

## **New Spa Pump Stopped Working**

**I bought a new pump from HTW and it worked great for a few weeks but now it's not working - what is wrong ?**

We need to determine whether it's the motor or the power going to the motor. If you can gain access to the back of the motor and have a volt meter we can get right to it. If you can remove the rear motor cover and just look to see if the area looks okay, that would help.

**Okay - i checked for Voltage at the side of the control box where the pump plugs in - i get 120v -across the white and black, but nothing on the red.**

Since your pump is 240v - that 120v means very little. Most likely it's the white wire that's got the 120v you see on your meter-the black and red are responsible for the Hi speed and Low speed functions, the white wire is Hot all the time on 240v pumps. So this means you are not getting power to the pump - the pump is fine but you have an issue inside the control box. Check for proper voltage at the main terminal hookup inside the spas control box. RED and Black should get you a 240v reading. **DO NOT GO ACROSS THE WHITE AND RED and then WHITE TO BLACK** -as this will show 120v on each test – but that doesn't mean you have 240v. RED and BLACK --you should see 240v on the meter. Let me know what you find.

**I only see 115 volts no matter what i test. So what's up?**

Sounds like you have an issue with the power supply to the spa. You will need to back track a bit- go to the main breaker and test for proper voltage at the spas breaker. Also check any sub panels along the way to the spa.

## **Hot Tub Pump Not Working**

**I bought a new hot tub pump a few months ago, but it stopped working - is there a warranty ? what do we do next ?**

Let's check this out. First unplug the pump from the side of your control box, power should be On and the system should be in Heat mode or Jets so there should be power getting to the pumps plug. With your meter on a setting for 240v or higher, probe the White wire and the black, then probe the White and the Red. You should see somewhere between 210v and 240v. If you are getting 120v, then neither of the Black or Red wires are powered, and they operate the High speed and the Low speed on the motor. The White wire is Hot all the time on 240v pumps, it's one of the LINE wires for power in.

**Well I get 118 volts on white and red and 118 volts on white and black -- isn't that 236 volts? I did check the main wires coming into my control box from the house and there is 238 volts there.**

The only way to really know you have 240 volts, is to see that number on your meter. If your meter shows 118 volts, then that's what you have - and that's not enough power to run a 240v pump motor. Since you have proper power coming into the control box its most likely a function problem somewhere between the main power and the pump plug. Since both Hi and Low are not functioning you probably have an issue with the board - power relay maybe. Check any fuses mounted on the board, some

manufacturers have 20 and 30 amp removable fuses that you should check.

**I did what you said, there are 2 different fuses that can be removed. One was bad -- I replaced it and the pump is now working. YOU GUYS ROCK - thanks for all the help.**

## **48 frame or 56 frame?**

Simply put the 48 frame is smaller in motor housing diameter than the 56 frame. If you look at the 4 bolts that run from the back of your motor and go all the way to the front and hold the plastic wet end on. If you measure across from side to side -the 48 frames will measure approx. 3-9/16", where the 56 frame motors will measure 4-1/8 inch across. So if your bolt pattern is under 4 inches, you have a 48 frame motor, if your bolt pattern measures over 4 inches you have a 56 frame motor.

This is important to know - especially if you're ordering a wet end. The mounting foot is also going to be slightly different and sometimes the overall length can be different.

DOUBLE CHECK YOUR FRAME SIZE! USE A TAPE MEASURE as some pumps are labeled 56Y but still measure the same as a 48 frame.

**What if my pump doesn't use bolts that go through the motor nor does it have a 48 or 56 frame distinction? My pump has 4 large, short bolts just in the front part.**

Sounds like you may have a Square Flange --these are used mainly for pools or in deck spas that have a separate motor/pump set up somewhere other than in the spas cabinet. These are usually a Sta-Rite brand or Pentair. These do require a completely different wet end and mounting. Your square flange is not interchangeable with most of the pumps on the hottubworks.com web site. These are easy to work on but do generally cost more to get parts. We can break it down for you once we know which pieces you need.

Take a look at [this photo](#) - the right side demonstrates the difference. The top is the 56 frame and the lower is the 48 frame, Notice the placement of the screws!

## **Start Capacitor for Spa Motor**

**I have Coleman hot tub, Horizon series. The second pump had issues. I took it in and they said it was fine. Tried it again, smoke came out the back. Start cap is leaking oil. Motor turns freely, where can you find start capacitors?**

Here is a link to the pump [motor capacitors](#). However, given your description of the events that took place, (smoke, blown capacitor), I would recommend that the incoming voltage be checked, and that the wiring is all tight and not touching stray metal. Also check that all other parts in the back look well attached and that the motor shaft and impeller spin freely after hook-up. You may have some wires crossed there.

**There is no power to the pump when I press the switch for low, but I hear the circuits activating. If I press it again when the circuits are active I can sometimes get it to jump into high speed. When the hot tub is initially powered on (circuit breaker reset). I can always get the pump to jump to high speed when I hear the initial circuits activating and trying to go into low speed startup, by pressing the start switch once.**

Since the pump is not getting power when activated but will run on low speed sometimes I don't believe it's the motor. I am more focused on the low speed relays on the board causing the problem. Since you can hear the pcb relays click like they are trying to activate when you push the top side button for low speed this makes me think the top side panel is working and again leaning towards the circuit board (pcb).

## **Spa Pump Problem**

**We have an older Quantum X Spadition. Replaced the pump last year. Storm blew out cable, internet, etc....seems also the hot tub. We can bypass the circuit board & get the pump to run, so don't think it's the pump. Is there something on the circuit board we can check or replace? Hot tub will not run at all. Help!**

If you are getting proper power to the spa, then the first thing I would check would be the system fuses. They should be located inside the control box in the equipment area of the spa. There should be a system [fuse](#) that may be a 20 or 30 amp fuse. If that has blown nothing will work on the spa. Are you getting any kind of indicator lights on the top side panel?

**In the older Quantum Expedition there is no digital readout panel & no lights. Equipment is accessible through a lower panel & looks like a pump & circuit board enclosed in a box. The hot tub is heated with heat stick. I'm not sure if there are fuses on that circuit board that are replaceable. Maybe they just don't look like regular fuses?**

If there are not any replaceable fuses and you are getting proper power to the spa I am leaning towards spa circuit board as being the problem. If you know an electrical wizard, you can trace down the problem and repair the board, but for most people it's best to replace the board. In your case, the storm may be to blame, frying the board.

## **Spa Impeller Removal**

**I am looking for information on removing an impeller form my pump motor. I need to replace the seal and slinger. My question is - is the impeller a right or left hand thread and does anyone have any tricks for getting it off. I have tried having someone hold a large screwdriver at the one end and using**

**a socket on the impeller 'acorn nut' shape in the center, but have been unable to remove it. I don't want to have to destroy it and buy a new one.**

Spa pumps will normally have a right hand thread, or regular clockwise to tighten, cc to loosen. So when you remove the back plate on the motor and use a screw driver in the slot you would want to turn the screwdriver to the left and the impeller in the opposite direction. Unfortunately, it is not uncommon to break an impeller when trying to remove. You can get rust built up on the shaft and will freeze the impeller onto it. If so, try some WD-40, on the shaft near the impeller. A Strap Wrench can be a useful tool for removing impellers, or a pair of very large Channel Lock pliers. Heating up the shaft slightly may also help, just behind the impeller (but not too much heat!).

## **Low Speed Marquis Motor Malfunction**

**I have a Marquis spa with a 2 speed motor (220V). The motor does not go on into low speed from start-up. If I press the start button twice I can get it to go into high speed. From High speed, the pump can go into low speed with no trouble and back to high again. Is the motor's inability to go to low speed from start up a motor or control circuit problem?**

When the [spa pump](#) is in high speed are you saying by pushing the button on the [spa top side panel](#) you can get it to go from high to low, but if you just push the spa top side panel button once it will not go into low speed? If you just push the jets button for low speed does the indicator come on the top side panel?

**When in high speed if I press the button once it usually goes into low. Sometimes it turns the pump off. When that happens I usually cannot get the motor to restart without pulling the breaker (turning off all power to the tub). When I do this and repower the tub I can get it to jump into high again when it is trying to start up in low by pressing the button, right when I hear the circuits trying to start. What I was trying to say is that when the hot tub cycles to low after ten minutes of use at high, I can press the button once and it goes back into high. When finished, it goes from high to low and stays in low for the clean-up cycle. After the clean-up cycle the motor will not go into low for routine nightly cleaning and temperature maintenance. Hope this clarifies my problem.**

Thank you, I was trying to determine if the top side panel was the issue. It sounds more like the circuit board since it will not go into its filter cycles. Can you hear the relays clicking when you push the button for low speed?

**Yes, some of the relays are clicking. When the hot tub tries to enter routine cleaning or temperature maintenance I also hear clicking.**

If you are hearing the relays clicking when you press the top side panel I am inclined to think it is not the spa top side panel causing the problem. I think this problem may be the [spa circuit board](#). If you are comfortable using a voltage meter, you can push the button on the top side once to put it in low speed and test for voltage coming off the board, going to the pump.

**There is no power to the pump when I press the switch for low, but I hear the circuits activating. If I press it again when the circuits are active I can sometimes get it to jump into high speed. When the tub is initially re powered on (circuit breaker reset). I can always get the pump to jump to high when I**

hear the initial circuits activating and trying to go into low speed startup by pressing the start switch once, at just the right time.

Since the pump is not getting power when activated but will run on low speed sometimes I don't believe it's the motor. I am more focused on the low speed relays on the board causing the problem. Since you can hear the relays click like they are trying to activate when you push the top side button for low speed this makes me think the top side is working and again leaning towards the circuit board. It may be a candidate for repair, check online for hot tub pcb repair, or you can replace the entire board, where everything is new, not just the bad relay, or whatever.

## **Bad Hot Tub Pump?**

**Pump 1 low speed doesn't work; high speed only works for 15 seconds then turns off. Then pump 1 becomes inoperable. When I try to activate pump 1, I hear a click. Pump 2 works fine. Is pump 1 broken? (220, 3hp, 2 speed pump).**

Your spa pump may be bad, but it could also be a power issue, possibly from a bad pcb circuit board. I would push the jet button and when you hear the relays click then quickly take a voltage reading going to the motor, from the circuit board by placing meter leads directly on both power wire terminals at the same time.

## **Spa Pump Short Cycling**

**On my Catalina Spa, everything seems fine as far as heat and all goes, it maintains 100\* constantly, but it seems like it is cycling on a lot more often than it used to. Now, the circulation pump turns on every 5 minutes for about 40 seconds (I timed it). It seems to me that it used to come on for a few minutes at a time, maybe 3 or 4 times/hour. Do you think this is some sort of programming/resetting issue or is something else causing it to only cycle for short periods?**

It should come on every 30 minutes and run for a few minutes. They use this function to monitor the water temperature. The new pump should not be causing this; it is only running due to being supplied power from the circuit board. It sounds more like a programming or circuit board problem. Are there any messages on the control panel display?

**Yeah, that's pretty much what I remember, on 2 or 3 times/hour for a few minutes each time. I never suspected the new motor/pump was causing it, I just wanted to mention that it was just replaced. The digital display is showing the temp, no error codes. I need to dig around in my files and find that manual. Maybe there's a reset sequence I can try or a series of entries to display any error codes.**

## **Restarting after Tub Motor Rebuild**

**I've a Tiger River Spa about three years old. The pump seal for the jet pump was leaking so I pulled it. After rebuilding everything and re-assembling. The pump turned OK after rebuilding as did the motor**

(new front shaft bearing). They turned fine as a unit so I anticipated no problems but after filling and waiting for about forty-five minutes I tried the jets. The motor strained without turning and kicked the house breaker. I went in, removed the motor end cap and used a huge flat-tip screwdriver to turn the shaft. It turned but difficult, nothing like when out of the system. Back about twenty years ago I had one of these develop a case of the vapor lock similar to what occurred daily in our old Desoto and it acted in a similar fashion. Any ideas?

What works a lot of the time is putting the hose down the filter pipe to force the air out of spa pump. Another way to release an air lock is to just slightly loosen the pump union so water just slightly trickles out or loosening the pump plug to do the same sometimes works as well. However, since your pump tripped the breaker, I don't think it's an air lock, but something else. Could be the shaft seal was put in backwards, or the bearings if you replaced those as well. You say only the front bearing was replaced? Normally both are done together, not sure if that makes a difference, maybe not. The pump o-ring could have come loose and wrapped itself around the impeller. Or a missing internal motor shim or washer. Something is causing the motor to bind up. Or, another thought is that the motor start capacitor is weak and needs to be replaced.

## **New Spa Pack Recommendation**

**I'm taking on the task of rebuilding a 4-person spa. The old pack/pump is beyond repair and I'm replacing the jets do to age and cracking. I have a parts list for jets and jet bodies (14) but I'm stumped on how to size the right pack and if I need an air blower. The tub looks like it might have had one at one time to blow bubbles up through the edge of the seats. There were three air control devices that are being replaced as well that supply air to the jets. So if anyone can recommend a pack or sizing chart or any other info, I would appreciate it.**

It sounds like you may have air injectors in the seats, that is where they normally are installed, then you would need a blower if you want to use them. Usually the rule on horsepower on the pump is for every 6-7 main therapy jets you need 1 horsepower. So if your spa has say 14 jets you may want to go with a 2.5 hp pump. We have a variety of different control systems to choose from. If space is a factor in the equipment area of the spa you may want to consider a Flex Fit Digital pack. If not, then one of our Balboa or Standard Digital spa packs should work just fine. If your spa only has one pump and a blower then the Balboa VS501 system would work great, or if two pumps and a blower the Balboa VS510 would be a good choice.

## **2-Speed Pump Not Working**

**I have a hydro spa hot tub; for no apparent reason, the main pump (2 speed) and the heater quit working. When you try to start the pump, the circuit board makes a "clicking" sound. The control panel just shows "--" for this pump. What I should check (I do have a multi meter).**

The heater may not be working right now because the pump is not coming on. It has to be running in order for the heater to come on unless you have a small, separate 24 hr circulation pump. It sounds like

the circuit board is not sending power to the motor but you can verify that with your meter. Remove the rear motor cover and place your meter leads on each incoming power line. Since you hear clicking I don't think it's your topside panel. More likely incorrect power or a problem with the spa circuit board.

## **New Jacuzzi Pump Blows Breaker**

**I have a Jacuzzi Laser Select that i just put a new pump in and when pump is on low speed, water does not circulate, and when main pump is turned to high it kicks the breaker.**

It sounds like it may be wired incorrectly. Check to verify where the white wire is located on the motor. There should be a wiring diagram on motor, white is the common wire. The black and red wires are for the two different speeds, one for low, one for high. Check to verify their connection point is correct. Also check that the green ground wire is securely fastened. Check to verify that bare wires are not contacting any metal inside the motor, other than the terminal or connection point for the wires. Check to verify that the wires are tightly connected at all connection points, from breaker to pump (turn power Off first!). A test meter can be used to verify proper voltage reaching the pump, should be 220-240V.

## **Sundance Optima Motor problem**

**2-speed jet pump motor does not operate. There is a humming sound but pump will not start. I see what looks like corrosion on the outside of the motor housing. Perhaps moisture has shorted out the inner motor controls. Can a motor be rebuilt instead of total replacement? All other pumps are working fine. There is no problem with the flo switch.**

If it is humming, then power is being supplied to motor. You can verify you are getting 220V to it from circuit board for second speed. An electric motor repair shop in your area should be able to rebuild almost any motor, with exception to shorting out across windings. A motor "rebuild" in most shops gets you new bearings and shaft seal. Prices vary, but usually around \$100. Switches, capacitors and terminal boards can also be replaced if needed, most shops will stock these items. Now, if your motor is humming and not turning on then the bearings may be seized (rusted). Check if you can turn the impeller by hand (power off!), if it won't move easily, it could be seized or something else could be preventing rotation in the impeller, or the seal in the back of the wet end may have failed, allowing water to pass through into the motor. Another possibility, which also produces a humming sound is a blown capacitor. If it looks cracked or bulged or has leaked fluid, the capacitor is bad, but sometimes are bad when they look good, too. If the shaft spins easily by hand, and all wire connections are tight, then you could try the capacitor first, replacing with exact duplicate MFD rating (the capacitor is the black cylinder inside the back of motor, at 9 o'clock).

## Replaced Pump - No Flow

Recently our pump motor seized and I ordered and replaced the motor and impeller assembly. Pretty easy job, everything went back in just like it should. But now the water isn't flowing! The motor is working, both speeds, but nothing gets pushed through the jets. I have loosened the connections to try to purge the air, and bubbles come out of the lines after I run the pump for a minute, but after about 20 minutes of trying this over and over, I still have not a hint of flow. I took off the intake connection and water wasn't flowing from it. Water was pouring back out of the impeller from the other direction, but the intake seemed to just let a bit of water out, then be done. The filter is removed at the moment... is there a valve that could be stuck or something?

If your spa has shut off valves they should be visible in the equipment area. Look around the pumps and heater on the pipes, and check very carefully that all valves are all the way open if your spa has them. Commonly used are Slice valves, which are closed with the handle down, and open when handle is up. Ball valves are closed when the handle is perpendicular to the pipe, and open when handle is parallel to pipe. Another possibility is that a check valve (one-way flow valve) is damaged and blocking flow, or there could be something foreign in the suction intake pipes, up to and including the impeller, that is stopping water flow. To help remove a possible Air Lock, pull out the filter again and take a water hose and put in filter intake, turn on hose fully to force a stubborn air pocket out of system.

## Sundance Del Sol Motor

I need to replace the motor on a 10-12 year old Del Sol. The motor sits behind the electrical box, so it appears that the electrical box needs to be moved to gain access to the motor. However, the box is attached to a stainless steel tube directly behind it.

The ss tube may be the heater; it may have unions on it to allow for removal. Sometimes you do have to remove components just to get to another one. In some cases, you may need to remove the side panel to get to pumps.

**Yes, the tube is the heater. I got the motor out of the spa by disconnecting heater and moving the control box aside. I think the motor is OK, but am now having trouble pulling the wet end. I pulled the outer case, but can't get the impeller off.**

Most impellers will thread onto the motor shaft. It is not uncommon for the impeller to be super tight on the shaft so sometimes they will break when trying to remove it. Always try it first by hand, with a tacky cloth, if that won't work, gently use very large channel pliers or a strap wrench to remove an impeller, while holding the steel motor shaft stationary, by gripping shaft with pliers or by inserting a ½" wrench on the back of the motor shaft, behind the centrifugal switch. It has standard threads, left loosey, righty tighty.

## **Catalina Spa, New Pump, No Power**

**As the title states, Catalina spa with Balboa control won't turn on after motor replacement. House breaker and outdoor GFCI both operate normally, and there is 240v going into the control board power connection. The topside control panel doesn't turn on, the display and buttons don't work, etc... It's like somebody flipped a switch.**

Does the pump come on automatically, like for a filter cycle or to heat? This could be a number of things causing this. It could be the transformer, circuit board, or the topside panel. Have you tested all fuses on the circuit board? My bet is it's one of two fuses. There is a 1/2 amp and a 3-amp fuse on most Catalina boards that could be causing your issue. The 1/2-amp fuse, if blown denies power to the board so if you have power at the input it won't go anywhere. If the 3-amp fuse is blown, it denies power to the 120v components of the circuit board. The circ pump may be 120v or 240v in a Catalina. The topside is 120v.

## **Cal Spa Circulation Pump Problem**

**Hi. I have a 2006 Cal Spa that anytime the circulation pump tries to kick on automatically, it just hums for a few seconds, then stops with a message code "dy". BUT, if I'm present when this happens, I can quickly turn the jets on and immediately turn the jets back off, the circulation pump works fine, until the next time.**

If you can manually turn it back on and off the topside, it is sounding like it could be a problem with the circuit board when coming on for its automatic functions. If you have a voltage meter, try and verify that the board is supplying proper power to motor when it comes on automatically. Also check and make sure it is only supplying low speed power at that time and not engaging both relays for low and high speeds, at the same time. Usually the black wire for the motor is for low speed.

