# Customer Spa Maintenance Guide

Produced by SpaMaster Service

Thank you for choosing Hot Tub and Swim Spa Outlet to provide your new spa. In order to enhance the use and enjoyment of your spa, SpaMaster Service is taking this opportunity to provide you with the information to make ownership of your spa a great experience.

Approximately 75 percent of the calls received by the service department do not require service at all, but are instead routine maintenance issues. The goal of this booklet is to help you resolve those maintenance issues on your own.

## Warranty Issues

Spa manufacturers have made it very clear to us (as a sales & service organization) that the responsibility for routine maintenance lies with the owner. The limited warranty provided by the manufacturer is usually quite generous, but it only covers defects in manufacturing. Specific subsystems that are part of a spa can carry different warranty periods, but they are still subject to the terms as set down by the manufacturer.

As part of owning a spa, the consumer must learn how to operate the controls, keep the filters clean, manage the water quality, and occasionally, prime an air locked pump. Details on operating and programming your spa can be found in the owner's manual. Also, it is important to consider the future when locating the site for your spa. For example, if it is set down into a pit or deck it will be very difficult for us, and expensive for you should service ever be required. Your spa warranty does not cover the cost of providing access for service, nor do they pay for travel as a rule.

The spa manufacturers will not reimburse our service department for expenses related to priming a pump, removing foreign objects from a pump, cleaning dirty filters, or repairing or replacing any part damaged or clogged by minerals or sand. Jets or valves that have been broken or jammed with sand are excluded from warranty coverage. They will also not provide warranty coverage to spas damaged by animals, lightning, or by incorrect wiring on the part of the person wiring the spa. The manufacturers do, and in fact can only warranty things that they have control over. No service center can provide these services for free and remain in business.

Information is included on the next few pages to assist you in maintaining your spa.

## Circulation System Maintenance

The most common complaint we receive involves Flow problems and no heat, which usually can be traced to dirty filters. The fastest way to tell if the filters are clogged is to first make sure there is no debris in the tub, then put the spa in standby or shut it off, remove the filters, and turn the spa back on. If the low Flow message on the topside control panel goes away, you can be sure the filters are dirty. Filters can last a long time if they are kept clean. Dirty filters should be sprayed off with a strong jet of hot water, and then soaked in a solution of Filter Fresh (if you have minerals like lime or iron in your water), but never soak Eco Pur Mineral Cartridges. It's a good idea to have a spare set of filters, so that you can always have a clean set ready to put in the spa to reduce down time. We do not recommend running the spa without filters for extended periods, since debris may be pulled into the pumps. The other common problem resulting in reduced water flow and no heat is when too many jets are dialed shut in a spa without a 24 hour circulation pump.

Running a spa with dirty filters will also reduce the amount of ozone bubbles in the spa, and can even increase the chances of water backing up into the ozone generator. The likeliest scenario for backing up water into the ozone generator comes from a clog in the ozone port. Pre-2006 spas have a screened ozone port to break up the ozone bubbles to make them dissolve into the water more effectively. This port cover needs to be removed at every filter change and cleaned, since it will collect calcium and skin flakes out of the water. It can best be removed by someone in the tub with a small phillips screwdriver.

Other Flow problems can be caused by leaves, pine needles, toys, or clothing being drawn into a pump. This will rarely occur with filters in place. We can service this situation, although it would not be a warranty service call. Pumps that are jammed and damaged by mineral deposits can cause flow problems as well, but are also not covered by warranty. On occasion, a flow sensor (on still older spas) can also fail.

## Priming Pumps

A circulation pump that is not primed or is air locked can cause a low Flow condition because water is not moving through the heater. Spas without a 24 hour circulation pump can have the same symptoms with the jet pump used for heating and filtering. Any pump that is running but not moving water can be primed by loosening the uppermost coupling ring until all the air has escaped, and water starts moving. Many spas will prime automatically, but under the right circumstances, an airlock might still occur. The chances for an airlock are greatly decreased by filling the spa with fresh water run into the bottom of the filter well. Water under pressure from the hose will sometimes force air out. Manufacturer's warranties do not provide for pump priming.

# Flushing and Clearing Clogged Pumps

When it is impossible to get water to move through a pump by priming it, and the shaft is turning, there may be an obstruction blocking the flow. The first step in dealing with this issue is to shut off power to the spa. If some foreign material has been drawn into the pump, it will usually be in the impeller. This can be verified by removing the plastic clips (or possibly sleeves) from the shafts of the T-handle slice or gate valves, if so equipped, and then pushing in and locking down the valves on either side of the affected pump. Then the suction side coupling can be unscrewed from the flat face of the pump. The pipe or tubing feeding this side of pumps is usually flexible, and should be moved out of the way. Some water will run out at this point. It may be possible to feel or perhaps even extract foreign matter in the pump housing at this time. The pump may be back flushed by opening and quickly closing the slice valve on the pressure side of the pump (the one on the side not now disconnected). The weight and force of the water in the spa will generally blow the clog out of the pump.

In any case, if water does not flow forcefully back through a pump with the slice valve opened, it's possible that the entire housing is clogged, and may need complete disassembly. If water does flow well back through the pump, the impeller might be broken loose from the motor shaft, or there might be a clog in the pipe supplying water to the suction side of the pump. It is very common for debris such as leaves, toys, pine needles, and pieces of cloth to be drawn into a pump intake when the spa is run without filters, or when filter maintenance is being performed. If the line from the filter socket to the pump intake is plugged tight, it usually can only be unplugged with a piece of wire.

The ozone/warm water system can be back flushed in a similar manner: If the slice valves on either side of the heater are closed, then one side or the other of the heater can be disconnected, and the tubing moved out of the way. Now the slice valves can be quickly opened, and then closed again, flushing any foreign matter from both sides of the circulation system using the weight of the water to force out debris.

After flushing any portion of the circulation or jet pump system, care must be taken to reconnect all fittings in the manner that they were before disassembly. All rubber o-rings and gaskets must be in place. PVC pump unions should be only slightly tighter than hand tight, otherwise they may crack. All slice valves must be open, and clipped in place. Upon start up, it may be necessary to prime the pump that was worked on. If the perforated ozone/ warm water port on a pre-2006 spa is clogged, back flushing is not the preferred method to clear it. It must be removed from inside the spa and scraped clean and rinsed off, then reassembled.

## Cleaning Diverter Valves & Jets

Cleaning diverter valves is an often overlooked part of normal maintenance of your spa, and the spa manufacturer does not cover disassembly and cleaning under the terms of the warranty. However, the valve can be easily cleaned. They usually get stuck due to fine sand or calcium scale being drawn in by a jet pump through the pickup screen in the bottom of the spa. This can often be prevented by placing a pan of water at the bottom of the steps to ensure that sand on bare feet is rinsed off! It's also a good idea to shower before entering the spa.

Diverter valves may be cleaned by disassembly, *after turning off the power*. First remove the diverter handle by pulling straight up and off. Next, the rounded cap can be removed by unscrewing to the left. If it is stubborn, a rubber grip used to open jars may help. After the cap is removed, you should note the location of any rubber O-rings or plastic washers, and be sure not to lose any. Pull the valve insert (it will have a square end) straight up out of the valve body. Sometimes the sand will make it stick in, and it will have to be wiggled loose, or pulled out with pliers. As a last resort, water pressure from the pumps can be used to force the insert out. With the washers and o-rings removed to a safe place, you can turn the pumps on and then off again as fast as possible. The water pressure will force the insert up and out. This is only a good plan for outdoor installations. Rinse the sand off the insert, and wipe the sand off the inside of the valve body with a soft cloth. A silicone spray or Teflon gel lubricant will sometimes also help, and will not damage the O-rings. If the insert is too badly damaged, replacements are available from SpaMaster Service. Reverse the procedure to reassemble.

Jet inserts can be protected and their lives prolonged by maintaining the pH balance properly, and by using a product like Protect Plus to sequester minerals and particulate matter to reduce wear and jamming.

## Slice Valves

Slice valves are also called gate valves and knife valves. They are installed in your spa to make it possible to service a pump without draining all the water from the tub. **Not all pumps have slice valves.** The most common slice valves have a white plastic body with a T-handle held open with a colored plastic clip or a plastic sleeve. When the valve handle and silver-colored shaft is pulled out all the way, it's turned on. When the clip or sleeve is removed and the valve handle is pushed in and locked down, it's turned off. *All slice valves must be turned on for your spa to operate properly*. If a clip or sleeve is left off or knocked loose, the valve will gradually close part or all the way by itself. Opening a closed slice valve would not be covered by warranty.

## Wiring the Spa

Giving advice on wiring a spa is both difficult and illegal. The control box is located beneath the topside control panel, or close by. It's fastened to the bottom of the spa. We recommend telling your electrician to run the conduit or cable in through one of the sides next to a corner, about six inches above the bottom of the panel. A U-shaped horizontal cut-out that will fit around the conduit should be made. For everyone's safety, and to meet code requirements, the spa **must** be connected to a GFCI breaker. To make maintenance easier, we suggest putting the GFCI breaker outside at the distance from the spa as specified by code, usually five to ten feet from the spa. The spa power cable should be as specified in the directions, AWG 6 gauge copper, 3 conductors plus ground. ***The instructions that come with the GFCI must be followed exactly.***

The single biggest problem we hear of on new spas is from people who wire the spa themselves, and then connect the Ground Fault Circuit Interrupter incorrectly. Wiring the spa incorrectly can cause problems that range from a tripping circuit breaker to irreparable damage to the circuit board. We highly recommend that you have a licensed electrician wire your spa, and then have it inspected. Damage to your spa caused by miswiring is not covered by warranty and can even void the rest of the coverage resulting in expensive repairs. ***A spa worth thousands of dollars connected to a 240 volt, 50 amp circuit is not a place to cut corners****!*

## Fuses, A/V Systems, & Light Bulbs

Light bulbs in spa lights, topside control panels, and fiber-optic light boxes are items that will burn out and fail over time, and are not covered by a manufacturer's warranty. LED Lighting and Audio / Video equipment is covered for a term as described in the manufacturer's warranty. Fuses in the Control system of a spa are excluded by the manufacturer from warranty coverage. These items can all be replaced by us or a service agent at regular service rates.

## Water Level in Spa

Most spas have a mark or sticker on the filter skimmer gate that indicates the minimum water level. The water level should be kept up near the bottom of the pillows on the side where the filters are. If the water level is too low, Therapy Jet Pump #1 will be unable to filter properly during a timed filter cycle, and will likely draw the water level in the filter well down, causing surging in high speed on a Legend Series model.

## Leaks

Most of the leaks reported in spas are not leaks at all, but are due to evaporation. The air controls should be turned off when the spa is not in use, and the cover secured. The drain could be loose, or a pump fitting may have loosened due to the combination of hot water, pressure, and vibration. The unions (or couplings) on the pumps should be checked for tightness as part of normal maintenance, especially after draining and refilling your spa. After many years, o-ring seals in pump unions, and in pump drain and bleeder valves can deteriorate. O-rings are not covered by the manufacturer's warranty. Pump shaft seals will eventually wear out.

When the spa is used regularly, it's not uncommon for the water level to drop a quarter to half an inch per day, due to evaporation, splashing, and people getting in and out. Telltale signs of evaporation are water marks down the side of the spa with a damaged or poorly fitting cover, and sometimes icicles on the ground in the winter.

Some apparent leaks are the result of jet inserts that are closed or clogged with debris causing water to back up into the air lines, and ultimately dripping out of air controls. Running a spa without jet inserts can sometimes cause water to run from air controls.

A leak can be verified by turning down the temperature to minimum, setting the spa to Economy, and marking the water level with plastic tape. No one should use the spa, and the cover should be closed tight. If the water level has dropped approximately one inch after a week, the spa is functioning normally and there is no leak.

## Water Quality Management

Many brochures and booklets are available to assist in treating the water in your spa. In order to provide the most trouble-free operation, it's most critical to keep the pH and alkalinity under control to minimize corrosion of metal parts and pump seals, and to use a product like Protect Plus to keep mineral deposits in solution to help prevent damaged seals or plugged lines. The other important issue is to keep the water clean through the use of a sanitizer.

Your specific water management will likely have to be tailored to your local water conditions.

Sodium Dichlor (chlorine) is the recommended sanitizer for most spas. It's important to use a good quality product that is preferably pH neutral. Pool chemicals are not recommended because they are much too concentrated. Biguanide sanitizer can damage plastic parts.

## Causes of Residue in Spas

There are several kinds of deposits and residues occasionally noticed in spas and hot tubs. One of the most common is dark blue or purple powder or crystals. According to factory customer service personnel, the cause is blue-colored clarifier reacting with ozone in the spa water, in high concentrations or when the container is not shaken or mixed before application. Also some granular chlorine and non-chlorine shock sanitizers have clarifier added, which increases the amount even further. Areas with high concentrations of calcium, manganese or copper in the water can also have an effect on deposits occurring in the spa.

White sand-like powder in the bottom of the spa is caused by high pH and alkalinity causing scale to precipitate out of the water. This scale will also damage the heating element, jet inserts, and pump seals, and can cause diverter valves to jam.

Sand blown or tracked into a spa will also collect in the foot well of the tub, and circulate through the diverter valves, causing them to jam.

Slimy white confetti-like material is a result of deposits of calcium, skin flakes, skin oil, bacteria, and other organic compounds building up on the inner walls of the plumbing lines, and then coming off and entering the spa. This often happens when the spa has sat empty for a time as when cleaning before putting in fresh water. Some residues can even cause pump seals to stick after sitting for a long time.

Oily or greasy scum is often the result of skin oil, lotions, makeup, hair conditioner, excess use of defoamer or Protect Plus, and soap or fabric softener residue in swimsuits. Excessive defoamer can also clog filters.

***It is our hope that this information will supplement your owners manual, save you time and money, and enhance the enjoyment of your spa for many years to come.***



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