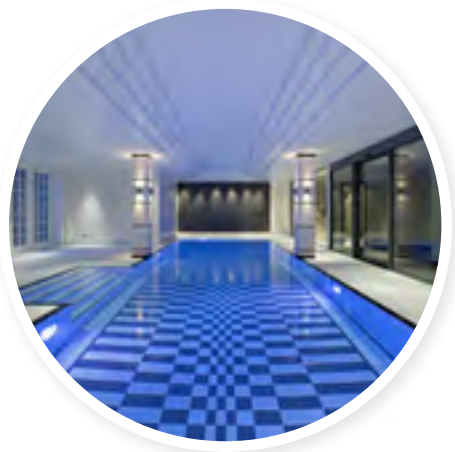
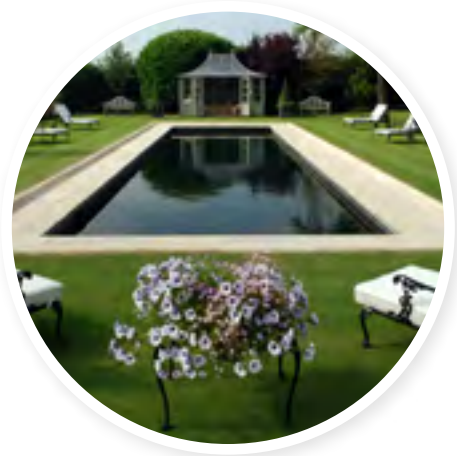


1. Introduction



Swimming pool owners know that their pool can provide years of fun and exercise opportunities. Being able to relax by a pool can give a tremendous sense of wellbeing, especially for outdoor pools when the sun shines!

This handbook has been compiled for pool owners and sets out the maintenance routine for the year. This guide is written in simple non-technical language, and endeavours to answer some of the queries that will inevitably occur. It is a general document that endeavours to meet the requirements of all pools and so some of the information may not apply to your pool in particular.

You are urged to follow the routines explained so that you can anticipate the trouble-free enjoyment of your swimming pool.

The normal, day-to-day, week-to-week, maintenance is very simple and non-technical in many ways; it does take a small amount of time. However, you may not wish to dedicate, that time no matter how small the pool. So, now is the time to decide what, if any, aspects of routine maintenance you would prefer your SPATA pool builder/ maintenance company to undertake leaving you free to enjoy the pool and other activities. Make your arrangements in good time to avoid possible disappointment at the last minute.

The operation of a swimming pool depends on several factors. The principal one is the removal of suspended matter, by filtration and chemical treatment, to provide safe, clear and inviting water.

Maintenance of your pool will vary slightly depending on the location, plus the level of equipment/controls installed and complexity of the installation. The temperature, the number of bathers and whether it is indoors or outdoors will also have a bearing. These notes concentrate on the outdoor pool, but many of these are also applicable to an indoor pool.

To understand the operation of the pool more fully, a brief description of all the processes involved is included.

Throughout this handbook, SPATA has assumed that your pool is built to SPATA Standards, so if there is any doubt, please check with your nearest SPATA Member that this is the case. Details of which can be found on www.spata.co.uk

2. Safety

It should be obvious to everybody that water is potentially lethal; even a small amount with little depth. It is on record that a Frenchman survived the sinking of both the Titanic and the Lusitania only to drown in less than six inches of water in his bath!

Now that you have a swimming pool, it is important that safety is never far from your thoughts. It is equally important that any measures taken are both practical and not excessive. Adequately securing the boundaries of your property, will minimise the risk of someone coming into your grounds without permission. There are other safety items mentioned below which will reduce the risks further. Consideration should also be given to depth markings, signage for no diving (where pools are not built with a "cage of safety") and signage for adult supervision of the aquatic environment.

Swimming pools should be fun and enjoyed as such.

There is not one product on the market which can be described as a completely foolproof safety device. Safety devices all rely on a human input; if you have a fence around the pool, then YOU must remember to shut and lock the gate. A safety cover will only be effective if YOU remember to put it over the pool, when not in use by bathers. Therefore, in addition to any of these layers of protection, the best defence against an accident is constant vigilance, education and common sense.

Continually check swimmers, even older ones, when the pool is in use. Even when the pool is not in use, warn people who are in the vicinity, especially children.

Teach EVERYBODY in the family to swim. Teach small children that they must keep away from the pool and only go in when they are told they can and are supervised by an adult. Do not allow bathers to indulge in horseplay around the pool. Remind yourself constantly to check on pool safety. Please see www.sta.org for more details of swimming lessons.

Never let small children swim without supervision and never allow friends' children to turn up uninvited. They should only come when you invite them, or by arrangement when their parents can help with the supervision.

A few general safety tips:

- Only dive into the pool from the agreed location, where the Cage of Safety is incorporated into the design.
- Ban horseplay, bombing and avoid running around the pool perimeter.
- Do not duck others under the water.
- DO NOT use the pool if the bottom cannot be seen clearly at all times.
- Mark 'DEEP' and 'SHALLOW' ends.
- Ensure that your family and visitors know what to do in an emergency.
- Warn parents that they must watch their children at all times.
- DO NOT use glass products near the poolside
- Once swimming has finished, and the area is to be vacated, check that there are no toys left behind that can encourage youngsters to search for them later.

There are many more tips, but there is no doubt that with a little thought and common sense, you can have a safe but enjoyable pool. In these days of increasing litigation in respect of compensation claims, it may be advisable to speak to your insurance company regarding Public Liability cover (at the same time talk about ensuring the pool and its equipment).

3. General care of the pool

Your swimming pool will give years of trouble-free service if the following points are remembered:

1. Check and correct pH value and disinfectant levels before use, as per the manufacturer's or installers recommendations, even if the pool is being regularly serviced. This is covered later in this document.
2. Be careful when adding chemicals, especially large doses. It is preferable to dissolve chemicals one type at a time in warm water taken from the pool, in a dedicated and clearly labelled plastic bucket, as this allows for quicker dissolving of chemicals. Stir with a timber or plastic paddle to dissolve. Always slowly add as a solution near to an inlet within the pool to aid rapid dispersal and without splashing, since undissolved chemicals can damage the pool finish.
3. Backwash regularly, when using a sand filter. Backwashing is the process of cleaning a filter by reversing the flow of water through the medium in the filter tank.
4. Check the pump coarse strainer basket is clean.
5. The surface skimmer removes all floating debris; the larger debris is retained in the skimmer basket with the finer particles trapped in the filter. The skimmer basket will require emptying at intervals, and if there are trees close to the pool, frequent checking and emptying will have to be done when leaves or blossom falls.
6. Vacuum the pool as required or consider buying an automated cleaner from your SPATA member.
7. The pool should be kept full of water at all times (except where winterising has been undertaken where the level may have been lowered)
8. Leaves must not be allowed to lie on the pool floor for prolonged periods as these can cause staining.
9. Have the pool equipment regularly serviced in accordance with the manufacturer's instructions.

Additionally for liner pools:

1. On a liner, hopper pool with steep sides, do not encourage standing on the slopes, especially in very warm water, as a pool liner is pliable and feet can cause wrinkles.
2. Any dirt accumulation around the water line can be removed with a specially formulated tile and liner cleaner. Regular use of the tile and liner cleaner will give the best results. (Do not use household cleaners, strong acid, wire wool or a wire brush, as these will damage the finish).
3. Do not exceed your liner manufacturer's recommended pool water temperature.
4. Always use a SPATA installer and/or maintenance company (www.spata.co.uk).

Rest assured that these points will become second nature to you and will not take the hours of work often quoted.

The Water Level

The water level in the pool must be at least halfway up the skimmer weir** aperture; otherwise, there is a danger that the filter pump will suck in air and lose the ability to pump water (this can damage the pump). When the weather is hot and the pool well used, a lot of water can be splashed out, and there will be additional losses from evaporation and backwashing the filter. Consequently, keep a check on the water level and top-up as necessary, especially during the peak times in the summer when the pool may lose 50-80mm (2-3 inches) of water per week. SPATA has produced a consumer factsheet with water saving tips, so ask your SPATA installer for a copy.

**The surface over which the water flows to the circulating system (usually it is self-adjusting for water level changes).

4. Maintenance schedule

With a well-designed pool and proper planning, cleaning and maintenance tasks should typically take no more than half an hour.

For an outdoor swimming pool, the annual maintenance schedule undertaken by yourself, or others, should ideally comprise the following:-

- Winterisation and Autumn shut down
- Recommissioning, or Spring opening
- The Weekly Service
- Regularly check that all of the equipment is working
- Also regularly check the water balance with a suitable test kit, following the advice given in Section 6 of this guide.

An indoor pool will also require: -

- Regular servicing, however, this is usually the weekly service described below but on a four-weekly cycle.
- Heating, water treatment and air handling units may require additional specialist servicing.
- The pool hall will require the usual building type maintenance, depending upon the construction.

Weekly service

Regular maintenance of the pool and all its equipment will increase its life and make you aware of problems as they occur, rather than afterwards when costly repair bills may result.

You will find that it is much easier to get into a routine if you try to do the servicing on a set day each week rather than on a haphazard basis.

1. Clean the filter pump coarse strainer.
2. Backwash the filter.
3. Clean the skimmer baskets.
4. Vacuum the pool.
5. Check the water level and top up as necessary.
6. Check and adjust the disinfectant and pH values.
7. Check your stock of pool chemicals and re-order as necessary from your SPATA member.

This guide can also be applied to an indoor pool.

Winter maintenance

Once the swimming season has finished, you must prepare for winter and the coming months of inactivity – winterisation. You must prepare for the cold weather and guard against frost damage, as severe frosts can burst pipes, heaters, and filters. Should any major work be needed then, the winter is the time to plan it.

The pool should be run and disinfected properly right up until it is winterised, even if the heating is turned off.

Once the pool is winterised, then the level of regular maintenance required is very much less than during the season. There are no hard and fast rules governing the actual date of winterising; however, the lower the ambient temperature becomes, the more expensive the heating becomes. Should you have a lot of trees around the pool, then you may wish to leave the closedown date until after the leaves have fallen.

You must not empty the pool, without professional advice, as hydrostatic pressures outside the pool shell can force a concrete structure out of the ground equally groundwater pressure can lift and displace liners. It would also be a hazard as people falling into an empty pool will face more risk of getting injured than if it were full of water.

All floating covers should be removed from the pool, cleaned and carefully dried and stored safely away from vermin. Slatted covers should be cleaned and rolled away for the winter. The fitting of a proper winter cover will help keep the majority of debris and sunlight out of the pool.

Winterising does not mean that the algae will stop growing, so you will need to treat the water until the water temperature drops to about 7°C (42°F). Once the date of winterisation is set, you must decide how the equipment is to be left during the winter.

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4. Maintenance schedule – *continued*

Winterising options

There are two options, and either one has pros and cons, which can be explained to you by your SPATA contractor. Generally, it is a good time to let your SPATA contractor do this work as it means a professional eye will be cast over the systems. Any servicing, repairs etc. can be carried out over the shutdown winter period.

Generally

Remove, clean and store all pool-side equipment and summer covers etc. Check all filtration, heating and cleaning equipment and report on its condition. Advise on the servicing of heaters etc. Remove and store pool cleaner if fitted. De-leaf and clean the pool.

Check the chemical values and adjust including a shock dose. There are a number of chemicals which are long lasting are available for winterisation. However, the variance of winter weather and temperature affects the longevity of these products, and occasional testing is recommended.

Option 1

Shut down all the systems (filtration, heating, treatment etc.) Lower the level of the pool water* to approximately 30 cms (1ft) below the skimmers as a frost precaution and plug and empty out the skimmer.

Turn off the electrical supply and drain the systems of water. Disconnect, remove and store the pumps in a warm environment. (only disconnect and refit pumps if electrically qualified to do so). Ask your SPATA contractor to fit appropriate plugs to the pump and socket connections (suitable for outdoor use) for you to do it. Generally, leave the pool area and plant room in a tidy state.

Once the pool has been winterised, do not ignore it. Check the water condition regularly and dose if required; this can be easily done by lifting a corner of the cover. Chemicals that dissolve quickly in the summer will be slower reacting in the winter, so pre dissolving them is essential.

*Take advice if you have a liner pool.

Option 2

This requires the installation of a frost-stat.

Run the filter pump only by time clock control for one hour per day at midday, for example, and set the frost thermostat to 2ºC. This means that if the temperature drops below 2ºC, the pump will operate continuously, thus preventing the water from freezing. Install a bypass around the heater and drain the heater, electrically disconnect, or switch off other equipment. If the pump is working the water is moving, and freezing will not occur. (You may need to take action if there are power cuts during cold weather, in which case contact your SPATA maintenance company). You should backwash the filter, once every two months, or if pool water level increases from rainfall. As a result, recommissioning and winterising are easier and quicker, as only a vacuum and water balance check is likely to be needed.

Your SPATA maintenance company will be happy to advise you on the most appropriate course of action and will take away the worry of "doing it yourself" and ensuring that a professional eye is cast over the whole system regularly. They will use a planned maintenance programme whereby you are advised of the date of recommissioning well in advance, so there is less rushing about in the spring.

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4. Maintenance schedule – *continued*

Recommissioning your pool

At the end of winter and before you start the swimming season, the pool will need re-commissioning to prepare for the coming season.

There are no hard and fast rules laid down as to when to do this; it is entirely up to you. However, the following factors should be taken into consideration: -

- Make sure you call your SPATA contractor early, as once the weather becomes warmer everyone will want their pool opened.
- Also, once the weather becomes warmer algae will start to grow. Having a winter cover on the pool will be no deterrent, and you will have to start chemically treating the water. As a guide, once the lawn begins to grow then the algae in the pool will be growing as well.
- Recommissioning early means that you do not miss the first of the warm swimming weather.
- When the pool is recommissioned, you do not have to start the heater immediately if the weather is not quite right.
- Easter usually heralds the start of the season and children will be at home and wanting to swim.

Your SPATA maintenance company will take away the worry of "doing it yourself" and ensuring that a professional eye is cast over the whole system regularly. Using a planned maintenance programme, whereby the dates for winterisation and recommissioning are advised to you well in advance, means that there will be less chance of rushing around in the autumn and spring.

As a guide, recommissioning comprises: -

- Remove the winter cover from the pool, clean it off, dry and fold it, then store away. These covers are easily pressure washed on the patio or lawn. Store the cover away from vermin.
- Clean the copings and surround paving to remove any mould or algae growth.
- Re-fit all the poolside equipment such as ladders, diving boards etc.
- If necessary, re-assemble all the filtration and heating equipment in the plant room.
- Start the equipment and thoroughly test it. Heaters should not be left running unless specific instructions have been received.
- Set all time clocks for summer running.
- Check all valves for freedom of operation and ease if necessary.
- De-leaf pool and vacuum or set the pool cleaner in operation.
- Check and adjust the chemical values.
- Generally, tidy and clean the pool area and plant room.

Once the pool has been recommissioned it is a good idea to run the filter continually for the first few days, backwashing daily, to thoroughly clean and make the water shine. After that you can revert to the normal regular weekly routine. Before the recommissioning date check your stock of pool chemicals and place an order with your SPATA maintenance company.

Note: It is also very helpful if you can top up the pool water to above the working level before the recommissioning work is done.

5. Filtration

The filter removes particles of dust and debris that are held in suspension in the water. For domestic pools during the bathing season, it is necessary to filter (turn over) the contents of the pool at least once every day. The filter pump moves the water not only through the filter but also the heating and treatment systems if fitted. In hot weather and high bathing load, the requirement in time for the filtration may be less than that for heating or water treatment. Therefore, as the water temperature rises and bathing increases, so does the necessity of running the filter for longer periods. Once the pool is up to temperature, it is certainly recommended that the filter is run for at least 8 hours every day; however, this may increase up to 24 hours per day. A period of 12 hours per day has been found as a good, economic compromise.

It is strongly recommended that a time clock is fitted to the filter pump. This will ensure that the essential period of daily filtration becomes automated if it is not run constantly. The pool water must always be crystal clear for safety reasons. If the water becomes dull or cloudy, the pool chemistry must be adjusted, and then the filter should be run for 24 hours per day, and cleaned regularly, until sparking clarity is regained.

A high wind, thunderstorm or a bathing party will introduce an excess of debris into the pool, and the pool water can go cloudy overnight. Continuous filtration, possibly with the use of a flocculent*, will quickly restore the clarity of the pool.

Cleaning or backwashing the filter

The filter will take out fine particles from the water and will consequently become partially blocked after a period. On the filter is a pressure gauge. The pressure will rise as the filter becomes dirty and this indicates when backwashing should be carried out. Note: the pressure when the filter has been backwashed, and the media is clean. This is called 'the clean running pressure'. When the pressure has reached 0.3 bar (or 5 psi) above the clean running pressure, the water flow around the pool will be consequently lessened, and the filter should be backwashed. However, it is a simpler task to backwash the filter regularly. With an outdoor pool, this is normally once per week.

Annual chemical cleaning of the filter, using a proprietary cleaner, is desirable for optimum performance.

*A chemical which, when added to the pool water, causes fine particles to collect together and form larger particles more easily removed by the filter.

Sand filter backwashing

1. Switch off all equipment, such as the heater and pool cleaner before backwash sequence is commenced.
2. Depress the lever on the multiport valve and turn to the BACKWASH position. Open backwash waste valve (if fitted) and run out the hose (if fitted).
3. Switch on the pump and run for approximately 2 minutes. The dirty water will pass through the sight glass on the multiport, which will gradually clear until the filter is clean.
4. Switch off the pump. Move the lever to the RINSE position.
5. Switch on the pump and run for 15-30 seconds and then switch it off again.
6. Switch to the FILTER position. Switch on the pump and other equipment only when water is flowing through the system to recommence filtration.
7. Close the backwash valve (if fitted) and run in the hose.
8. For cartridge and diatomaceous earth filters, the procedures are different, and the manufacturers' instructions must be adhered to. Your SPATA maintenance company will advise.

Note: DO NOT MOVE THE MULTIPORT VALVE WHILE THE PUMP IS RUNNING and always move the lever in the same direction for the longevity of the spider gasket.

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5. Filtration – *continued*

Filter pump coarse strainer

In front of the filter pump is a coarse strainer basket. The purpose of the coarse strainer is to prevent any debris from entering the pump and causing damage to the impeller.

This is accessible by undoing the screw thread, or lid clamping device and removing the lid. The basket can then be removed and emptied. However, to prevent the water from flowing back into the pipes to the level in the pool, the suction valves in front of the pump and the multiport valve should be closed before cleaning and opened afterwards.

After using a skim-vac adaptor and vacuuming through the skimmer basket, the coarse strainer will require inspection. However, when vacuuming through a vacuum point, all the debris will be trapped on the pump coarse strainer, which will have to be cleaned after and if necessary, during the pool vacuuming.

When replacing the lid of the coarse strainer, make certain that the gasket and top are thoroughly clean and screwed up tightly to form an airtight fit, and that the gasket is correctly positioned.

Valves in front of the circulation pump

There are usually two or three valves in front of the pump; one controls the skimmer line(s) and the other the main drain. During normal running, both valves should be open to ensure maximum circulation.

When using a pool vacuum, if this is operated off the skimmer, the skimmer valve should be fully open, and the other valve closed to give maximum suction. On large pools, there are sometimes three or more valves fitted in front of the pumps. The other valves control the vacuum line or additional skimmers.

6. Chemical treatments

The recommended chemical treatment for a particular pool may vary according to the nature of the water to be used. It is a good idea to have the water balanced for you by your SPATA maintenance company. Ask them to explain the process in simple terms.

There are two basic needs for pool water treatment to provide bather comfort and protection:

Control of pH

pH is the scale indicating the degree of acidity or basicity of the water. The logarithmic scale used for pH reading is 0 to 14, with the middle point at 7.0 – below which the water is acidic and above which is alkaline.

The recommended range of pH in swimming pool water is between 7.2 and 7.8. Where the pH falls below 7.2, there is a risk of corrosion of metals and the pool finishes. Where the pool water rises above pH 7.8, some disinfectants are not so active, and there may be problems of scaling due to precipitation of calcium salts from the water.

The pH is adjusted to the range of 7.2 to 7.8 by the use of acid when the pH rises above 7.8 and alkali when the pH falls below 7.2. Regular addition of pH correction chemicals, as necessary to maintain the ideal pH, will protect the pool, its equipment and the swimmers.

It may be necessary to control total alkalinity and calcium hardness to ensure good water balance. If in doubt, seek the advice of your local SPATA maintenance company.

Control of disinfection

Disinfection of pool water is carried out to rapidly destroy micro-organisms that may be harmful to the health of swimmers. It is a prime requirement of swimming pool disinfection that an adequate residual is maintained in the water at all times.

There are a number of disinfectants available for swimming pool treatment. Consult your SPATA Pool Installer for the best one for your use. You will be advised of the level of residual required, it's testing and method of adding to the water, and you should be given the manufacturer's literature on the system chosen.

The use of Chlorine, in its various donor forms, is still considered to be the safest, best and easiest means of rendering water safe to bathe.

If using chlorine then a reading of 1.0ppm / mg/ltr (at pH 7.2) is the lowest safe limit without the backup of ultraviolet or ozone, but generally, 1 to 1.5ppm / mg/ltr is considered to be ideal. Periodic shock dosing will raise the level to 10 / 12ppm mg/ltr, this is generally accepted to be a safe upper limit, for a short period and should ideally be done after the bathing has ceased for the day.

Some pool disinfectants are effective in controlling algae growths, while others have only limited algicide properties. Your SPATA Pool Installer will advise you regarding the need for an algicide and all other special treatments required in your particular pool. If more detailed information is required, then SPATA Standards information on Water and Chemicals is available from the SPATA office or your SPATA installer.

Automatic testing and dosing equipment

There are some systems on the market that electronically test disinfection and pH level of swimming pool water. Some computer-based machines dose the required number of adjustors internally, while others can be fitted with feeding devices for the chemicals from separate containers.
Note: Refer to the manufacturer's instructions and your SPATA maintenance company for specific details relating to the above.

Above: Copper(II) Sulfate, also called blue vitriol or bluestone. Commonly used as algicide in swimming pools.

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6. Chemical treatments – *continued*

Testing, safety and handling of chemicals

You will need a test kit, to test for disinfectant and pH using a simple colour comparison method. The kit will contain specific instructions as to its operation. In most kits, tablets will produce a colour change in a test sample of water.

Compare the colour of the test liquid with the standard colours on the test kit; the nearest match will be the level in the pool. Do not expect to see an exact colour match, as both natural and artificial light may alter the matching. The best result is taking a reading in natural daylight with a white piece of card or paper behind the test cell when looking at it.

It is vital that having tested, you consider the results and dose the pool according to the instructions.

Safety tips

All pool chemicals are potentially dangerous and must be treated with care

All chemicals are supplied to you in clearly marked containers noted with instructions on use and storage.

1. Always read the instruction for use labels on the containers.
2. Never mix chemicals before adding them to the pool water (as fatal gas formation or explosions can occur).
3. Never put one type of chemical into a container designed for another type, or use an empty container from another product.
4. Always store containers in a cool, dry lockable area, separating different chemical containers.
5. Never allow children to handle chemicals.
6. Ideally, pre-dissolve the different chemicals individually in a separately designated bucket and slowly pour the fluid in around the perimeter of the pool. Wash the bucket in the pool after each application.
7. Empty chemical containers should be washed out in the pool water, rinsed thoroughly and then disposed of in normal household waste.
8. Wash your hands after using pool chemicals (the pool water will do!)

7. Cleaning your pool

Pool vacuum

Some dust and debris will blow into the pool and accumulate on the pool floor. This can only be removed with a pool vacuum or automatic pool cleaner. New pool owners may experience a little trouble in operating the vacuum for the first time, and the following technique is suggested:

1. Put the pool vacuum head with the hose attached into the pool. This should be close to the skimmer/vacuum position, and stretch the remaining hose along the pool surround.
2. Feed the hose vertically down into the water a little at a time, which will fill the hose up with water and remove the trapped air through the open end above the water level.
3. Fit the end of the hose through the skimmer on to the special skim vac plate available, which is positioned above the skimmer basket. If there is no vacuum plate available, remove the skimmer basket and place the hose in the suction hole at the base of the skimmer. Alternatively, if the vacuuming is carried out from a vacuum point, attach the hose direct to this point.
4. The vacuum will now operate, and to get maximum suction, the skimmer or vacuum valve must be fully open, and the other suction valve(s) should now be closed either fully or partially depending on flow balance. The pump will make a distinct straining noise if the flow balance is incorrect, which is adjusted by opening valve(s) slowly until the noise stops. Do not take the vac head out of the water as it could cause the pump to lose prime.
5. The vacuum head should be slowly pushed across the floor and slopes. If pushed too fast it will stir up the dirt into suspension. The suction of the vacuum will gradually diminish as the filter becomes dirty, and it may be necessary to backwash the filter to get good suction to complete the pool cleaning.

Vacuum to waste

If the floor is very dirty, it is best to vacuum to waste, which is the quickest way to vacuum without blocking up the filter. Commence vacuuming in the normal way, and then stop the pump and re-position the multiport at 'waste' (if a valve is fitted on the waste line, open this before switching on the pump). Recommence vacuuming. All the water is sucked out, by-passing the filter and pumped out to waste along the backwash line. This operation reduces the pool water level, which must be topped up. It is therefore advisable to overfill the pool before the cleaning process.

If the pool vacuum stops operating

This can be due to the following:

a) If using the skim/vac adaptor, the basket in the skimmer may be blocked up with leaves.
b) Large leaf or similar sucked over the opening on the pool vac head.
c) Leaves or debris blocking up the hose.
d) The basket in the coarse strainer in front of the pump may be blocked, especially if vacuuming through a vac point.
e) The pump may have become unprimed through sucking in too much air. This can happen quite easily on commencement if all the air has not been removed from the hose.
f) If all the above are correct and there is still no suction, then the filter should be backwashed (this is the most common).

Automated cleaners

There are several makes of automated cleaners, which divide into vacuum, pressure and electric self-contained cleaners. Electric cleaners have strainers and filters that will require cleaning regularly. If you are not sure of what needs doing consult your SPATA maintenance company.

For safety reasons, due to the potential for entanglement and entrapment underwater, then hoses and cables along with cleaners must be removed from the pool before swimming commences.

8. Heating your pool

Pool heaters, whether heat pump, gas, electric or oil are fitted with a thermostat to keep the pool at a controlled temperature. Solar panels are controlled by a differential temperature control to activate the system whenever solar heat is available for collection. It is important that you identify the temperature you require in the pool, the available fuels on site, and therefore the best system to suit your requirements.

Whether you have an oil or gas-fired boiler or heat pump, remember that these units require servicing and winterisation in the autumn by your SPATA maintenance company to keep them in good condition.

Pool temperature

Temperature is very much a matter of personal preference, but diligent use of the heat retention cover, coupled with the very efficient modern heaters available enables the pool to be kept at an acceptable temperature, economically.

Some notes on the methods to heat your pool are below.

Heat pump

A heat pump is quite simply a refrigerator, which is trying to cool the atmosphere and put the heat collected into the pool water, as opposed to the domestic refrigerator, which is cooling your butter, milk etc. and putting the heat from those items into the atmosphere in the kitchen.

For the technically minded, the operation is achieved by a large cylindrical fan in the heat pump, which moves air through the unit. The relatively warm air passes over an evaporator containing a liquid, which boils at very low temperature. When the liquid boils, it turns to a vapour. This vapour is pumped into a compressor and compressed which increases its temperature by five to six times.

This hot gas is then pumped into a heat exchanger where it heats a metal coil as it passes through it; the pool water circulates through the heat exchanger on the outside of the coil, picks up the heat and takes it back to the pool. Therefore, the pool water cannot be heated unless the filter pump is circulating the water and, of course, the heat pump is switched on.

The heat pump is very efficient and depending on the outside air temperature can return 3 to 5 more units of heat per unit of electricity than if an electric heater on its own were used.

This method of heating is classified as “low grade” heat. This means that to heat the pool water, you will, at the beginning of the swimming season, have to run the heat pump, and consequently the filter pump, for 24 hours per day until the desired temperature is achieved. After that the running time can be cut back to 10 to 12 hours per day. It is important to have a heat retention cover on the pool to conserve the heat; otherwise the heat pump efficiency is lost particularly at night.

During the heating process, the heat pump will produce condensation, which will drip out of the discharge pipe outside the plant room. This is a good indication that the machine is working. However, at the beginning and end of the season, the air temperature can get quite low even to the point when this condensation will freeze. No harm will come to the heat pump, as it will sense this. However, in doing so, the compressor will switch off, and the fan will continue to move air through the heat pump trying to warm it up and defrost by itself.

It is important that the circulation of air is not restricted in its passage through the plant room, the heat pump, and after that out of the plant room. That is to say, the air vents or windows must always be open and wheelbarrows, bushes, chairs etc. must not block the discharge vent.

The front of the heat pump should not be covered but kept clear; periodically dust debris, flies etc. should be brushed off.

Remember the indications that the heat pump is working are:

- The mains indicator lamp is on, and the filter pump is running.
- There is a cold draught coming out of the discharge vent.
- There is condensate dripping out of the drain tube.

continued...

8. Heating your pool – *continued*

Electric heater

The heater works in the same way as an electric kettle although very much larger. Most have a series of "status" neon lights, which indicate whether or not the elements are working. They also have a dedicated neon light to indicate whether the power supply is on. This will stay on even when the filter pump is off.

The heater is controlled by the on/off switch on the pool control panel and also by the large switched fused isolator alongside. The heater will have on it a pool water thermostat. Once the pool water is up to the required temperature, the heating elements will be switched off.

These heaters are neat, clean and easy to install, although a registered electrician must make the electrical connection. Depending on the connection, they may able to function either with or without a cheap rate tariff. The electrical supply into the property must be competently checked before installation to ensure that an adequate supply is available. If the electric heater does not contain a flow switch, then one must be installed to operate the heater on / off with water flow through the system.

Heat exchanger

The heat exchanger has an outer shell which contains a multitude of small-bore tubes; imagine a kitchen mug on its side and full of children's drinking straws. The hot water from the house boiler circulates between the "mug" and the "straws"; the pool water flows through the "straws" and is heated by them. The two waters do not mix.

- The water from the house heating comes through low-pressure hot water pipes, which are connected to the heat exchanger.
- The pool water thermostat controls the pool temperature.

If the pool water requires heat, then a signal sent by the thermostat will operate the boiler, and a circulating pump turns on and draws water from the central heating system to the heat exchanger. When heat demand to the pool water is satisfied, a further thermostat signal will turn the boiler off.

Therefore to heat the pool the following must happen:

- The filter pump must be running.
- The house or pool boiler must be turned on and available to provide heat.
- The heating switch on the main control panel must be on.
- The pool water thermostat must be set at a temperature greater than that in the pool.

Gas heater

Gas heaters, whether they are fuelled by natural gas or propane must be installed by a registered GasSafe fitter in accordance with the current Regulations. These include the size and position of the flue, the gas supply and the ventilation. Some gas pool heaters are designed to stand outside a building in the open and in this case, there is no flue. However, siting is important and again must be in accordance with regulation.

Separate switches control the heater:

- A control panel isolator.
- The on/off switch on the heater itself.
- The thermostat on the heater.
- A gas cock on the gas supply.

The heater has three safety devices:

- A high limit thermostat, which will shut down the heater if it gets too hot. Once it has cooled down the stat will automatically reset itself.
- A safety gas valve, which will cut off the gas supply if the flame or pilot light goes out. In this case, the heater will have to be re-lit.
- A pressure switch which will turn the heater off if the pool water stops flowing and automatically reset itself when the flow is resumed.

With modern technology, thermometers are very accurate with a digital display, so simply set it to the desired temperature. With older models, the easiest way to get your desired temperature is to turn on the filter pump to run constantly, until it has reached the desired temperature. Turn the heater ON, both on the main control panel and the heater, and turn the thermostat to maximum. Put your pool thermometer into the pool water and when that reaches your desired temperature return to the plant room, turn the heater thermostat down to the position where the heater goes out; the thermostat setting will then match the pool water temperature and will then maintain that temperature in the pool.

Most new gas heaters have electronic ignition, but on older models, should the heater pilot light go out, re-lighting instructions are usually set out on the inside of the front door, or in the appropriate instruction booklet. Always ensure that all air vents are clear and the ventilation is not hindered.

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8. Heating your pool – *continued*

Oil heater

Oil heaters have long been used to heat swimming pool water. A few are available that have the pool water flowing directly through them and operate in a manner similar to the Gas Heater (described above). In some cases, they are standard domestic or commercial boilers, which are connected to the pool water via a heat exchanger.

In this case, the oil heater can either be the main house boiler with the heat exchanger added to the system in a manner similar to an additional radiator or as a stand-alone boiler. In the latter case, the boiler will need to be fully installed with either a header tank or expansion vessel and connected to the heat exchanger with a set of primary flow and return pipes.

As with the gas boiler, the flue and ventilation requirements are critical. However, care must be taken when siting the boiler to ensure that flues do not terminate close to windows, to boundaries etc. Additionally, stand-alone boilers will require connection to an oil supply whether existing or a dedicated tank.

Solar panels

The concept of the solar heating system gathering free heat from the sun is attractive and will work. However, in this climate, it is unreliable at maintaining a constant temperature in the pool. The usual heat input from a correctly sized solar panel system is 2-4°C (35-39°F) above the natural temperature of the unheated water; the higher rise occurring at the hottest part of the season.

The panels are controlled by a differential controller that is set to measure the temperature of the water and the temperature of the air. When the air is sufficiently warmer than the water the pool water flow through the panels will be started. (Otherwise, the heat from the pool would radiate to the air!).

Standard pool solar collectors require a bank of panels' equivalent to approximately 75% of the surface area of the pool depending on the geographic location. Ideally, the bank should be angled at 15° to 45° degrees to the horizontal and be facing south. The distance between the filter pump and the panels must be taken into consideration when designing and siting such a system. Solar panels are most effective when combined with another fossil fuel heater or heat pump.

Indoor pool heating

Indoor pool water can be heated by any of the options listed above although solar heating is rarely used. However not only does the pool water have to be heated but also the space above it to keep down condensation that will damage the structure of the pool hall if allowed to build up. This will require the installation of an air-handling unit with a distribution system for dehumidification. Consequently, it is important that each system is designed separately and separate instructions issued.

9. Pool covers

There are several different types of pool covers available, which fulfil different functions.

Heat retention covers

These are primarily used to conserve heat by preventing heat loss from evaporation and cold winds. These covers float on the pool surface and do not require fixing. For ease of handling pool reels, both manually and electrically operated, are available.

There are several types available, the most popular being the bubble cover, which saves heating costs and gives free solar heat through the blanket to increase the pool temperature. Floating covers do prevent some debris from entering the pool but need careful handling when removing or the debris will fall back into the pool.

When winterising the pool, remove the cover, and thoroughly dry and store it away, carefully, over the winter. (If the cover is left lying on the pool in icy conditions, the cover will deteriorate.)

The use of a suitable roller will simplify the handling of the cover which must NEVER be left rolled, folded or exposed to strong sunlight without some form of protective cover on it.

Winter debris covers

A winter cover, suspended across the pool, will keep put out the majority of leaves, debris etc. The cover is made approximately 60 cms (2ft) longer and wider than the pool to give the necessary overlap and is normally provided with special fixings that slot into holes drilled into the surrounding paving. When installed, the cover straps should be tightened so that the cover is tight fitting and it should be re-examined a few days after initial fitting and any slackness eliminated. These winter covers keep out debris and leaves but allow any rain to pass through. Please note that even if this type of cover is maintained in good condition and is firmly anchored, it must not be assumed that it will offer any degree of safety.

Certain trees have very unpleasant habits during the spring: willows and poplars, for instance, shed white feather debris for which the winter debris cover is invaluable. It is desirable to keep the cover clear of the water at all times, although a snow load will push the cover on to the water where the water will support that extra weight. If your cover becomes blocked into ice, leave it alone until the thaw, or you will damage it.

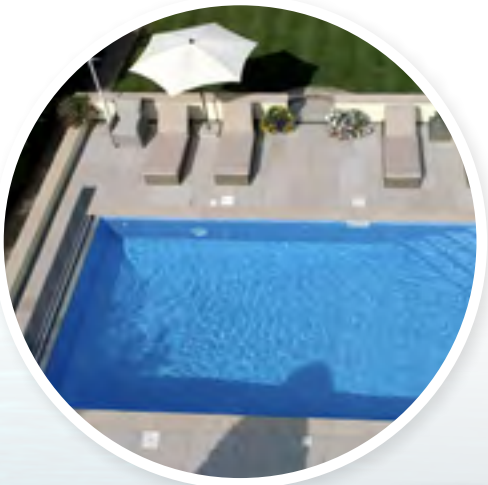
Storage of covers

Before storing the cover, remove all of the debris and clean it — store away from excess heat and also from concentrated chemicals. NEVER clean the cover with solvents, as this will cause it to shrink.

Automatic covers

For added safety and ease of operation, power operated lockable covers are available in either fabric or plastic slatted materials.

There are no swimming pool covers that are 100% safe, and therefore in certain circumstances, other measures (such as fencing) might have to be considered dependant on each case.



10. Pool enclosures

Pool enclosures come in a wide variety of types both fixed position, or telescopic versions (which can be opened up or rolled back in fine weather) air inflated domes, large 'conservatories' and log cabins.

Even if you go for an open pool, you may well want to consider enclosing it in the future, and you should bear this in mind when deciding on its position in your garden. Enclosing your swimming pool not only enables you to use it for more of the year but also means that you are more likely to use it earlier and later in the day. Added to the savings in heating and cleaning which a pool enclosure can bring, the prospect becomes very attractive.

Deciding which type of enclosure is best for you will depend on the type of use you make of your pool, your budget and how permanent you want the structure to be.

The different types of enclosures include architect designed buildings, glazed conservatories, log cabins and specialist aluminium/PVC and polycarbonate/glass enclosures specifically designed for the swimming pool environment.

Aluminium/PVC and polycarbonate/glass enclosures

These enclosures are built in sections spanning the pool and can either be fixed or mobile, allowing sides to be lifted into the roof and sections to roll back enabling bathers to enjoy the sunshine.

Some models can be used in either mode making them an adaptable method of enclosure. Aluminium/PVC frame sections, glazed with high-performance polycarbonate/glass panels are mounted on rails allowing them to be rolled back, creating an instant outdoor pool, part-enclosed, or fully enclosed pool.

Wall panels which slide up into the roof and doors at the end of the structure make these even more flexible in use.

Log cabins

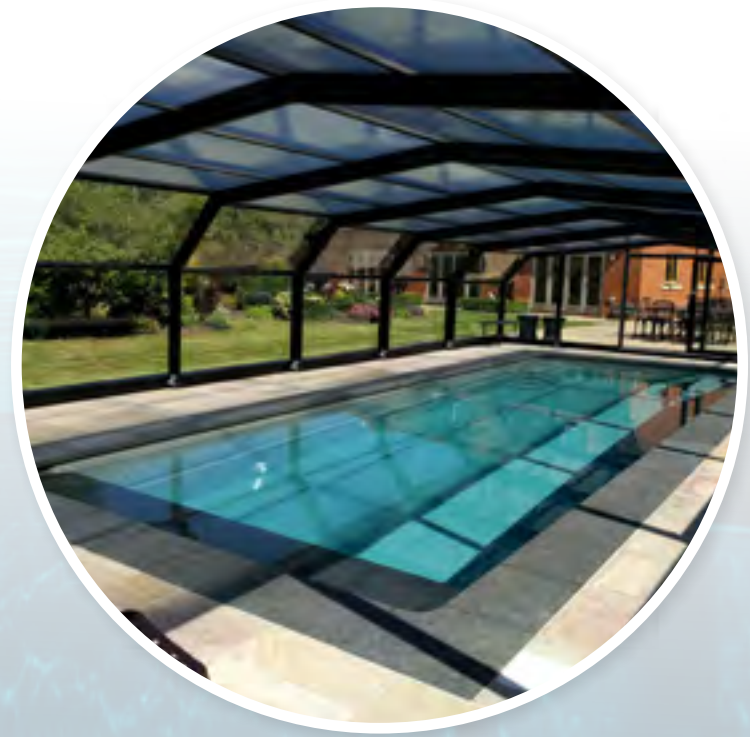
Log construction is used extensively throughout northern Europe, primarily for its high standard of insulation, attractive appearance and versatility. In the UK, a log enclosure with thick walls for a pool in year-round use will be unlikely to require any additional insulation. This material, being warm to the touch, minimises and the natural acoustic insulation provided by the logs makes these structures very comfortable.

As these buildings are constructed from interlocking logs, they are quickly erected with very little disturbance to your garden. The requirement for planning permission should be checked with your Local Authority before starting work.

Conservatories

With frames available in wood, PVCu and powder coated aluminium, a conservatory offers an elegant and a practical solution to pool enclosure needs. A single glazed conservatory can comfortably extend pool use from Easter to Christmas while a double glazed version is suitable for year-round use.

Aluminium frames are particularly versatile being available in over 175 different colour finishes and are virtually maintenance free. Sliding roof panels and hinged windows ensure ventilation on hot summer days, while a double-glazed conservatory even acts like a giant night-storage heater, with the combination of heat from the pool and daytime solar gain removing the need for any additional space heating in most cases.



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10. Pool enclosures – *continued*

Traditionally built structures

The traditionally built, architect designed structure, is either as an extension to your home or as a separate pool hall. It is vital to work with both an architect and a pool specialist who understand the special heating, ventilation and dehumidification requirements.

Timber frame pool buildings

Laminated timber beams and portal frames offer great strength and versatility. Glue laminated timber components have an extremely high strength-to-weight ratio which means that relatively heavy loads can be supported by lightweight structures which do not impose high loads on foundations. Used in conjunction with insulated timber panels they can provide a highly insulated, low maintenance building with the benefit of economic running costs.

Both internally and externally, timber frame panels provide an ideal base for a wide variety of finishes including plaster, tiles, brick or timber. Insulation is provided by 100mm or 150mm fibreglass, which, in conjunction with a vapour barrier, creates an energy efficient building.

Air Inflated Structures

An air-inflated structure is a giant PVC 'bubble' inflated by air drawn from outside by a simple fan. The dome completely encloses the pool and is secured either by fixed anchors or using water filled tubes, which weigh the structure down.

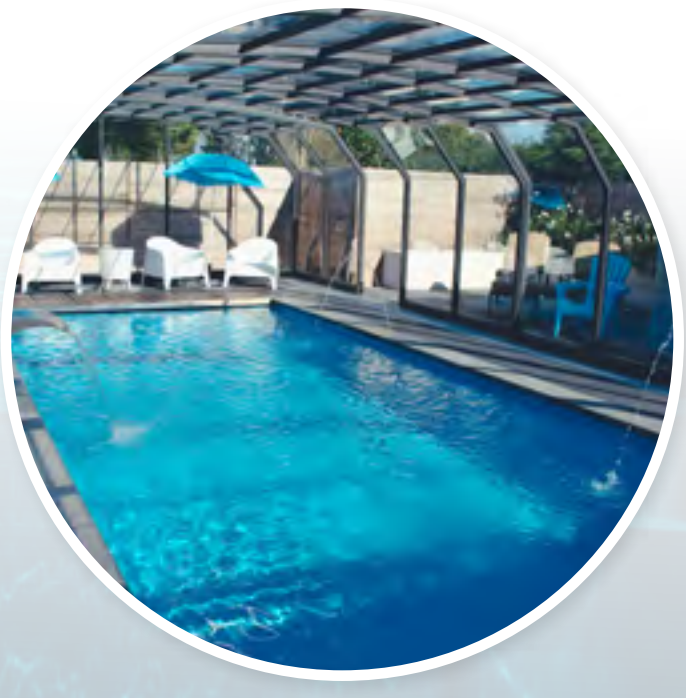
Access is usually using a zip door, which keeps the air at a suitable pressure and temperature. Air-lock or revolving doors can be fitted, and a heating element can be included in the fan box.

A very reliable electricity supply is required for the air pumps to maintain the air pressure inside the dome.

Planning permission and Building Regulations

There are separate planning requirements for outdoor swimming pools and that for the traditional built structures. Most of the other structures mentioned above do not require planning permission in their own right, as they are within permitted development rights, but do require Building Regulations Approval. However, once the manufacturer of those structures requiring Building Regulations Approval has obtained that Approval, then that Approval stays with the structural design and can be passed on (so Approval is not required for every site installation).

For owner's resident outside England, please check with your own Local Authority for their relevant requirements in your area.



11. Troubleshooting

Pump priming

Some difficulties may be expected in priming the pump at the commencement of the season.

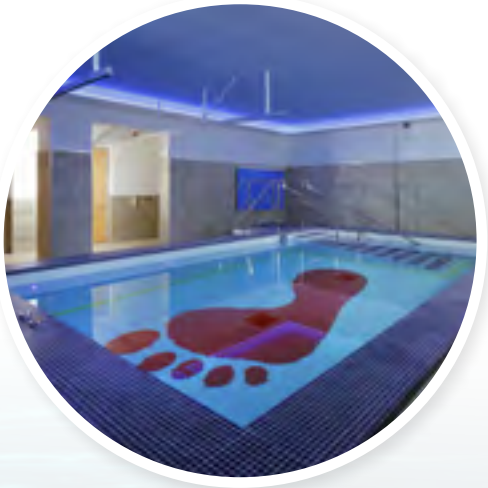
The following procedure is suggested:

1. Make sure that the pool is full. It is extremely difficult, if not impossible, to prime the pump if the pool is not full of water. Attempting to prime with the pump wet end dry and with a low pool water level, will more than likely cause costly damage to the pump.
2. Close all the valves in front of the pump.
3. Set the multiport at 'waste'.
4. Remove the top of the coarse strainer and fill to the top with water. Replace the top firmly.
5. Switch on the pump and immediately open one of the valves. After a minute or two, the pump should start pumping, and the pressure gauge will rise. If this does not happen within three minutes, shut the valve and then switch off the pump. This is important as by doing it you will trap the vacuum initially produce for use the next time. Then go through the procedure again. When the filter is operating satisfactorily with this one valve open, the second valve can be opened very slowly. If the pressure gauge immediately drops to zero, shut off the second valve until the pressure has risen to normal and slowly open again. Continue in this manner until the gauge is constant with both valves fully open. On many filters, air can be released from the filter air relief valve to assist with priming.

If the pump will not prime, there is probably an air leak in front of the pump. It could be that:

1. The top of the coarse strainer is not sealed correctly.
2. The socket union between the pump and the valves is not fully tightened.
3. The rubber gasket has not been replaced in the socket union.

On older pumps, if the priming is difficult, there may be a leak between the pump and the pump motor. A worn pump seal will suck air and make priming difficult and should be replaced.



Troubleshooting

General

Problem	Cause	Solution
Electric motor will not start	Check fuse, if motors hums the impeller may be jammed.	Turn off electrical supply and call your SPATA maintenance company.
Pressure gauge is abnormally low	Check that both suction and skimmer valves are open. Check that the skimmer and pump strainer baskets are clean. Check the water level.	Change faulty gauge.
Pressure gauge is abnormally high	Check that any valves on the return line are open. Dirty filter.	Backwash the filter. If this does not work, consult your SPATA installer / maintenance company.
Air bubbles continually blowing into pool through inlet fitting	Air is being sucked into the system Check the water level in the pool and the top of coarse strainer.	If these checks do not solve the problem, the cause may be a faulty joint or gate valve on the suction side of the pump. Bubbles will always be blown into the pool after commencement of filtering / after backwashing, but these should disappear after 5-10 minutes. If none of these recommendations work, consult your SPATA installer / maintenance company.
Water is cloudy, not crystal clear	Check pH and disinfectant level. If the water is cloudy then the recommended disinfectant level will not apply. You may have to shock dose the pool.	Filter continuously until clear, using a flocculent if necessary.
Walls and floor are slippery	This is the commencement of algae forming. Check the pH and disinfectant levels.	Follow chemical manufacturer's recommendations for algae treatment.
Hole in swimming pool vinyl liner	The specially formulated vinyl liner is very tough, and will resist normal stresses and strains. It has been known however, for pool owner's children to play with sharp objects in the water, which can damage a vinyl liner. Fortunately holes and tears can be easily mended even with the pool full of water. Your SPATA maintenance company can do this for you, or supply a patching kit.	To make a repair, cut a patch slightly larger than the hole, round off the corners and apply the special adhesive to the patch. Place the patch over the hole and press from the middle outwards to expel all water. This patch will adhere firmly, and the water pressure will also keep it in place.

Troubleshooting
Heaters

Problem	Cause	Solution
Failure of Electric Heater	The heaters are usually on'economy' electrical supply, operated by a time clock. A power cut may alter the time for switching on the unit. If the filter requires backwashing, only a small volume of water may pass through the heater, and the built-in safety device will trip the excess temperature switch. The heater will not operate if the thermostat is set at a lower temperature than the pool water.	Check and reset time clock. To restore the safety device, backwash the filter and reposition the switch. Set thermostat to the correct temperature.
Gas Heater	Insufficient amount of water passing through the heater will not operate the pressure switch. Filter requires backwashing. Pilot light, if fitted, may have gone out. The heater will not operate if the thermostat is set at a lower temperature than the pool water.	Adjust to correct amount of water. Backwash filter. Re-light pilot light. Set thermostat to the correct temperature.
Oil Heater	Check the oil level in the tank. This may seem obvious, but many calls are due to no oil.	Check and fill the tank oil if necessary. Check the temperature controller. Adjust if necessary. Check reset button on the burner.
Heat Exchanger	Check that the boiler supplying heat is operating. Check for airlock in the heat exchanger. Check that the secondary circulation pump is operating. Check the temperature controller.	Consult your SPATA maintenance company. Adjust if necessary.

Troubleshooting
Heaters – continued

Failure of	Cause	Solution
Heat Pump	Clean the air intake at regular intervals. If there is sufficient water flow through the heat pump it will cycle on and off.	Always make sure that nothing is restricting the air outlet to ensure maximum airflow through the heat pump. The filter should be backwashed and pump strainer and skimmer baskets cleaned.
Solar Heating	An adequate flow of pool water through the solar panels is necessary to ensure efficient operation. If the surface of the panel is not cool to the touch when operating in bright sunshine, this indicates inadequate flow, and the cause should be identified.	Check water flow to identify cause. The panels may not work if the air/ water temperature differential is too great. No regular maintenance is required, other than washing off any dirt accumulating on the panels.

With all heaters, if the obvious troubles are not the cause of the heater failure, consult your SPATA maintenance company.

This guide is the 2019 version, and all information is correct at the time of publishing.
For the latest updates please see the SPATA factsheets in the online Knowledge Hub at www.spata.co.uk