MINERAL SPRINGS®
BASIC POOL MAINTENANCE REQUIREMENTS

	TEST	IDEAL RANGE	ADJUSTMENT REQUIRED
WEEKLY	Sanitizer	1.0 - 3.0 ppm	Turn output dial up to increase, down to decrease -OR- increase or decrease pump filtration time.
	pH	7.2 - 7.8	Too high - add BioGuard® Lo'N'Slo® Too low - add BioGuard Balance Pak® 200
MONTHLY	Alkalinity	80 - 150 ppm	Add BioGuard Balance Pak® 100 to increase / Add BioGuard Lo'N'Slo® to decrease
	Minerals	2500 - 3200 ppm	Add Beginnings™ to increase
MONTHLY	Stabilizer	50 - 80 ppm	Add BioGuard Stabilizer 100™ to increase
	Calcium	200 - 400 ppm	Add BioGuard Balance Pak® 300 to increase / Drain and add water to decrease
	Electrolytic Cell	inspect & clean	Refer to section in manual

For questions concerning water chemistry or product information:
www.bioguard.com
BioGuard Mineral Springs dealer

BioLab, Inc., P.O. Box 1489
Decatur, GA 30031-1489
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06/03

Mineral Springs™
by BioGuard®

OPERATION AND INSTALLATION MANUAL

For Models MS-10 and MS-11

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Decatur, GA 30031-1489
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IMPORTANT SAFETY INSTRUCTIONS

When using this electrical equipment, basic safety precautions should always be followed, including the following:

- ## READ AND FOLLOW ALL INSTRUCTIONS

- Use Copper Conductors Only

- Disconnect all AC power during installation.

- Warning - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

- A green colored terminal marked "Earth Ground" is located inside the wiring compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying the equipment.

- One bonding lug for US models (two for Canadian models) is provided on the external surface. To reduce the risk of electric shock, connect the local common bonding grid in the area of the swimming pool, spa, or hot tub to these terminals with an insulated or bare copper conductor not smaller than 8 AWG US / 6 AWG Canada.

- All field installed metal components such as rails, ladders, drains, or other similar hardware within 3 meters of the pool, spa or hot tub shall be bonded to the equipment grounding bus with copper conductors not smaller than 8 AWG US / 6 AWG Canada.

- NOTICE TO USERS: This control product is to be used only in accordance with the directions of this label. It is an offense under the Pest Control Products Act to use a control product under unsafe conditions.

- ## SAVE THESE INSTRUCTIONS

5.   "High Minerals" LED illuminated
Check mineral level in pool/spa. If the mineral level is too high, lower the mineral level by draining some of the pool water out of the pool and replacing it with fresh water. Continue until the mineral concentration is at recommended levels.

6.   "Inspect Cell" LED flashing
Inspect and clean cell according to directions on page 7. When done, press the "diagnostic" button for 3 seconds to stop the "Inspect Cell" LED flashing.

7.   "Inspect Cell" LED illuminated
Remove and inspect the cell for scale. If the cell is scaled, follow the directions on page 7 for cell cleaning. If the pool has the proper amount of minerals and the "Inspect Cell" LED is still illuminated, the cell may be worn and need replacement.

8.   Possible causes of little or no free chlorine residual
- Mineral Springs switch in OFF position.
- Sanitizer Output Control % adjustment setting is too low.
- Low stabilizer (Cyanuric Acid).
- Filter pump time too short (10-12 hours for average size pools, more for large pools)
- Mineral level too low (below 2400 ppm, Low Salt LED on).
- Mineral level too high (High Salt LED on).
- Very warm pools increase sanitizer demand--increase Output %, or filter run time.
- Cold water (below 50F) causes Mineral Springs to stop generating (Generating LED flashing).
- Excessive scaling on cell.
- High level of Nitrogen in pool water.
- Mustard Buster, "Yellow Out", or similar treatment recently used. Some yellow algae treatments will use sanitizer at a very high rate and deplete the residual free chlorine. Manually shock the pool if indicated in the directions on the algae treatment. It still may be a matter of days before the pool returns to "normal" and chlorine tests will show the desired 1-3ppm free chlorine reading.

9.   "-Pcb-" displayed and all 4 red/yellow LEDs are illuminated.
A possible Printed Circuit Board fault has been detected. Call for service.

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Operation

The Mineral Springs® System

Mineral Springs is an automatic sanitizer generation system for all pool types. The operation requires a low concentration of minerals (*Beginnings*™) to be present in the pool water. Mineral Springs automatically sanitizes your pool by converting the minerals into free chlorine which kills bacteria and algae in the pool. This process is called electrolysis.

Before installing this product as part of a Mineral Springs® system in a pool with an immediately adjacent natural stone patio/decking, a qualified stone installation specialist should be consulted regarding the appropriate type, installation, sealant (if any) and maintenance of stone used around a pool with a mineral-based electronic chlorine generator, in your particular location and circumstances.

The System consists of three basic parts: The Mineral Springs Unit, Mineral Springs *Beginnings*™, and Mineral Springs *Renewal*™. These components are an essential part of the Mineral Springs System.

The Mineral Springs Unit

The Mineral Springs Unit contains three parts, the electronic controller, the electrolytic cell and flow detection switch. A temperature sensor and mineral level sensor are built into the electrolytic cell. The cell and flow switch are plumbed into the pool return piping. The flow switch informs the controller that water is flowing and the generation process can start. The temperature and mineral level sensors keep the Mineral Springs controller calibrated regardless of pool temperature. The cell contains a series of specially coated electrode plates and is where the sanitizer generation occurs. The amount of sanitizer generated by Mineral Springs is a function of filter time, pool mineral level, water temperature, and the setting on the "Sanitizer Output Control %".

Mineral Springs is designed to handle the sanitization needs of the average residential swimming pool of up to 40,000 gallons (150,000 liters), or the needs of commercial pools up to 25,000 gallons (95,000 liters). Check local codes for other restrictions. The actual amount of chlorination required to properly sanitize a pool varies depending upon bather load, rainfall, temperature, and the cleanliness of the pool.

Mineral Springs *Beginnings*

Beginnings is the first step in creating a mineral water bathing system in your pool. The essential elements of *Beginnings* make it possible to fully enjoy the Mineral Springs System. The ideal mineral level is between 2500-3200 ppm (parts per million) with 3000 ppm being optimal. A low mineral level will reduce the efficiency of the Mineral Springs System and result in low sanitizer production. Mineral Springs will operate properly with mineral levels up to 3500 ppm. The chart on page 2 will help you determine how much *Beginnings* is needed to reach recommended levels. Use the equations below if pool size is unknown.

	Gallons (pool size in feet)	Liters (pool size in meters)
Rectangular	Length x Width x Average Depth x 7.5	Length x Width x Average Depth x 1000
Round	Diameter x Diameter x Average Depth x 5.9	Diameter x Diameter x Average Depth x 785
Oval	Length x Width x Average Depth x 6.7	Length x Width x Average Depth x 893

Troubleshooting

Diagnostic Displays

Sequential pushes of the small "diagnostic" button next to the LCD display will cause the Mineral Springs to display the following information:

1. Pool temperature (xx degrees Fahrenheit or Celsius)
2. Cell voltage (typically 22.0 to 25.0 volts when sanitizer is being generated, otherwise 30-35V)
3. Cell current (typically 4.50 to 7.80 amps when sanitizer is being generated, otherwise 0 amps)
4. Sanitizer Output Control % ("0P" -- "100P" depending on knob position or input from remote pool automation controller)
5. Instant mineral level (-xxxx ppm or -x.xx grams/Liter)
6. Product name sent to the pool automation control display ("AL-2" which signifies "Mineral Springs")
7. Software revision level (r1.xx)

On the 8th push of the button the display will revert back to the default mineral display. Also, if the button is not pushed for 30 seconds, the display will revert back to the standard mineral display.

Common Problems and Solutions

1.   "Power" LED not on
Check to make sure either 120VAC or 240VAC input power is connected to the proper screw terminals at the Mineral Springs control. Verify input voltage with a voltmeter. If there is input power, the fuse may have blown. The Mineral Springs is protected by a 20 amp mini fuse located on the circuit board above the cell connector.

2.   "Generating" LED flashing
The temperature of the pool water is too high or low to operate. You can override this by switching the main switch to SANITIZER BOOST. The Mineral Springs will run at maximum output for the remainder of the current pump cycle or 24 hours, whichever comes first.

3.   "No Flow" LED illuminated
The Mineral Springs has sensed a no flow condition and has stopped generating sanitizer. Check that the flow switch is plugged into the connector on the bottom of the control unit and that the wire is not cut or damaged. Make sure you have at least 12" of straight pipe before the flow switch. If there is adequate flow and the LED is still on, check that the arrows on the flow switch (on top of hex) are pointing in the direction of flow.

4.   "Low Minerals" LED illuminated or flashing
Check mineral level in pool/spa. If the mineral level is low, add Mineral Springs Beginnings according to chart on page 2. Before adding large quantities of minerals, it is advisable to have your mineral level professionally checked at your BioGuard Mineral Springs dealer.

Polaris - Attach wires to proper screw terminals as shown below. Note that screw terminal "1" is marked on the Polaris PCB.

Mineral Springs — GRN 4, YEL 3, BLK 2, RED 1

black, yellow, green, red — *note marked on PCB* — 1 — Eos
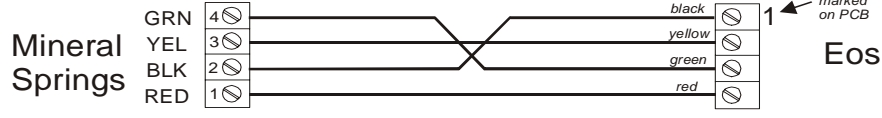
Mineral Springs Beginnings
(Required number of bags to raise mineral level to 3000 ppm)

Current Mineral Level (ppm)	Pool Size -- Gallons																
	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
0	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
200	7	9	11	13	15	17	19	21	22	24	26	28	30	32	34	35	37
400	7	9	10	12	14	16	17	19	21	23	24	26	28	29	31	33	35
600	6	8	10	11	13	14	16	18	19	21	22	24	26	27	29	30	32
800	6	7	9	10	12	13	15	16	18	19	21	22	23	25	26	28	29
1000	5	7	8	9	11	12	13	15	16	17	19	20	21	23	24	25	27
1200	5	6	7	8	10	11	12	13	14	16	17	18	19	20	22	23	24
1400	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21
1600	4	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18	19
1800	3	4	5	6	6	7	8	9	10	10	11	12	13	14	14	15	16
2000	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13	13
2200	2	3	3	4	4	5	5	6	6	7	7	8	9	9	10	10	11
2400	2	2	2	3	3	4	4	4	5	5	6	6	6	7	7	8	8
2600	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5
2800	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3
3000	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal	ideal
3200	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
3400	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
3600+	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute	dilute

For Initial Application:

Backwash and clean filter with BioGuard® Strip Kwik® per label directions. Balance you pool water and adjust pH between 7.4-7.6. Add 1 bag of *Beginnings*™ per 1,000 gallons. Apply evenly at deep end of pool with pump operating. Brush any undissolved product from the bottom of the pool. *Beginnings* may cause temporary clouding of the water. This temporary clouding should clear within 24 hours with proper water circulation.

For Spring Start-Up:

To determine proper application for spring start-up, have your pool water tested by your BioGuard Mineral Springs dealer.

Mineral Springs® *Renewal*™

The weekly application of *Renewal* is all you need to rejuvenate your Mineral Springs System and maintain soft, gentle, sparkling pool water. Replacing lost minerals and restoring pool water's sparkle couldn't be more simple.

- **TEST** for free chlorine and pH.
- **ADJUST** pH to maintain a 7.4-7.6 level.
- **REGULATE** Sanitizer Output Control % to maintain 1-3 ppm free chlorine
- **ADD** Mineral Springs *Renewal* on a weekly basis.

For Maintenance Application:

1. To maintain soft, gentle, sparkling pool water, add one pound (approximately 1½ cups) of *Renewal* per 5,000 gallons of water per week.
2. Broadcast evenly around the edges in the deep end of the pool when the pool is not in use.
3. Add when pump and filter are operating. Allow pool water to circulate for 15 minutes after application.
4. Reapply after heavy rain showers (2 inches of rain within 24 hours).
5. Have your pool water tested monthly by your BioGuard Mineral Springs dealer.

Mineral Springs Renewal Needed for Weekly Application	
Pool volume in gallons	Pounds of Renewal
10,000	2
12,500	2.5
15,000	3
17,500	3.5
20,000	4
25,000	5
30,000	6

Input Power for use with Goldline, Pentair and Polaris controls:

Wire the Mineral Springs® **DIRECTLY** to 120/240VAC power (not through timer or relay).
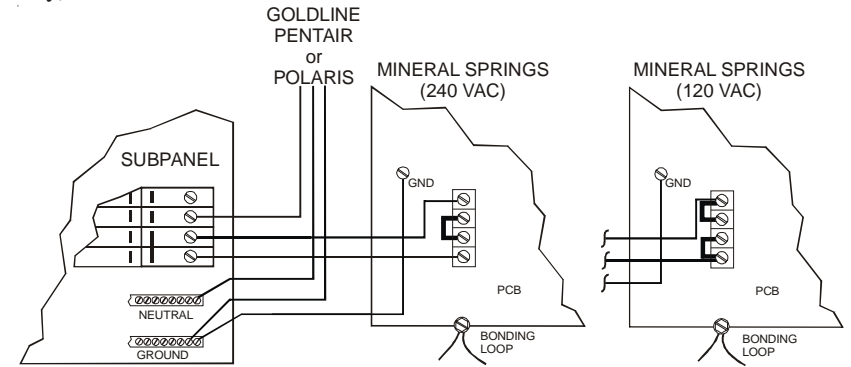
Optional Goldline, Pentair and Polaris controls:
The Goldline, Pentair and Polaris controls use a 4 wire connection to communicate to the Mineral Springs and can be wired up to 500' apart. Any outdoor rated 4 conductor cable can be used. Refer to each manufacturer's instructions and the wiring diagrams below for proper wiring connection to the Mineral Springs. NOTE: There must be only 1 "primary" unit. All other Mineral Springs units must be configured as "secondary".
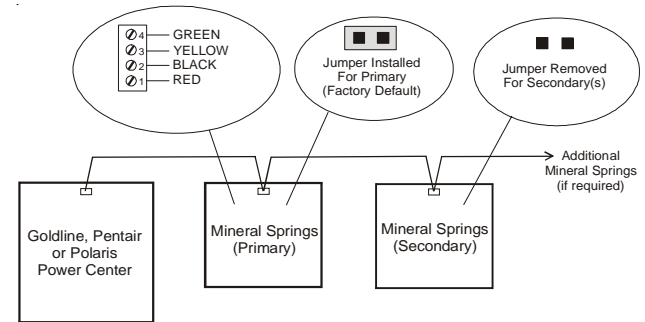
Goldline - Attach wires to proper screw terminals as shown below.
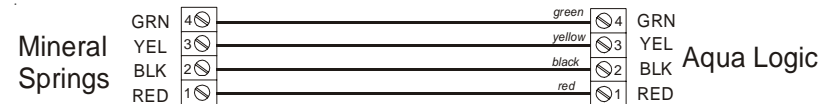
Pentair - Attach wires to opposite numbered screw terminals as shown below. **Note that the colors marked on the Pentair PCB do not match the Mineral Springs.**
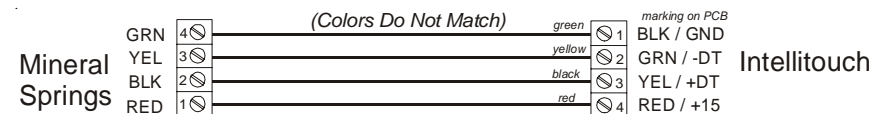
Wiring

Power must be shut off at the circuit breaker before performing any wiring. Be sure to follow Local and NEC electrical codes. To provide safe operation, the Mineral Springs® must be properly grounded and bonded.

Input Power for Stand Alone Operation:

Wire the Mineral Springs to the **LOAD SIDE** of the filter pump timer. It is very important that the Mineral Springs is powered only when the pump is running.

Refer to the wiring label on the Mineral Springs as well as the diagram below to determine correct wiring connections. The Mineral Springs is shipped from the factory with the configuration jumpers in 240VAC position. If using 120VAC, move the jumpers as shown below. For Canadian models, the Mineral Springs should be connected to a circuit protected by a class A ground fault interrupter. Be sure to connect the ground wire to the green ground screw terminal located on the bottom of the enclosure.
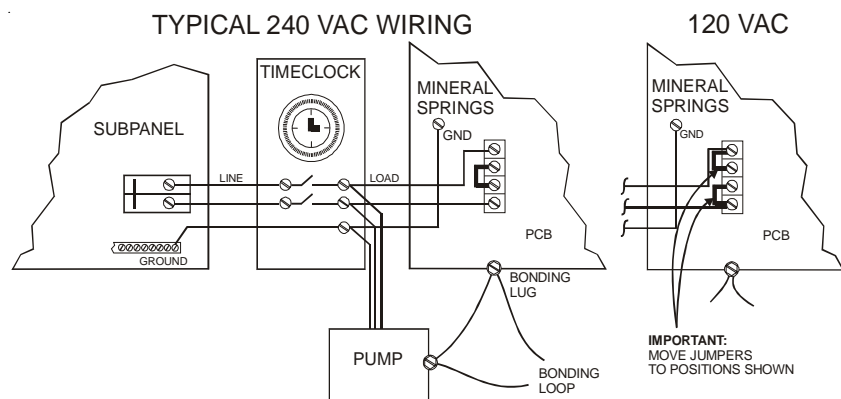

TYPICAL 240 VAC WIRING   120 VAC

Note: Wire the pump directly to the timeclock--do not use the Mineral Springs as a junction box.

Bonding:

A lug used for bonding is attached to the bottom of the Mineral Springs enclosure (see diagram below). The Mineral Springs must be bonded with an 8 AWG copper wire (6 AWG Canada) to the pool bonding system.

Electrolytic Cell and Flow Switch:

The electrolytic cell and flow switch cables are terminated with connectors which plug into the Mineral Springs, for easy attachment and removal. The door of the Mineral Springs must be open to access the cell cable connector. The flow switch plugs into a connector (similar to a telephone jack) located outside, on the bottom of the enclosure. Refer to the diagram below for the location of these connections.
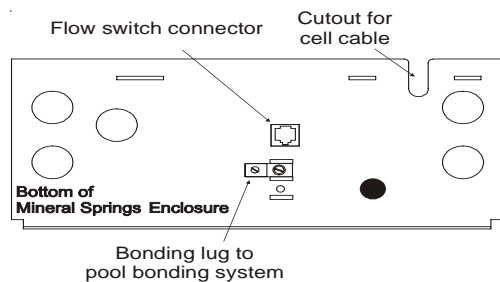
Pool Water Testing and Pool Maintenance

When your Mineral Springs unit is first installed, you should test the chemistry of your pool water daily to determine the proper "Sanitizer Output Control %" setting. A water sample bag is provided for this purpose. Monthly, you should have your BioGuard® Mineral Springs dealer check all seven of the pool water and water balance values listed in the chart below. Any time the pool water appears cloudy, forms algae or shows signs of a problem, have all these pool water values tested immediately. If this is a fresh fill, balance your pool water according to the recommended parameters.

Test The Pool Water For:	Chemical Ranges	Comments
Total Available Chlorine	1.0 - 3.0 ppm	Formula:
Combined Chlorine	- Zero -	TAC = Total Available Chlorine
Free Available Chlorine	1.0 - 3.0 ppm	FAC = Free Available Chlorine **(TAC) - (FAC) = Combined Chlorine**
pH	7.4 - 7.6	
Total Alkalinity	80 - 150 ppm	150 ppm Max
Calcium Hardness	200 - 400 ppm	200 - 275 ppm is ideal in plaster pools
Metals	- Zero -	

- **DO** ADD Mineral Springs *Renewal*™ weekly to maintain sparkling clear water and mineral balance. Minerals can be lost through backwashing, dilution, splash-out, etc. and are replenished with Mineral Springs *Renewal*.
- **DO** operate pool pump a minimum of 10-12 hours per day.
- **DO** test pool water parameters weekly.
- **DO** keep pool water balanced.
- **DO** change Sanitizer Output Control % for varying sanitizer consumption to prevent over or under chlorination of water. We recommend 1-3 ppm (parts per million) of free available chlorine.
- **DO NOT** use copper based algicides other than BioGuard *Banish*™ to prevent potential staining.
- **DO NOT** operate unit if pool water temperature is at or below 50°F.
- **DO NOT** attempt to perform repairs yourself.
- **DO** contact your BioGuard Mineral Springs dealer if you have any questions regarding proper water maintenance for your Mineral Springs® System.

Mineral Springs® Controls

Main Switch

Note: When the Mineral Springs is being controlled by the optional remote pool automation control, the main switch will not function.

AUTO: For normal operation, the Main Switch should be left in the AUTO position. In this position the Mineral Springs will produce sanitizer according to the "Sanitizer Output Control %" adjustment setting for the entire filtering/pumping cycle.

SANITIZER BOOST: When you have an abnormally high bather load, a large amount of rain, a cloudy water condition, or any other condition which needs a large amount of purification to be introduced, put the Main Switch in the SANITIZER BOOST position. This electronically "super sanitizes" (shocks) the water for 24 hours (filter pump must be on during this time) or until the power has been turned off, whichever comes first. At the end of the sanitizer boost time, be sure to put the switch back into the AUTO position.

OFF: The OFF position prevents the Mineral Springs from energizing the electrolytic cell. In this position there is no sanitizer generation. NOTE: To service any of the pool equipment or the Mineral Springs, turn the power off at the circuit breaker.

Indicator LED's

POWER When illuminated, the Mineral Springs has input power.

GENERATING This LED is on steady during normal operation. When flashing, the pool water is too hot or cold to operate.

SANITIZER BOOST Illuminates during Sanitizer Boost. See description above.

REMOTELY CONTROLLED When illuminated, indicates that a remote pool automation control (Goldline Aqua Logic, Pentair Intellitouch or Polaris Eos, etc.) is controlling the Mineral Springs--the main switch and "Sanitizer Output Control %" adjustment are inactive. When flashing, the Aqua Logic, Intellitouch or Eos is in SERVICE or TIME-OUT mode and the Main Switch and "Sanitizer Output Control %" adjustment are active.

NO FLOW When illuminated, the flow switch has detected no water flowing and the Mineral Springs has stopped generating sanitizer. A flashing LED indicates a 15-60 second time delay period.

LOW MINERALS When flashing, the mineral level is low (below 2700ppm) and Mineral Springs is generating at low efficiency. When illuminated steady, the mineral level is too low and Mineral Springs has shut down. Before adding large quantities of minerals, it is advisable to have your mineral level professionally checked.

HIGH MINERALS The mineral level is too high and Mineral Springs has shut down.

Plumbing

Ensure that the Mineral Springs® installation does not constitute a cross connection with the local potable water supply. Consult local plumbing codes.

The flow switch and cell should be plumbed in the return line to the pool/spa. The preferred installation is after (downstream) all the pool equipment (filter, heater, solar, etc.). The electrolytic cell and flow switch tee fitting are designed to be plumbed into 2" PVC pipe. Adapters (not included) can be used for systems with 1½" plumbing.

For proper plumbing, refer to the overview diagram on page 9. Alternate configurations #1 shows the flow switch can also be in front of the cell. Configurations #2 and #3 allow for sanitation of both the pool and spa during spa spillover operation, but prevent oversanitation of the spa during "spa only" operation. Never use configuration #4.
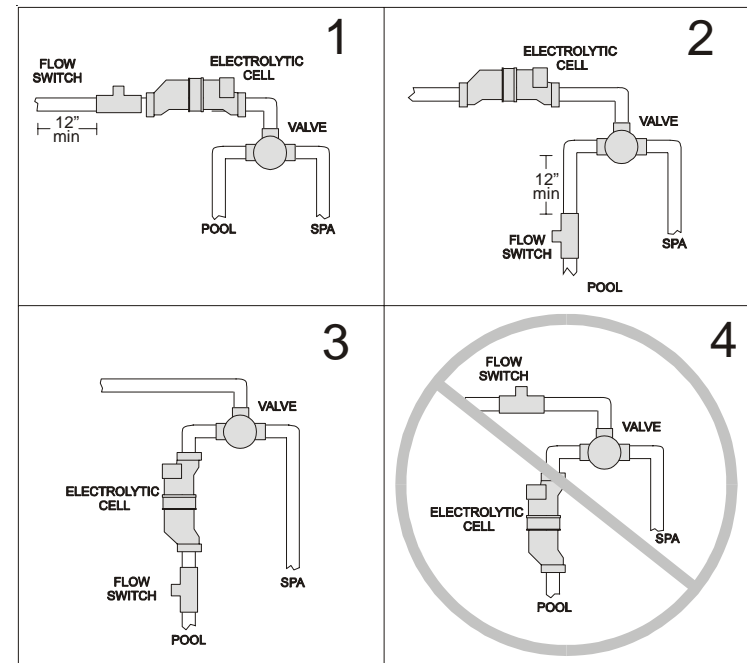
Flow Switch: IMPORTANT: There must be at least a 12" (30cm) straight pipe run before (upstream) the flow switch. If the switch is plumbed after the cell, the cell can by counted as the 12" of straight pipe. To ensure proper operation, verify that the arrow on the flow switch (located on top of gray hex) points in the direction of water flow.

Electrolytic Cell: Install using the unions provided. Tighten unions **BY HAND** for a watertight seal. For pool/spa combination systems with spillover, use configurations #2 or #3 above to allow chlorination of both the pool and spa during spillover but preventing oversanitation when operating the spa only.

INSTALLATION

Installation must be performed in accordance with Local and NEC codes.
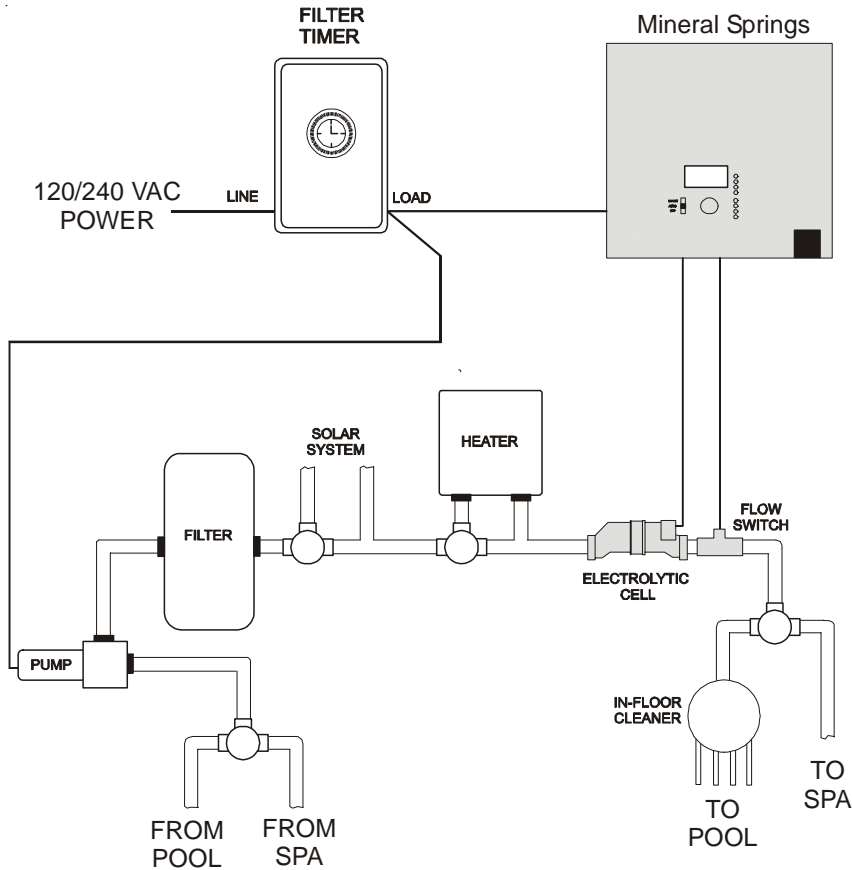
Preparing Pool/Spa Water

Refer to page 4 for recommended chemical levels. The pool's chemistry must be balanced BEFORE activating Mineral Springs®.

Mounting the Mineral Springs Control

The Mineral Springs is contained in a raintight enclosure that is suitable for outdoor mounting. The control must be mounted a minimum of 5 ft horizontal distance (or more, if local codes require) from the pool/spa.

The control is designed to mount vertically on a flat surface with the knockouts facing downward. Because the enclosure also acts as a heat sink (disperses heat from inside the box), it is important not to block the four sides of the control. Do not mount Mineral Springs inside a panel or tight enclosed area.

INSPECT CELL A flashing indicator signifies that either the cell efficiency is reduced or that it is time for regularly scheduled cell inspection. In either case, inspect cell and clean if necessary. When illuminated steady, cell efficiency is greatly reduced and the Mineral Springs® has stopped producing sanitizer. Inspect, clean or replace if necessary.

"Sanitizer Output Control %" Adjustment Knob

The "Sanitizer Output Control %" adjustment knob is located in the lower center of the Mineral Springs control panel. This setting is used to control the amount of sanitizer the Mineral Springs generates. Raise this setting to increase sanitizer level and lower it to decrease sanitizer level. Note: The "Sanitizer Output Control %" adjustment will not function when the Mineral Springs is being controlled by a remote pool automation control.

Mineral Display

The Mineral Display shows the current mineral concentration of the pool water. Readings are in ppm (parts per million). Refer to the Water Chemistry section for recommended mineral levels as well as how to add/remove minerals.

The factory default display is in English units (ppm). If Metric units (grams per liter) are preferred, push the small button next the display once. The display will now show the pool temperature. With the temperature displayed, move the main switch from AUTO to SANITIZER BOOST and back to AUTO. The temperature display will instantly switch to Celsius and the mineral display will switch to grams/liter. Repeat this process to switch back to English units. (ppm and Fahrenheit)

Operation

By understanding how Mineral Springs operates, you'll be sure to use it more effectively for maximum convenience and performance. Assuming that the water chemical levels are in the recommended range, there are three factors that you can control which directly contribute to the amount of sanitizer Mineral Springs will generate:

1. filter time each day (hours)
2. the amount of mineral in the pool
3. the "Sanitizer Output Control %" setting

A variance in any one of these factors from day to day will affect the amount of sanitizer produced by Mineral Springs. Out of these three, two factors will remain relatively constant. The filter timer will power Mineral Springs for the same amount of time (cycle time) everyday and the mineral level should be fairly constant. Therefore, you should only need to change the "Sanitizer Output Control %" setting to increase or decrease the amount of sanitizer generation. Also, it is important to be aware that a change in filtering time or mineral concentration will require some readjustments to the "Sanitizer Output Control %" setting to achieve the same sanitizer generation level.

To find the optimum "Sanitizer Output Control %" setting, start at a fairly high setting and work downward. It will take a few days of adjustments to find the ideal setting for your pool. Once determined, it should only take minor adjustments, if at all, to compensate for differing mineral levels due to splash-out, backwashing, rain, etc. Because the production of sanitizer is affected by water temperature, it is important to check sanitizer levels during periods of unusually high or low pool water temperatures. The Mineral Springs control is designed to turn OFF at pool water temperatures below 50º F. If your pool will be below this temperature for any length of time, you must chlorinate manually.

NOTE: The Mineral Springs® control enclosure will become warm to the touch. Mineral Springs dissipates heat whenever the electrolytic cell is energized. The amount of heat dissipated is directly related to the amount of sanitizer being generated.

Prevent over-chlorination during cold weather: Check chlorine levels periodically. Most pools require less chlorine during cold weather and the "Sanitizer Output Control %" dial should be turned down accordingly.

When connected to a pool automation control (Goldline Aqua Logic, Pentair Intellitouch or Polaris Eos):
The Mineral Springs is designed to operate with all pool automation controls. The Aqua Logic, Intellitouch or Eos can fully control the function of the Aqua Rite chlorinator in addition to the other pool equipment. The "Remotely Controlled" LED on the Mineral Springs chlorinator will be illuminated when the automation control is activated. Adjustment of the Mineral Springs "Sanitizer Output Control %" and also Superchlorination can be controlled from the pool automation display/keypad. Refer to the pool automation control instructions for more information. The Mineral Springs mineral display and LED indicators operate as normal, but the main switch and "Sanitizer Output Control %" dial are disabled.

Maintaining the Mineral Springs System
The Mineral Springs electronic control, temperature sensor, mineral sensor and flow detection switch are virtually maintenance free and should give you years of troublefree use. To maintain maximum performance, it is recommended that you open and visually inspect the cell every 3 months or after cleaning the filter. The Mineral Springs electrolytic cell has a self cleaning feature incorporated into the electronic control's logic. In most cases this self cleaning action will keep the cell working at optimum efficiency. In areas where water is hard (high mineral content) and in pools where the water chemistry has been allowed to get "out of balance", the cell may require periodic cleaning. The INSPECT CELL LED will indicate if cell efficiency is decreased and servicing is necessary. If the INSPECT CELL LED remains on after a thorough cleaning, the cell may be worn and require replacement.

Servicing and Cleaning the Mineral Springs cell
Turn off power to Mineral Springs before removing the electrolytic cell. Once removed, look inside the cell and inspect for scale formation (light colored crusty or flaky deposits) on the plates and for any debris which has passed through the filter and caught on the plates. If no deposits are visible, reinstall. If deposits are seen, use a high pressure garden hose and try to flush the scale off. If this is not successful, use a plastic or wood tool (do not use metal as this will scratch the coating off the plates) and scrape deposits off plates. A buildup on the cell indicates that there is an unusually high calcium level in the pool. If this is not corrected, you can expect to have to periodically clean the cell. If calcium levels are unusually high, use BioGuard® Scale Inhibitor™ on a regular basis.

Mild Acid Washing: Use only in severe cases where flushing and scraping will not remove the majority of deposits. To acid wash, turn off power to Mineral Springs. Remove cell from piping. In a clean plastic container, mix a 4:1 solution of water to muriatic acid (one gallon of water to one quart of muriatic acid). ALWAYS POUR ACID INTO WATER - NEVER POUR WATER INTO ACID. Be sure to wear rubber gloves and appropriate eye protection. The level of the solution in the container should just reach the top of the cell so that the wire harness compartment is NOT submerged. It may be helpful to coil the wiring before immersing the cell. The cell should soak for a few minutes and then rinse with a high pressure garden hose. If any deposits are still visible, repeat soaking and rinsing. Replace cell and inspect again periodically.

Winterizing
The Mineral Springs® electrolytic cell and flow detection switch will be damaged by freezing water just as your pool plumbing would. In areas of the country which experience severe or extended periods of freezing temperatures, be sure to drain all water from the pump, filter, and supply and return lines before any freezing conditions occur. The electronic control is capable of withstanding any winter weather and should not be removed.

Winter Operation
In areas of the country where pools are operated throughout the winter season, some minor adjustments are necessary. The "Sanitizer Output Control %" will need to be turned down due to the cooler water temperatures. With cooler temperatures, less sanitizer is required. At a temperature of 50°F, Mineral Springs will automatically shut down. During winter operation, Mineral Springs *Renewal* should be added monthly at a rate of 1 pound per 5,000 (1½ cups).

Spring Start-up
DO NOT turn Mineral Springs on, until the pool water chemistry has been brought to the proper levels. This information can be found on page 4. Have your water tested by your BioGuard® Mineral Springs dealer to determine proper application of *Beginnings*.