

FROG Serene In-Line System Operating Instructions

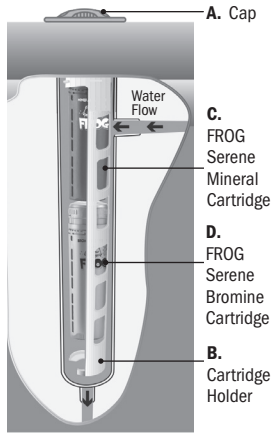


Cleaner
because it kills bacteria two ways
Clearer
because it helps keep pH balanced
Softer
because there's up to 50%* less bromine
Easier
with pre-filled cartridges for no mess, or measuring



FROG Serene Mineral Cartridge (Blue)
FROG Serene Bromine Cartridge (Green)

Register your FROG Serene System at frogproducts.com



The In-Line System is made up of:

- (A) a cap that is easily distinguishable among the fittings on the top of the hot tub
- (B) a cartridge holder that pulls out of the system
- (C) a FROG Serene Mineral Cartridge that helps control bacteria in the water
- (D) a FROG Serene Bromine Cartridge that helps support the minerals while oxidizing contaminants like body oils and ammonia compounds responsible for smelly chloramines. The cartridges are adjustable to meet your specific hot tub water care needs.

Cut-away view of cartridges snapped into holder and placed into the In-Line System.

Step 1: Prepare the Hot Tub

- 1. Fill hot tub with fresh water.**
If using source water that is high in iron or other metals, see your dealer before filling the hot tub. It may require the use of a metal control product.
- 2. Clean or replace filter cartridges when dirty.**
(Follow manufacturer's instructions).
- 3. Balance water by following STEPS a – d in order.**
IMPORTANT: Always follow printed instructions on the balancing chemical packages. Add balancing chemicals in small increments one at a time with the jets on and wait 6 hours before testing again and adding any additional balancing chemicals.

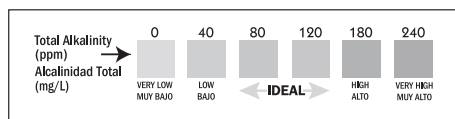
Water Balance Guidelines

pH:	7.2 – 7.8
Total Alkalinity:	80 - 120 ppm
Calcium Hardness:	150 - 250 ppm
Total Dissolved Solids:	<1500

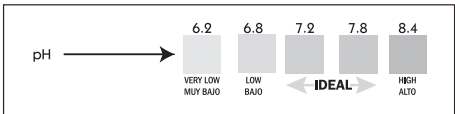
a. Take a water sample from the hot tub and dip a FROG® Test Strip into it.



b. Look at the **Total Alkalinity** reading first. Adjustments should be made to bring the Total Alkalinity in the **range of 80 – 120 ppm** prior to making any adjustments to pH even if it throws pH off further.



c. After Total Alkalinity is in range, **test for pH**. It should be **between 7.2 and 7.8**. If higher or lower, add a pH adjuster.



d. Lastly **test for Calcium Hardness**. It should be **between 150 and 250 ppm**. If higher, partially drain the hot tub (about 6 inches) and fill with water low in calcium. If lower, add Calcium Increaser.

If balancing takes longer than 2 days, shock the water and maintain a chlorine level while continuing balancing.

- 4. Very Important!** Before using cartridges, establish an initial residual of 0.5 - 1.0 ppm free chlorine with FROG® Jump Start® (EPA Reg. No.: 53735-12) start-up shock, included in this package, that quickly dissolves with an effervescent fizzing action – one packet per 600 gallons.

- 5.** Heat water to the manufacturer's recommended temperature.

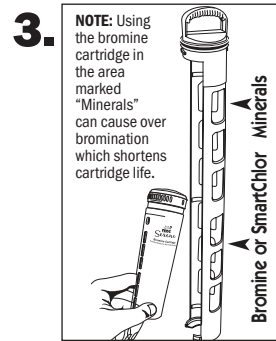
Step 2: Set the Cartridges

Set the blue FROG Serene Mineral Cartridge to #6 (hold the bottom and turn the top until 6 appears in the window). No further adjustments are necessary for the life of the cartridge.

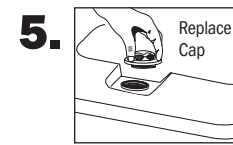
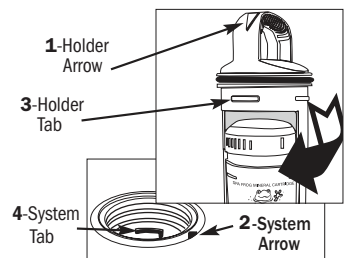
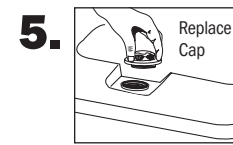


Step 3: Put the System to Work

- 1.** Open cap of In-Line System and set aside. **DO NOT OPEN CAP WHILE JETS ARE ON.**
- 2.** Remove holder by pushing down and turning counter clockwise before pulling out.
- 3.** Snap the FROG Serene Mineral Cartridge into the area marked "Minerals" (top portion) and the FROG Serene Bromine Cartridge into the area marked "Bromine or SmartChlor" (bottom portion) making sure to line up the indentation at the top of the cartridges with the raised area on the holder.



- 4.** Slowly insert holder into system (see diagrams). Line up holder arrow-(1) with system arrow-(2). Push down until holder tabs-(3) go past system tabs-(4) and turn holder to the right (clockwise) until it stops. To ensure a locked position, attempt to pull holder up. If it stays in place, the lock is secure.



Replacing Cartridges

- Replace blue Mineral Cartridge every four months.**
 - Discard it in the trash even if it appears to have media left inside.
 - Don't attempt to reuse: the minerals are spent after 4 months.
- Replace green Bromine Cartridge when empty.**
 - Life of cartridge varies depending on hot tub size and number of users.
 - Drain water from cartridge to ensure it is empty.
 - Discard in trash or offer for recycling if available.

Step 4: Routine Hot Tub Care

- 1.** Drain and refill hot tub as directed by your hot tub manufacturer or every four months when FROG minerals need to be replaced.
- 2.** Run filtration system as the manufacturer recommends to maintain proper water flow through the In-Line System.
- 3.** Regularly test water with FROG Test Strips and follow directions in Step 1 for maintaining pH, Total Alkalinity and Calcium Hardness.

NOTE: pH is affected by bather load, chemicals used, evaporation and the make-up of your source water so maintaining water balance regularly is important.

- 4.** Maintain at least a 1.0 ppm bromine level at all times. **Note:** Bromine levels are reduced up to 50%* when using FROG minerals.
- 5.** Shock the hot tub once a week or as needed with a non-chlorine shock. Heavily used hot tubs may require more frequent shocking.
- 6.** Replace mineral and bromine cartridges as directed in Step 3: Put the System to Work.
- 7.** Lubricate in-line holder o-ring twice a year with a silicone lubricant.

Troubleshooting

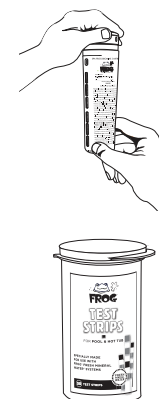
• Cloudy Water or Low-Bromine Levels

- Check water balance. pH and Total Alkalinity need to be in the proper ranges for the FROG Serene In-Line System to work correctly.
- Check FROG Serene Bromine Cartridge and replace if empty—see instructions under "Put the System to Work".

• Make sure your FROG Serene Mineral Cartridge is not older than 4 months as it will be ineffective and more bromine will be required to maintain the hot tub until you replace the minerals.

• Shock the hot tub with a non-chlorine shock to regain clarity.

• High Bromine Levels



- Remove the FROG Serene Bromine Cartridge from the In-Line System until the bromine level is down to 2.0 ppm.
- Lower the FROG Serene Bromine Cartridge setting by 1 number and replace cartridge in the In-Line System.
- Test in 24 hours. Repeat process until bromine level stays within 1.0 to 2.0 ppm.

Learn more at frogproducts.com or call 800.222.0169

* Compared to the minimum ANSI recommended bromine level of 2.0 in a residential hot tub.

Manufactured by: King Technology, Inc.
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