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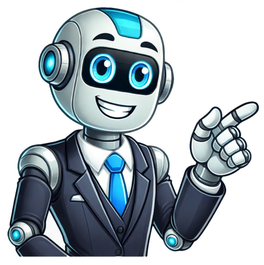

Skip to content Hi. We are repairing our pool before replacing the liner and have noticed the ground level is higher near the middle areas of the pool than by the walls.A few questions: 1. Is it better to add sand closer to the walls OR take out sand and level the areas near the middle? 2. Should the floor foam pad meet at the foam cove? 3. Is it ok to put sand over the foam cove?Thanks for your help. I love TFP. I am sorry it took so long for me to find this thread. I am hoping it is not too late to help. -We dished our pool so the middle was slighty lower. You can level it however you want but I have heard it is better to remove than add sand so... -foam pad should sit under the foam cove or right at. This will help keep it in place. -sand over foam cove-I guess you could but why? Do you want the cove higher?Kim Thanks Kim. Since there seems to be a lot of sand (we probably put too much in 12 years ago) and the outer edge of the floor seems lower than the middle (maybe because we walk a lot along a ledge we put in near the walls and it got packed down more than the middle, LOL), it seemed like a good idea to move some sand to the outer edge, which then seems to cover part of the foam cove. We don't have a need to make the cove higher. We will also have to remove some sand from the middle of the shallow end. We have so much sand, we don't even get to the ground clay when we scrape the sand off the top. Unable to pull the foam cove off because of extra sticky adhesive so we left them in place. We have not yet installed the floor foam and plan on bringing it right to the edge of the sand/foam cove. Do you think that would work?Thanks for your help. I would try using some thing without any sharp areas/corners to GENTLY push the cover under the cove BUT it it does not work don't worry about it.Kim I was wondering if you were to put a bigger than average cove in an AGP. Would a climbing robot then be able to access the pool walls for cleaning? That's a good question. We don't have one so I'm not able to test it out. I have a Dolphin Active 20 robot with a normal foam cove and it climbs the walls great. If you want a robot to climb your walls, you might look into a dolphin. I was wondering if you were to put a bigger than average cove in an AGP. Would a climbing robot then be able to access the pool walls for cleaning? I Zodiac Whaoo climbs the walls if I keep the suction too high. It climbed them when I had sand coves, and to climbs the foam ones too. Just wanted to follow up on what we've done.The sand against the foam cove did not work out so well. It shifted and left some uneven areas. Also laying the foam floor up to the foam cove did not work the way we had hoped. Sand had also gotten on top of the foam flooring which we thought would not be a problem. Next time (if ever again) pull off the foam cove, lay out the sand to the wall, lay out the foam flooring up to the pool walls and then re-glue the foam cove back on the wall over the top of the foam pad. If any sand gets on top of the foam floor, brush it off. Just my 2 cents and "dah" moments after doing this. I'm a perfectionist and it bugs me but the pool is still usable and hopefully everyone can enjoy it. It's just that "I" know its there. The images sort of say it all. I bought this house last year and the spa spillway leaks and runs down throughout the stone and grout. In addition to the grout on top of the spillway stone being bad, it also leaks around the sides and possibly bottom of the spillway stone when the spa is off. You can see water trickling down the outside of the spa, and the water in the spa drops to the bottom of the spillway stone. What readily available products are available for me to repair this myself? I patched the spillway up with silicon awhile back but it just grew algae underneath and I had to remove it. I looked for Laticrete grout locally, but can't find it anywhere that will sell it to the public.Appreciate any help! It looks like type S mortar was used as that is very common in that type of construction. The problem though is that it does not hold up well to water and erodes away with time.Your best bet would be to remove all of that grout and replace with something that's designed to withstand water Not a salt water pool. Using liquid chlorine per TFP advice, but who knows what was done prior.Yes, I want to chip out all the old grout and replace it, we're on the same page here for sure. My question is, what product to use, or is there an additive to mix in with some big box store sanded grout? They sell several products that replace the water mixed in the grout and basically make epoxy grout I have used this in the past in similar area, but not on Spillway thats exposed to daily water. MorFlexx Sashco. Its perfect for stucco repair too. Paintable. You went out to your Sundance Spa and you see that its not working and the display panel shows -. This is the Watchdog error. Whats that mean? What do you do now? Ive got some answers!Most of the time, you ARE going to need to call a technician. BEFORE you do that, though, the best thing to do is shut off all power to your hot tub and give it at least 15 minutes for everything to reset. Go do that now, if youre having this problem, then read on!Alright. What causes the Watchdog error? MOST of the time, this is caused by a faulty temp sensor or flow switch, possibly a circuit board. On very rare occasions it could be the control panel or a transformer. It could also just be a power spike, which is why we want to give it a chance to reset before you call anyone out to work on it.If it is the temp sensor or the flow switch, it will be fairly quick and inexpensive to replace, and those are the most common problems. A Sundance Certified Technician wont have any problem replacing the faulty parts and getting you quickly back to enjoying your hot tub. When they come out, they will test different jumpers on your circuit panel to diagnose which component of your spa needs to be replaced.Now that you know more about the Watchdog Error on Sundance Spas, go ahead and try powering your spa on again (as long as its been at least 15 minutes) and see how it does! If its working like normal again, dont worry about it. If it goes into Watchdog again, call your local service techand dont worry about it!Thanks for reading!Jen AllenCentral Iowa Pool & Spajen@soakandswim.com I was going over the state codes for Fecal Accident Response where I live and I had a few questions. Our indoor pool uses bromine and the state asks for the free chlorine to be raised to 20ppm and maintain for 13 hours in the event, it makes no mention of bromine levels. Is there a corresponding bumped up bromine level to be at? We use Potassium Monopersulfate shock in the pool normally, which doesn't increase free chlorine. Can we use this shock in this instance of an accident or should we have calcium hypochlorite on hand specifically for this occasion. Does the CalHypo account for the 20pp of FC? Another question I had was about the ph during all this. It says to maintain a ph between 7.2 and 7.5 at the higher chlorine level. Say your ph was at 7.6-7.8 at the time of accident. Would you first lower the ph before superchlorinating? If so how long would you have to wait between the two.Any help would be appreciated. Great forum! Welcome to TFP! Are you operating a public pool? Unless I am wrong, I think that public pools are typically required to use chlorine rather than bromine. Therefore, that may explain the requirement of raising the FC to treat.Chlorine does a better job of disinfecting when it is closer to a pH of 7.2 than it does with a pH of 7.6 to 7.8. You would first want to adjust your pH and then superchlorinate afterward. This is because pH readings can read falsely high with high FC readings. Thanks for the reply! This is indeed a public pool. Bromine is an acceptable sanitizer according to the code, it must be maintained between 2-10 mg/L. Just wasn't sure what to do in this event, normally I'd just add a bunch of the non-chlorine shock, now I'm not so sure if that's the best route in a bromine pool.If I have to adjust my ph before superchlorinating, will it take a whole turnover period to lower the ph before I can add the chlorine? I realize the best method is to have your ph in this range anyway, but I was just curious what to do in this instance. Where are you located? If Bromine is a accepted sanitizer then there should be a paragraph in the code that handles pools using that as a sanitizer instead of chlorine. Though the action may be the same, it should be stated. If it isn't, you should call the AHJ (authority having jurisdiction) and ask them specifically what the rule is for a bromine pool. I'm located in New Hampshire. I've gone over the codes a few times and while there is info regarding what level the bromine should be kept at during normal operation, there is no mention of raising bromine levels in response to fecal accident, only the chlorine levels. This is why I was wondering if I had to add a chlorinated shock. Here is a link to the state regulations: I missing something? If I'm not I will give the DES a call. I looked up the Los Angeles County guidelines, just to see if they said anything, and I know I've read it before and could find it again. They don't mention Bromine, but do mention using CDC guidelines. So I looked there. The relevant section says 6.5.3.5 There are no inactivation data for Giardia or Crypto for bromine or anydeveloped protocols for how to hyperbrominate a swimming pool andinactivate pathogens that may be present in fecal matter or vomit.Therefore, pool operators should use chlorine in their disinfectionprocedures. It should also be noted that DPD test kits cannot differentiatebetween chlorine and bromine. This is because DPD undergoes the samechemical reaction with both chlorine and bromine. Therefore, it is important that the pools bromine residual be measured before chlorine is added to the pool. This bromine residual should be taken into consideration when determining that the free chlorine residual necessary for the type of contamination has been met (i.e., the free chlorine residual measured minus the bromine residual should be equal to or greater than the intended free chlorine residual). If a DPD test kit with a chlorine comparator is used; the total bromine residual can be determined by multiplying the free chlorine residual by a factor of 2.2. So you better keep some bleach on hand, just in case! (some duplicate info to Richard's post above as I wrote it at about the same time he did...)The CDC's Fecal Incident Response Recommendations for Pool Staff does not mention bromine and I don't know of any studies showing bromine levels needed to inactivate Cyrptosporidium. Likewise, the CDC Model Aquatic Health Code (MAHC) Fecal/Vomit/Blood Contamination Response (which is in development and not yet official) gives the following not particularly helpful response: There are no inactivation data for Giardia or Crypto for bromine or any developed protocols for how to hyperbrominate a swimming pool and inactivate pathogens that may be present in fecal matter or vomit. Therefore, pool operators should use chlorine in their disinfection procedures. So basically you are just left with superchlorinating the pool using the chlorine guidelines, but if you are using a bromine test kit you need to divide the bromine reading by 2.25 to get the equivalent chlorine reading. Thanks for all the help everyone. I'm starting to get a better understanding of it now. Another question I have is can you use chlorine shocks in a bromine pool? The bromine in the pool is normally kept at a little over 6ppm, which is the chlorine equivalent of 3ppm which is the suggested level for solid stool. So I just maintain that level along with the states suggestion of "spot treating" with liquid bleach or 2 oz. granular chlorine. Can I use calcium-hypochlorite for this in my bromine pool without any adverse effects? Does it matter that I use a potassium-monopersulfate shock on a regular basis? I've read a couple places that you shouldn't use them both in the same pool. They wouldn't be mixed that's for sure, probably not even in the same week. My outdoor chlorine pool also uses potassium monopersulfate for weekly maintenance shocking, will calhypo have any adverse effect here? Last series of questions (famous last words), if I can in fact use calhypo in the bromine pool for disinfection purposes, does the chlorine reading "overtake" the bromine reading or start the reading over? I'll attempt to elaborate what I mean. I normally use a comparator that measures chlorine/bromine side-by-side, the bromine is usually >6ppm equivalent to 3 ppm chlorine. In that CDC document you both cite it mentions measuring and subtracting the bromine reading before determining the level to raise chlorine. When I add calhypo will it start the reading over or just get darker from where it started with the 6ppm bromine reading. And if I subtract the previous bromine level, do I only have to raise it to 17 ppm to meet requirements? Apologies for all the rambling. Normally, you have enough sodium bromide in the water either added directly initially or accumulated from bromine tabs that any oxidizer added to the pool, be it chlorine or non-chlorine shock (potassium monopersulfate aka MPS) will simply oxidize the bromide to bromine. This is what is meant by "once a bromine pool, always a bromine pool". So yes, you can use Cal-Hypo, MPS or any other chlorine or oxidizer in the pool with the result that it will just end up making more bromine. As for the test kit, it cannot distinguish between chlorine and bromine. The units of measurement are different which is why the bromine side shows double the chlorine side in the test kit. Technically, the bromine reading is 2.25 times the chlorine reading, but it is impossible for the test kit nor for you to know which it is. However, based on what I wrote above, you can pretty much be assured that what you are reading is a bromine reading.At the end of the day, it doesn't really matter because fecal accident response just means getting the Free Chlorine (FC) reading to 20 ppm or the Total Bromine reading to 45 ppm since these are identical. A standard DPD test kit can't read that high. You'd need a FAS-DPD test kit instead and in that case the kit will tell you how many drops represents how many ppm of chlorine or bromine (depending on which kit you get). Like Chem Geek said I would go through that CDC info and follow that carefully to keep compliant. Most local health departments will fall back to CDC suggestions. Another issue is what is the level of dimethylhydantoin? It probably has an inhibitory effect on the bromine similar to what happens with cyanuric acid and chlorine. Some jurisdictions limit the level of DMH to 200 mg/L (ppm). How long since the pool was filled? How many gallons is the pool?How many pounds of bromine tabs have been used?I think that the use of bromine tabs should be limited to what would supply 200 ppm DMH. Then you could use liquid chlorine, which would activate the bromide to bromine without adding any additional DMH. Liquid chlorine would also be more pH neutral than the acidic tabs. Another issue is what is the level of dimethylhydantoin? It probably has an inhibitory effect on the bromine similar to what happens with cyanuric acid and chlorine. Have you ever found any scientific papers giving the equilibrium constants for bromine that is free vs. attached to DMH? I've seen inconsistent sources, but would really like to know this information as this issue has come up before in terms of the use of bromine tabs. I have not been able to find any good information regarding the equilibrium equations. I am not sure what the recommended maximum level of 200 mg/l is derived from.It seems to me that the use of bromine tabs should generally be avoided. I think that once the bromide bank is established, then liquid chlorine could be used, and would provide a better overall water quality. Son of a ..... Another insidious chemical I never knew about. I checked our state codes and it makes no mention of dimethylhydantoin at all, or of any level it should be maintained at, so I think we're okay in the compliance aspect. You said "It probably has an inhibitory effect on the bromine similar to what happens with cyanuric acid and chlorine", but is there evidence of that? The local codes and CPO handbook mention the effect of CYA on chlorine and on CT values for accidents repeatedly, but make no mention of this interaction. Is there any way to test for DMH? I take it that dilution is the only means of lowering it? The spa gets drained pretty much weekly so I can't see a problem there, but the pool is another story. We drained it in December (due to a fire), but before that it had probably been 5 years since a complete refill (resurfacing). We normally order 50 lbs of bromine about every 3 months, keeping the pool and spa at around 6ppm, normally.I'll probably continue with bromine in this pool/spa, but now I have a reason to distrust that as well. You said "It probably has an inhibitory effect on the bromine similar to what happens with cyanuric acid and chlorine", but is there evidence of that? The level of dimethylhydantoin in the water must be limited and should not exceed 200 mg/l. There is no poolside test kit available, and the need to regularly monitor dimethylhydantoin by a qualified laboratory is a disadvantage of the use of BCDMH. Reference The concentration of BCDMH in water should not reach 200 mg/L or higher, otherwise the equilibrium between the residual disinfectant and the organic matter is disturbed. Reference 4 Where bromochlorodimethylhydantoin is used the maximum dimethylhydantoin concentration shall be 200 mg/L. Reference High concentrations of dimethyl hydantoin (the DMH in BCDMH) are known to build up in pools treated with bromo-chloro-dimethylhydantoin, tying up bromine and reducing effectiveness. Problems similar to those that occur in chlorinated pools overstabilized with cyanuric acid result. Reference Excessive DMH affects the disinfection efficiency so the level must not be allowed to get too high. The concentration should not exceed 200 ppm. ... icals.html Facilities using bromine as a sanitiser shall keep the DMH levels no greater than 200 milligrams per litre. ... 202010.pdf Dimethylhydantoin (DMH) is a disinfection by-product of BCDMH, which has been associated with skin irritation (bromine itch) when the DMH concentration in pool water becomes too high. Pool operators need to maintain DMH below 200 mg/L. ... g_pool.pdf Is there any way to test for DMH? I take it that dilution is the only means of lowering it? The spa gets drained pretty much weekly so I can't see a problem there, but the pool is another story. We drained it in December (due to a fire), but before that it had probably been 5 years since a complete refill (resurfacing). We normally order 50 lbs of bromine about every 3 months, keeping the pool and spa at around 6ppm, normally.I'll probably continue with bromine in this pool/spa, but now I have a reason to distrust that as well. There is no poolside test kit that I know of to test for DMH. The only way, other than taking a sample to a special lab, is to calculate the level based on the amount of tablets used. Every 10 pounds added to 24,000 gallons will add 26 ppm of DMH. 50 pounds of tabs will add 130 ppm of DMH. The tabs are about 52 % DMH by weight.Dilution and reverse osmosis are the only ways to remove DMH. Some areas have a service that will come to you with a commercial grade reverse osmosis setup to clean your pool water. Southern California and Arizona are the only areas that I know have the reverse osmosis service available.You can use bromine in the indoor pool without using tabs. You just add 8 pounds sodium bromide (for 24,000 gallons) and then use liquid chlorine as the oxidizer. The main advantage of the tabs is the regular bromine dosing so is useful in residential spas that are not used every day or two (that's also the advantage of Trichlor tabs for pools). The bromine tabs provide a residual while after spa use one adds an oxidizer to handle the spike in bather load. For commercial/public pools, automatic feeders would be better, such as saltwater chlorine generators (for chlorine) or peristaltic pumps. Usually this is combined with ORP measurement systems to approximate an FC level that is to be maintained. You can still have a bromine pool with a peristaltic pump adding chlorine since the chlorine will oxidize bromide to bromine (assuming you have a bromide bank by initially adding sodium bromide or having used tabs for some time). Unfortunately, tabs of any sort aren't pure sanitizer so have side effects. Bromine tabs increase DMH. Trichlor tabs increase CYA. Cal-Hypo tabs increase CH.There are two types of bromine tabs. 1-bromo-3-chloro-5,5-dimethylhydantoin (BCDMH) and 1,3-dibromo-5,5-dimethylhydantoin (DBDMH). In both cases, assuming a bromide bank exists, one produces 2 moles of bromine for every mole of DMH added. So for every 1 ppm Bromine from tabs one gets (128.13 g/mole DMH)/((2 bromine per tab)*(2 bromine in Br2)*(79.904 g/mole Br)) = 0.4 ppm DMH. For every 10 ppm Bromine from tabs, one gets 4 ppm DMH. The standard Water Replacement Interval (WRI) defined in ANSI/APSP-11 is (1/3) x (Spa Volume in U.S. Gallons) / (Number of Bathers per Day) where soak time in a hot (104F) tub is probably around 20 minutes. This roughly works out to a cumulative FC from bather load of 270 ppm (about 610 ppm bromine) between water changes. If all bromine came from tabs, then this would be a DMH of over 240 ppm so somewhat over the maximum recommended limit. Ugh! My General Manager is going to hate my finding this website, but I like knowing this stuff. Thanks guys. According to the CPO handbook:"There are two methods of providing hypobromous acid (HOBr) to pools and spas other than elemental bromine. The first is sodium bromide activated by the oxidizer, potassium monopersulfate. This method is called the two-part system, it is limited in use to small volumes of water and is not used for commercial pools The second is a solid form of bromine bound to an organic molecule. This solid is dissolved in a soaking or erosion type feeder to deliver hypobromous acid. Organic bromine compounds are used in commercial pools and spas." If I used chlorine, like you mentioned, instead of MPS, as in the book, as a two-part system would this still be ruled out for use in commercial pools? And if I use chlorine to oxidize after using sodium bromide, does that bromide bank from the initial 8 lbs. of sodium bromide remain as long as I never completely drain the pool? No matter all the backwashing, fill water, etc? Or does the sodium bromide need to be replenished periodically?Like I said, the state code mentions no limit on DMH, so we're in no danger there, but I'd like to have the cleanest water I can. The bromine bank remains in the water for a time. It will break down very very slowly (years and years) and of course you will lose some by splash out, backwashing, and water replacement. To get rid of it completely you need to drain and refill.Regulations vary from place to place. I can't think of any reason they would not allow using chlorine to reactivate bromine, but you never know. OK, here's another newbie-ish question. How do you know when that bromide bank is depleted, and your not just reading the chlorine oxidizer on the test? Page 2 You can't really tell. You have to estimate based on water replacement. You have to add more sodium bromide to make up any lost to splash out, backwashing etc. It doesn't hurt to have too much sodium bromide, so you can add extra just to be sure. The test kits do not directly distinguish between chlorine and bromine, but when bromine combines with ammonia to form monobromamine (NH2Br), it still shows up in a Free Chlorine (FC) test rather than as Combined Chlorine (CC) which happens when chlorine combines with ammonia. This is probably because monobromamine is in equilibrium with monobromammonium ion (NH3Br+) that may release a positively charged bromine atom (Br+) that reacts with the dye in the FC test (see this paper for technical details).Unfortunately, no one makes a test kit where you can add some very diluted ammonia to a water sample to make this distinction (where CC reading would mean chlorine while FC reading would mean bromine) and we haven't tried this out to see if it would really work anyway. You could regularly test for CCs, especially after heavy pool use, to get an idea if there is any chlorine remaining. Even if the bromine bank is completely gone, it really shouldn't matter that much, because chlorine works fine, too. You could manage the chemistry such that the numbers work either way. Watch for any chloramine smell or reports of swimmer complaints.Remember that MPS will register on the CC test unless you use the interference remover. So to implement this in a pool that's already been using bromine could one just add sodium bromide periodically while constantly feeding liquid chlorine with a peri pump at lower rates? While it's only happened once or twice, I have had complaints of minor skin irritation (only in the bromine pool/spa) and now I'm led to believe eliminating DMH would be a step toward eliminating them entirely. So to implement this in a pool that's already been using bromine could one just add sodium bromide periodically while constantly feeding liquid chlorine with a peri pump at lower rates? Yes, I think that that should give better results than using tabs.Below is a reference to the method. One common method of producing bromine in pool water involves the addition to the water of sodium or potassium bromide in conjunction with an oxidizer such as sodium hypochlorite or monopotassium persulphate. These substances are available as solutions and they are readily dosed into pool water. Method 2The addition of sodium bromide together with an oxidizer such as sodium hypochlorite to the pool water.Sodium bromide and sodium hypochlorite are supplied commercially as solutions. ... romine.pdf While it's only happened once or twice, I have had complaints of minor skin irritation (only in the bromine pool/spa) and now I'm led to believe eliminating DMH would be a step toward eliminating them entirely. There are several possibilities that could cause swimmer irritation. It could be an adverse reaction to the DMH. It might be that excessive DMH is preventing the bromine from properly sanitizing the water, or it might be something else. I agree that minimizing DMH is a good idea. What kind of a dosing schedule would I be looking at with the sodium bromide? My usual dosage for bromine is 2 bags (roughly 60 1" tabs each at 0.5 oz./tab = 60 oz. = 3.75 lbs) every 10-14 days, depending on bather loads, and I like to keep it at around 6ppm. As far as water replacement, I usually refill about -1" every week (~381-510ish gallons), not taking backwashing into account which is usually done about once or twice a month, as needed.Any ballpark estimates? Also, with those numbers, would you have a rough estimate of the amount of DMH currently in the pool? Thanks a lot, this is great info! What kind of a dosing schedule would I be looking at with the sodium bromide? My usual dosage for bromine is 2 bags (roughly 60 1" tabs each at 0.5 oz./tab = 60 oz. = 3.75 lbs) every 10-14 days, depending on bather loads, and I like to keep it at around 6ppm. As far as water replacement, I usually refill about -1" every week (~381-510ish gallons), not taking backwashing into account which is usually done about once or twice a month, as needed.Any ballpark estimates? Also, with those numbers, would you have a rough estimate of the amount of DMH currently in the pool? Thanks a lot, this is great info! 2.4 ounces of bromine tabs added to 24,000 gallons will add 1 ppm of bromine, 0.4 ppm of DMH and 0.25 ppm of bromide. 60 ounces of BCDMH tabs will add 25 ppm of bromine, 10 ppm of DMH and 6.25 ppm of bromide. If we use a 12.5 day period, then you are adding 2 ppm bromine, 0.8 ppm DMH and 0.5 ppm bromide per day. If we assume 90 days since the last fill, then your DMH should be 72 and your bromide should 45 ppm. If your bromide is at 45 ppm, then you won't need to add the initial 8 pounds of sodium bromide. You would just need to add 5.5 ounces of sodium bromide per 1,000 gallons of makeup water. 11 ounces of 12 % liquid chlorine will raise your bromine level by 1 ppm. If you need to add 2 ppm of bromine per day, then you would need 22 ounces of 12 % liquid chlorine per day.Note: Edited to correct the amount of bromide. Thanks a lot James, I really appreciate you calculating all that! You say with ~90 ppm bromide I have enough of a bromide bank to skip the initial 8 lbs. What is the target size of the bromide bank? I know there's no upper limit, but how about a lower limit? I've seen some products intended for small-volume home spas that mention having a 30ppm bromide reserve. Does this figure apply with larger pools as well? And, just so I have a better understanding, how did you come up with 5.5 oz. sodium bromide/1,000gallons? The CPO handbook has a handy chemical adjustment guide for a lot of chemicals (x amount chemical = xppm change in x amount of gallons) but it doesn't list sodium bromide and I can't find that info anywhere else.Thanks again. 5.5 ounces per 1,000 gallons will give you a sodium bromide level of 40 ppm. Sodium bromide is 22.4 % sodium and 77.6 % bromide. 5.5 ounces of sodium bromide per 1,000 gallons will give you 31 ppm of bromide ions, which can be converted into up to 62 ppm of bromine. The minimum bromide should always be at least half of the maximum bromine level you will want to achieve.Here is an example: If your bromide level were 5 ppm and you added 220 ounces of 12 % liquid chlorine, then 110 ounces of the liquid chlorine would convert all of the bromide into 10 ppm bromine and the rest of the 110 ounces of the liquid chlorine would create 4.44 ppm of chlorine. Thanks a lot James, I think I've got a slightly better handle on it. I'll give you a shout if I have any more questions on this. I can't say I've read much of anything about DHM before you brought it up. 5.5 ounces per 1,000 gallons will give you a sodium bromide level of 40 ppm. Sodium bromide is 22.4 % sodium and 77.6 % bromide. 5.5 ounces of sodium bromide per 1,000 gallons will give you 31 ppm of bromide ions, which can be converted into up to 62 ppm of bromine. The minimum bromide should always be at least half of the maximum bromine level you will want to achieve.Here is an example: If your bromide level were 5 ppm and you added 220 ounces of 12 % liquid chlorine, then 110 ounces of the liquid chlorine would convert all of the bromide into 10 ppm bromine and the rest of the 110 ounces of the liquid chlorine would create 4.44 ppm of chlorine. I haven't thought through this completely, but is there no way to determine what the bromide bank is with this (bolded) type of information by doing a DPD test before and after adding the chlorine?Nevermind....I thought it through now. Unfortunately, you cannot easily distinguish between bromine and chlorine since they both show up in the Free Chlorine (FC) test. However, there is a way to tell if you have bromine vs. chlorine by adding ammonia to the water since monobromamine will continue to register as FC (because of its equilibrium with the monobromammonium ion which reacts with DPD dye) while monochloramine will not but will register as Combined Chlorine (CC) instead. As for the bromide bank, unfortunately the chloride salt tests do not readily distinguish between chloride and bromide. Skip to content Skip to content This is a little more complicated than the title suggests, but I went for most meaningful rather than exhaustive title or vague title. I got a 2003 Sundance Optima 850 for free on craigslist. It was in great shape. I replaced the headrests and cleaned the filter, and got it started up. The pumps are all good, ozonator is working, heater is working. Everything looked great. The cover and cover lift are a little worse for wear, but everything else is pristine. Heats up to 104 and sustains the temperature like a champ. Had to replace one of the diverter valves, but now all the valves are in perfect working order and the jets are all fully functional. Unfortunately there are some bugs that have shown up. 2 to be exact. 1) The tub will occassionally shut off for a short interval. When this happens, the jet pumps shut off, the air pump shuts off, and the control panel goes completely blank and unresponsive. The circulation motor, however, continues churning on as if nothing has happened. No faults in breaker at all, and the tub starts back up on its own. That is all I know about this one. 2) The tub get a FLO and FLO2 message. I have replaced the flow switch and the problem continues. This is where it gets strange though. When the tub is powered on, FLO2 shows, but if I turn the flow switch a quarter turn so that the switch is sideways, that message goes away and everything comes on as it should. The message FLO usually shows at this point, but I can turn the flow switch back about an eighth of a turn and everything works fine for a while. Usually I will come back to it a day later and be looking at a flow message again and tweaking the flow switch position a little will get it back to working fine. I thought maybe I had gotten a bad flow switch so I got another one and replaced it. The problem still exists. I have made absolutely certain that the switch I have installed is the correct switch for the tub. I can visually see that the switch works as intended when installed in the correct position (open when off, closed when on), but the tub doesnt work with it turned correctly. This problem is making my brain explode. I am assuming that the flow switch is actually a variable resistor using a magnetic field to vary the resistance based on the proximity of the tab to the pole. Turning the switch a quarter turn causes the tab to separate from the pole fully. Turning it back the eighth of a turn causes to to get closer, but not touch. Does anyone have any experience with this crazy? Are there any good ways to resolve these? Or is this indicative of a failing board that needs to be replaced? I refuse to give up on this tub. When its not having any of the above mentioned issues, man does it work great. Any help to fully revive this beast would be awesome. Thanks in advance! FLO-FLOW SWITCH (heater is deactivated pump may also be deactivated)proper flow of water is inhibited or a flow switch has malfunctioned. Check for proper water level, and check for clogged stage 2 filter. FLO2-CLOSED OR SHORTED FLOW SWITCH ON SYSTEM START-UP (system disabled)flow switch is non-functional. (The flow switch when the spa is off should be "open" and when the spa turns on it should "close" the switch, from the water flow) 1) If the filter is dirty it weakens the water flow, and might not be able to close the switch. This only applies to the FLO error code. 2) The circuit board needs to sense that the switch is open upon start-up, not closed. You need to know you have the switch pointed in the proper direction in the pipe to be able to detect water flow. stop turning it. the open switch is necessary it is designed to prevent spa owners that might try to defeat the flow switch by creating a constant closed switch, such as cutting the switch wire and twisting the wires together to close the switch, this is why the board needs to sense that the switch is always open upon start-up. The most important thing here is to make sure the switch is positioned correctly, and you know it is open, stop turning it, and trying to manipulate it, and leave it alone, then when the spa comes on, it should only display the FLO code, again, DO NOT MESS WITH THE SWITCH BY TURNING IT AND SUCH TO TRY TO GET THE FLO CODE TO TURN OFF this code shows up 90% of the time because of a dirty filter, so clean the filter, this allows more flow to occur, which usually is enough to close the switch again, then the FLO code should disappear to. Hi pool&spatechThanks for the input. I have read the documentation extensively and understand what you are referencing. But as I stated initially, the flow switch works properly when installed in the correct position. That is to say that the flow switch is open when the power is off and closes when the circulation pump kicks on. The problem is that the board doesn't recognize it as open and closed properly for some reason. Turning it really shouldn't help (in my mind anyway) Turning it has the opposite effect and leaves the switch open when the circulation pump is running and for some reason, the tub is happier with that. For the record though, I am not turning it to try to bypass it. I'm turning it to try and figure out logically what the board is detecting and responding too so I can troubleshoot. I am no stranger to electrical work and I have the capability to build a simple circuit to replace this sensor that is closed when the circulation pump is on and open when it is off. My goal is instead to get it to work as intended with the original hardware. Keep in mind that this tub has only been running for a few days and the filter is clean and has been recleaned just in case. I have also made sure there is no air caught up in the pipes anywhere. You should have been able to confirm that the 1st flow switch you bought was indeed good by checking it's continuity, for that matter the original switch should have been tested. I never meant to imply you were bypassing it, just explaining to you what is part of the boards design feature, as to why it needs to see the switch open, and that is to prevent someone who actually intends to try and bypass it, by closing it by twisting the wires together and making it a closed circuit at all times, which as you know, wont work, people in the past have done this a lot on older spas with mechanical controls, when you actually could bypass a pressure or flow switch. I get the curiosity of what your trying to do, as you try and figure out how to fix it, with regards to the twisting of the switch and why it does what it does, but if you are 100% sure the switch is open when it should be, and closed when it should be, then you are looking at a board malfunction or lock up, and board replacement is required. Spas that are 5 years old are considered old, let alone one from 2003, cross reference your model and specs to see if a board is still available, and replace it, if it is not available then consider new controls altogether with a new top side panel also.Remember there a lots of people out there paying thousands of dollars for spas that there never going to use after the 1st year, you got yours for FREE!!! stop wasting time with the switch at this point, and know you have 3 extras, and fix the board. Thanks for the info. I decided to open some of the relay covers today and looks like 2 stuck relays are the source of the issues. The replacement board for this model is 6600-730 and is readily available for a little less than 500 from the places I have found. Any places you know of that this board can be had for less than 425? I often do board level repairs, one of which is the replacement of relays, which if you know are stuck,burnt etc, can be replaced, you want to make sure if possible they are part of the circuit that involves your problem though, and you sound as if they are so, try replacing the relays, there readily available. Only wholesale distributor would have it cheaper, but anymore there are many online sources that are not to much more expensive than a wholesaler, but at this point because it is a Sundance, could be why the board is kind of pricey in my opinion, and the price is the price, Sundance uses there own design for controls, like hot springs spas, unlike most manufacturers that will use controls from balboa or gecko, etc. A new set of balboa controls with new topside panel, might be an option at around a cost of $600.00 or so depending on how easily of a retrofit to a Sundance spa would be possible, which due to the small circ pump you currently have and how to plumb it into a balboa configuration would be the only thing you would want to make sure could be pulled off, not to mention any issues with space requirements,etc, that could justify the cost,etc, of a retrofit.Whatever sites are coming up that offer the board are what you have to choose from basically without a wholesale account somewhere so.... I have no idea why I hadn't considered just replacing the relays. That's definitely what I am going to do. Any chance you know the specs for the three smallest electromechanical relays on the board? (K9 10 and 11) The blue covers on them are unmarked so I have no idea what the replacement would be. I could guess, but any help would be awesome. Skip to content You went out to your Sundance Spa and you see that its not working and the display panel shows -. This is the Watchdog error. Whats that mean? What do you do now? Ive got some answers!Most of the time, you ARE going to need to call a technician. BEFORE you do that, though, the best thing to do is shut off all power to your hot tub and give it at least 15 minutes for everything to reset. Go do that now, if youre having this problem, then read on!Alright. What causes the Watchdog error? MOST of the time, this is caused by a faulty temp sensor or flow switch, possibly a circuit board. On very rare occasions it could be the control panel or a transformer. It could also just be a power spike, which is why we want to give it a chance to reset before you call anyone out to work on it.If it is the temp sensor or the flow switch, it will be fairly quick and inexpensive to replace, and those are the most common problems. A Sundance Certified Technician wont have any problem replacing the faulty parts and getting you quickly back to enjoying your hot tub. When they come out, they will test different jumpers on your circuit panel to diagnose which component of your spa needs to be replaced.Now that you know more about the Watchdog Error on Sundance Spas, go ahead and try powering your spa on again (as long as its been at least 15 minutes) and see how it does! If its working like normal again, dont worry about it. If it goes into Watchdog again, call your local service techand dont worry about it!Thanks for reading!Jen AllenCentral Iowa Pool & Spajen@soakandswim.com Skip to content Hi all, Sundance Spa 850 series is showing multiple errors codes and I'm not sure how to proceed. When attempting to power it up for the first time this season, I noticed the dreaded "watchdog" code on the display. I power cycled a couple of times with the same result, but I wasn't at the screen so that's all I caught. On the 3rd cycle, it instead displayed an alternating FLO2 / COOL message on the screen; I cycled a few more times to the same FLO2/COOL result. I know that FLO2 indicates a closed (or faulty) flow sensor, so I took the panels apart to inspect and the flow sensor was indeed open. I inspected the wiring and the sensor itself and didn't see any obvious issues. Upon powering it back up, I did so in a manner that I was able to view the screen and it came on displaying a temp of 93, which began to drop, 91, 87, 84, etc. to about 64, alternating the COOL message in between. This makes sense, as the water is cold. It then made a click, as though it were going to begin operating, and that's when the watchdog/"----" returns. It's doing this through a few power cycles, as it did originally. I can't imagine it's actually the flow sensor, given the inconsistent behavior. I also know that the most common watchdog event is a faulty temp sensor recording a dangerously high temp. I'm skeptical as it showed a temp of 93 and dropped consistently for a few power cycles, though I don't know why it didn't just record the temp at the start, so maybe it is faulty? Otherwise I'm fearing it may be the actual circuit board, but given that's not at all a cheap part, I wanted to see if anyone has any insights into what this may be.Thank you in advance! Every time my Capri spa was inactive for a while there would be a flo2 error. The water would be warm so it probably would kickin when the temperature of something cooled off. Powering on and off and opening up the panel and jiggling the valve would eventually work until the next long layover. Just tried a new technique and it worked perfectly without dropping the panel and banging the valve. Used a small 6 inch tall plunder that is used to unclog a sink. After making sure it was full of water put it over the placed it over the hot water output hole and pushed and pulled the plunder and immediately it freed the stuck flow valve and the error went away. Bought the sink plunger at a hardware store for under $10 dollars. There are a number of unique functions designed into your Sundance hot tub to protect it from damage and/or to aid in troubleshooting. The indicator light located on the front cabinet panel of the spa is an early detection system that will notify you when the spa needs immediate attention. A sloid white light indicates that all operations are normal. A solid red light indicates that immediate attention is required to clear or fix an error code. Following is a listing of all the possible messages along with their meanings.

Watchdog sundance spa. Watchdog call for service sundance. Watchdog error code sundance spa. Watchdog sundance.