

# AQUA TROL®



Above-Ground Pool Automation  
by

**GOLDLINE**  
CONTROLS  
A HAYWARD COMPANY

## **IMPORTANT SAFETY INSTRUCTIONS**

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

- **READ AND FOLLOW ALL INSTRUCTIONS**
- 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.
- **SAVE THESE INSTRUCTIONS**

# Table of Contents

## OPERATION

The Aqua Trol® .....	1
Water Chemistry.....	1
Controls.....	6
Maintenance.....	8

## INSTALLATION

Mounting.....	9
Plumbing.....	10
Wiring.....	11

## THE TROUBLESHOOTING

Troubleshooting.....	13
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## WARRANTY

Warranty.....	15
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# OPERATION

The Aqua Trol® is an automatic chlorine generation system with a built-in filter pump timer designed specifically for above ground pools. The operation requires a low concentration of salt (sodium chloride) in the pool water at levels low enough that it normally will not be tasted. The Aqua Trol automatically sanitizes your pool by converting the salt into free chlorine which kills bacteria and algae in the pool through a process called electrolysis. Because chlorine will revert back to sodium chloride after killing the bacteria, these reactions will continuously recycle virtually eliminating the need to add sanitizing chemicals to your pool. The only time you may need to add more salt to the pool is when water is replenished due to backwashing, draining, or splashing (not evaporation).

The Aqua Trol incorporates a built in timer to control the pool filter. This timer insures that the proper daily filtration and sanitization occurs. The Aqua Trol is designed to handle the purification needs of the average residential above ground swimming pool of up to 18,000 gallons (67,500 liters). The actual amount of chlorination required to properly sanitize a pool varies depending upon bather load, rainfall, temperature, and the pool's cleanliness.

The Aqua Trol is available with several different options to allow for easy installation on a wide variety of above ground pools. The cell may be connected with 1½" - 1¼" flexible hose or to 2" rigid PVC pipe when the **-HP** option is ordered, or the cell may be mounted directly to the pool return jet when the **-RJ** version is ordered. Similarly, the electrical connections may be made via 120V/15A "straight blade" linecord and receptacle (standard Aqua Trol version, no option designation) or may be made via a 120V/20A "twist lock" linecord and receptacle when the **-TL** version is ordered.

<b>AQ-Trol-HP</b>	"Straight blade" 120V/15A linecord/receptacle; 2" (51mm) rigid PVC piping or 1½ - 1¼" (38-32mm) flexible hose
<b>AQ-Trol-HP-TL</b>	"Twist lock" 120/20A linecord/receptacle; 2" (51mm) rigid PVC piping or 1½ - 1¼" (38-32mm)flexible hose
<b>AQ-Trol-RJ</b>	"Straight blade" 120V/15A linecord/receptacle; adapters for return jet mounting
<b>AQ-Trol-RJ-TL</b>	"Twist lock" 120V/20A linecord/receptacle; adapters for return jet mounting

**NOTE:** Before installing this product as part of a saline water purification system in an above-ground 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 saline pool with electronic chlorine generator in your particular location and circumstances.

**NOTE:** The use of dry acid (sodium bisulfate) to adjust pool pH is discouraged especially in arid regions where pool water is subject to excessive evaporation and is not commonly diluted with fresh water. Dry acid can cause a buildup of by-products that can damage your chlorinator cell.

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 page 2 summarizes the  
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AL	IDE
	2700 to 3400 ppm
	1.0 to 3.0 ppm
	7.2 to 7.6

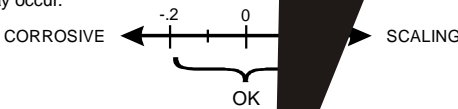

## Saturation index

The saturation index (Si) is an indicator of the pool's water balance. If the Si is 0 ±.2. If the Si is greater than 0, scaling will be dissolved into the pool. If the Si is less than -0.2, scaling will occur. Use the equation below to calculate the Si.

$$Si = pH + Ti + Ci$$

°C	°F	Ti	Calcium Hardness	Ci
12	53	.3	75	1.5
16	60	.4	100	1.6
19	66	.5	125	1.7
24	76	.6	150	1.8
29	84	.7	200	1.9
34	94	.8	250	2.0
39	103	.9	300	2.1
			400	2.2
			600	2.4
			800	2.5

How to use: Measure pool pH, temperature, total hardness, and total alkalinity. Use the chart above to find Ti, Ci, and Ai from your measurements. Insert values for pH, Ti, Ci and Ai into the above equation. If Si equals 0, the pool is balanced. If Si equals .2 or greater, scaling and staining may occur. If Si equals -.2 or less, corrosion or irritation may occur.



# Salt Level

Use the chart on page 4 to determine how much salt in pounds (or Kgs) needs to be added to reach the recommended levels. Use the equations below (measurements are in feet/gallons and meters/liters) if pool size is unknown.

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

The ideal salt level is between 2700-3400 ppm (parts per million) with 3200 ppm being optimal. If the level is low, determine the number of gallons in the pool and add salt according to the chart on page 4. A low salt level will reduce the efficiency of the Aqua Trol® and result in low chlorine production. A high salt level can cause the Aqua Trol to shutdown and may begin to give a salty taste to your pool (generally, the salt will begin to be tasted at a level of about 3500-4000 ppm). The salt in your pool is constantly recycled and the loss of salt throughout the swimming season should be small. This loss is due primarily to the addition of water because of splashing, backwashing or draining (because of rain). Salt is not lost due to evaporation.

## Type of Salt to Use

It is important to use only sodium chloride (NaCl) that is 99% pure. This is common food quality or water softener salt available in 40-80 lb. bags at your local Goldline dealer. It is also acceptable to use water conditioning salt pellets, however, it will take longer for them to dissolve. Do not use rock salt, salt with more than 1% yellow prussiate of soda, salt with more than 1% of anti-caking additives, or iodized salt.

## How to Add or Remove Salt

Turn the filter pump on and add the salt directly into the pool. Brush the salt to speed up the dissolving process--to not allow the salt to sit in a pile on the bottom of the pool. Run the filter pump for 24 hours with the suction coming from the main drain (use the pool vacuum if there is not main drain) to allow the salt to evenly disperse throughout the pool. The salt display may take 24 hours to respond to the change in salt concentration.

The only way to lower the salt concentration is to partially drain the pool and refill with fresh water.

**POUNDS and (Kg) OF SALT NEEDED FOR 3200-PPM  
Gallons and (Liters) of Pool/Spa water**

Current salt level ppm	6,000	8,000	10,000	12,000	14,000	16,000	18,000
	<del>(22,500)</del>	<del>(30,000)</del>	<del>(37,500)</del>	<del>(45,000)</del>	<del>(52,500)</del>	<del>(60,000)</del>	<del>(67,500)</del>
0	160 (73)	213 (97)	267 (121)	320 (145)	373 (170)	427 (194)	480 (218)
200	150 (69)	200 (91)	250 (114)	300 (136)	350 (159)	400 (182)	450 (205)
400	140 (64)	187 (85)	233 (106)	280 (127)	327 (148)	373 (170)	420 (191)
600	130 (59)	173 (79)	217 (98)	260 (118)	303 (138)	347 (158)	390 (177)
800	120 (55)	160 (73)	200 (91)	240 (109)	280 (127)	320 (145)	360 (164)
1000	110 (51)	147 (67)	183 (83)	220 (100)	257 (117)	293 (133)	330 (150)
1200	100 (46)	133 (61)	167 (76)	200 (91)	233 (106)	267 (121)	300 (136)
1400	90 (41)	120 (55)	150 (68)	180 (82)	210 (95)	240 (109)	270 (123)
1600	80 (36)	107 (48)	133 (61)	160 (73)	187 (85)	213 (97)	240 (109)
1800	70 (32)	93 (42)	117 (53)	140 (64)	163 (74)	187 (85)	210 (95)
2000	60 (27)	80 (36)	100 (45)	120 (55)	140 (64)	160 (73)	180 (82)
2200	50 (23)	67 (30)	83 (38)	100 (45)	117 (53)	133 (61)	150 (68)
2400	40 (18)	53 (24)	67 (30)	80 (36)	93 (42)	107 (48)	120 (55)
2600	30 (14)	40 (18)	50 (23)	60 (27)	70 (32)	80 (36)	90 (41)
2800	20 (9)	27 (12)	33 (15)	40 (18)	47 (21)	53 (24)	60 (27)
3000	10 (4)	13 (6)	17 (8)	20 (9)	23 (11)	27 (12)	30 (14)
3200	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal
3400	OK	OK	OK	OK	OK	OK	OK
3600+	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute

## Stabilizer (Cyanuric Acid)

Always check stabilizer (cyanuric acid), when checking salt. These levels will most likely decline together. Use the chart below to determine how much stabilizer must be added to raise the level to 80 ppm.

### POUNDS and (Kg) OF STABILIZER (CYANURIC ACID) NEEDED FOR 80 PPM

#### Gallons and (Liters) of Pool/Spa water

Current Stabilizer Level (ppm)	6,000 (22500)	8,000 (30000)	10,000 (37500)	12,000 (45000)	14,000 (52500)	16,000 (60000)	18,000 (67500)
0 ppm	4.0 (1.8)	5.3 (2.4)	6.7 (3.0)	8.0 (3.6)	9.4 (4.3)	10.7 (4.9)	12.0 (5.4)
10 ppm	3.5 (1.6)	4.7 (2.1)	5.8 (2.6)	7.0 (3.2)	8.2 (3.7)	9.4 (4.3)	10.5 (4.8)
20 ppm	3.0 (1.4)	4.0 (1.8)	5.0 (2.3)	6.0 (2.7)	7.0 (3.2)	8.0 (3.6)	9.0 (2.2)
30 ppm	2.5 (1.1)	3.3 (1.5)	4.2 (1.9)	5.0 (2.3)	5.9 (2.7)	6.7 (3.0)	7.5 (3.4)
40 ppm	2.0 (.9)	2.7 (1.2)	3.3 (1.5)	4.0 (1.8)	4.7 (2.1)	5.4 (2.4)	6.0 (2.7)
50 ppm	1.5 (.7)	2.0 (.9)	2.5 (1.1)	3.0 (1.4)	3.5 (1.6)	4.0 (1.8)	4.5 (2.0)
60 ppm	1.0 (.5)	1.3 (.6)	1.7 (.8)	2.0 (.91)	2.4 (1.1)	2.7 (1.2)	3.0 (1.4)
70 ppm	0.5 (.2)	0.7 (.3)	0.8 (.4)	1.0 (.45)	1.2 (.54)	1.4 (.64)	1.5 (.68)
80 ppm	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## **Controls**

### **Timer**

The pool filter pump should run long enough to circulate the entire volume of pool water each day. This will vary depending on pump size, pool plumbing and pool size. Consult a local pool store to help determine the appropriate run time for your pool.

**NO FLOW** When illuminated, the flow switch has detected no flow and the Aqua Trol® has stopped generating chlorine. A flashing LED indicates a 15/60 second time delay period.

**TEST SALT LEVEL** When flashing, the salt level is low (below 2700ppm) and Aqua Trol is generating at low efficiency. When illuminated steady, the salt level is too low and Aqua Trol has shut down. Before adding large quantities of salt, it is advisable to have your salt level professionally checked.

**HIGH SALT** When illuminated, the salt level is too high and Aqua Trol has shut down.

**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 the cell and clean if necessary. Pressing the "diagnostic" button next to the display for 3 seconds will stop the flashing LED. When illuminated steady, cell efficiency is greatly reduced and the Aqua Trol has stopped producing chlorine. Inspect, clean or replace if necessary.

## Salt Display

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

The factory default display is in English (ppm). If Metric units (grams per liter) are preferred, push the "diagnostic" button next to the display once. The display will now show the pool water temperature in degrees Fahrenheit. With the temperature displayed, move the main switch from AUTO to SUPER CHLORINATE to AUTO. The temperature display will instantly change to degrees Celsius and the salt display will switch to grams/liter. Repeat this process to switch back to English units (ppm and Fahrenheit).

## Operation

By understanding how the Aqua Trol 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 chlorine the Aqua Trol will generate:

1. filter time each day (hours)
2. the amount of salt in the pool
3. the "Desired Level %" setting

To find the optimum "Desired Level %" 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/spa. Once determined, it should only take minor adjustments, if at all, to compensate for differing salt levels due to splashing, backwashing, rain, etc. Because the production of chlorine is affected by water temperature, it is important to check chlorine levels during periods of unusually high or low pool water temperatures. The Aqua Trol control will not produce chlorine at temperatures below 50° F. If your pool will be below this temperature for any length of time, you must chlorinate manually.

**NOTE:** After the ideal "Desired Output %" setting has been found, you may need to raise the setting when the pool water temperature increases significantly, when there is higher than normal bather load or when your chlorinator cell ages. You may need to lower the setting when the pool water temperature decreases significantly or there are long periods of inactivity.

## **Maintaining the Aqua Trol® System**

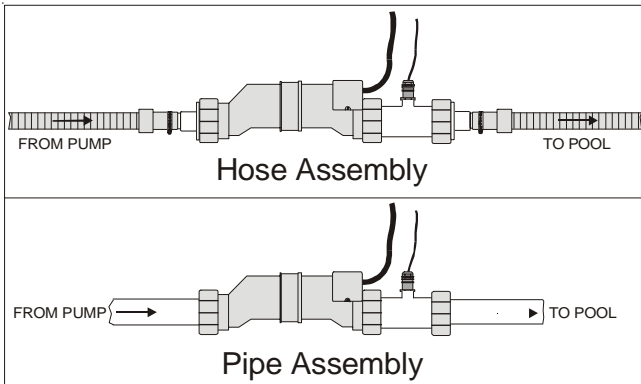
To maintain maximum performance, it is recommended that you open and visually inspect the cell every 3 months or after cleaning your filter. The Aqua Trol will remind you to do this by flashing the "Inspect Cell" LED after approximately 500 hours of operation. After you inspect the cell (and clean, if necessary) press the small "diagnostic" button next to the display for 3 seconds to stop the flashing "Inspect Cell" LED and start the timer for the next 500 hour inspection period.



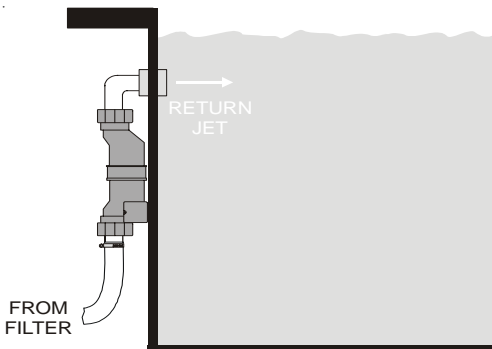
# Plumbing

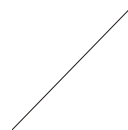
The cell and flow switch (not used on -RJ systems) are plumbed in the return line to the pool. Install after (downstream) all the pool equipment (filter, heater, solar, etc.). The kit included in the Aqua Trol provides the necessary plumbing components for either 2" (51mm) rigid PVC piping installation or 1½ - 1¼" (38-32mm) flexible hose installation. An overview of the Aqua Trol system with the hose/pipe installation (-HP) is shown on the previous page, see below for detail on the return jet mounting.

**Hose/Pipe installations (-HP option):** Install the cell and flow switch as shown in the diagrams below. Always make sure that the flow switch is downstream from the cell. When using the hose adaptors, remove the o-ring from the pipe union tailpiece and install them in the hose tailpieces. Tighten all union nuts **BY HAND** for a watertight seal.



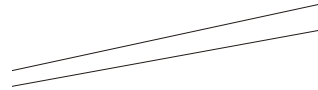
**Return Jet installation (-RJ option):** Unscrew the the hose adaptor from the pool return jet fitting and, in its place, screw in the right-angle cell mounting adaptor. Note that this installation does NOT require a flow switch--however it is very important that the cell be mounted vertically directly below the return jet in order to allow the gases produced in the cell to naturally dissipate in the pool. Attach the cell to the union and then use the fittings supplied to attach the lower end of the cell to either the hose or rigid PVC pipe coming from the pools filtration system. Tighten all union nuts **BY HAND** for a watertight seal.





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## Bonding

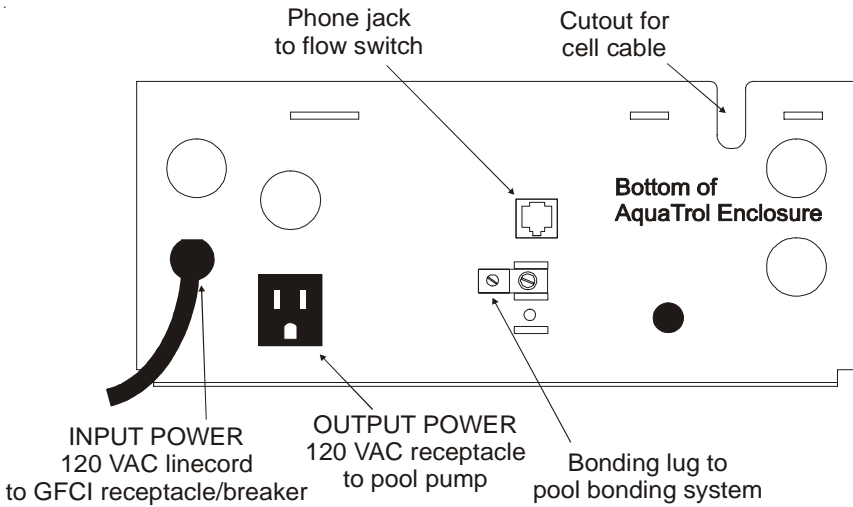
A lug used for bonding is attached to the bottom of the Aqua Trol enclosure. Connect to the pool bonding system using minimum 8AWG copper wire if required by code.

## Pump Output

The Aqua Trol's filter pump output is rated at 120 VAC, 15 A max. Check the electrical rating marked on the pump motor. Connecting a pump with a higher amperage rating may result in permanent damage to the Aqua Trol. The 120 VAC standard or twist lock pump receptacle is located outside, on the bottom of the enclosure.

## Electrolytic Cell and Flow Switch

The cell and flow switch plug into connectors on the Aqua Trol electronics unit. Note that return jet units (-RJ option) will NOT have a flow switch. See diagram below.





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.

**6. "Test Salt Level" LED illuminated or flashing**

Take a sample of your pool water to your local Authorized Aqua Rite Dealer and have the salt level tested. No salt test is completely accurate and the test results may vary from the salt level on the Aqua Trol display. If salt level is low, add salt according to chart on page 4.

**7. "High Salt" LED illuminated**

Check salt level in pool/spa. If salt level is too high, lower salt level by draining some of the pool water out of the pool and replace with fresh water. Continue until the salt concentration is at recommended levels.

**8. "Inspect Cell" LED flashing**

Inspect and clean cell according to directions on page 8. When done, press the "diagnostic" button for 3 seconds to stop the "Inspect Cell" LED flashing.

**9. "Inspect Cell" LED illuminated**

Remove and inspect the cell for scale. If the cell is scaled, follow the directions on page 8 for cell cleaning. If the pool has the proper amount of salt and the "Inspect Cell" LED is still illuminated, the cell may be worn and need replacement.

**10. Possible causes of little or no free chlorine residual**

- Aqua Trol switch in OFF position.
- Desired Level % adjustment setting is too low.
- Low stabilizer (Cyanuric Acid).
- Filter pump switched off or filter pump time too short (8 hours for average size pools, more for large pools)
- Salt level too low (below 2500 ppm, Low Salt LED on).
- Salt level too high (High Salt LED on).
- Very warm pools increase chlorine demand--increase Desired Level % or filter run time.
- Cold water (below 50F) causes Aqua Trol to stop generating (Generating LED flashing).
- Excessive scaling on cell.
- High level of Nitrogen in pool water.
- "Yellow Out" or similar treatment recently used. Some yellow algae treatments will use chlorine 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.

**11. "-Pcb-" displayed and all 4 red/yellow LEDs are illuminated.**

A possible Printed Circuit Board fault has been detected.

**LIMITED WARRANTY (effective 04/01/09)** Hayward/Goldline warrants its Pro Logic and E-Command pool automation products as well as its Aqua Rite, Aqua Rite Pro, Aqua Plus and SwimPure chlorination products to be free of defects in materials and workmanship, under normal use and service, for a period of three (3) years. Hayward/Goldline also warrants its Aqua Trol chlorination products to be free of defects in materials and workmanship, under normal use and service for a period of one (1) year. These warranties are applicable from the initial date of installation on private residential swimming pools in the US and Canada.

Hayward/Goldline warrants all the above-identified pool automation and chlorination products installed on commercial swimming pools and on swimming pools outside of the US and Canada for a period of one (1) year. Likewise, Hayward/Goldline warrants all accessories and replacement parts for the above-identified pool automation and chlorination products for a period of one (1) year. Each of these warranties is not transferable and applies only to the original owner.

Proof of purchase is required for warranty service. If written proof of purchase is not provided, the manufacturing date code will be the sole determinant of the date of installation of the product. To obtain warranty service or repair, please contact the place of purchase or the nearest Hayward/Goldline authorized warranty service center. For more information on authorized service centers please contact the Hayward/Goldline Technical Service Support Center (61 Whitecap Road, North Kingstown RI, 02852) or visit the Goldline web site at [www.goldlinecontrols.com](http://www.goldlinecontrols.com) or the Hayward website at [www.haywardnet.com](http://www.haywardnet.com).

#### **WARRANTY EXCLUSIONS:**

1. Material supplied or workmanship performed by others in process of installation.
2. Damage resulting from improper installation including installation on pools larger than the product rating.
3. Problems resulting from failure to install, operate or maintain the product(s) in accordance with the recommendations contained in the owners manual(s).
4. Problems resulting from failure to maintain pool water chemistry in accordance with the recommendations in the owners manual(s).
5. Problems resulting from tampering, accident, abuse, negligence, unauthorized repairs or alternations, fire, flood, lightning, freezing, external water, degradation of natural stone used in or immediately adjacent to a pool or spa, war or acts of God.

**DISCLAIMER. THE EXPRESS LIMITED WARRANTIES ABOVE CONSTITUTE THE ENTIRE WARRANTIES WITH RESPECT TO THE ABOVE-IDENTIFIED HAYWARD/GOLDLINE POOL AUTOMATION AND CHLORINATION PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS OF EQUIPMENT, LOST PROFITS OR REVENUE, COSTS OF RENTING REPLACEMENTS, AND OTHER ADDITIONAL EXPENSES, EVEN IF THE SELLER HAD BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.**

**NO WHOLESALE, AGENT, DEALER, CONTRACTOR OR OTHER PERSON IS AUTHORIZED TO PROVIDE, SUPPLEMENT OR MODIFY ANY WARRANTY ON BEHALF OF HAYWARD/GOLDLINE.**

**THESE WARRANTIES ARE VOID IF THE PRODUCT HAS BEEN ALTERED IN ANY WAY AFTER LEAVING THE FACTORY. FOR THE ABOVE-IDENTIFIED CHLORINATION PRODUCTS, THESE WARRANTIES ALSO ARE VOID IF, DURING THE WARRANTY PERIOD, YOU USE A REPLACEMENT CHLORINATOR CELL OTHER THAN AN UNMODIFIED, NEW HAYWARD/GOLDLINE CHLORINATOR CELL PURCHASED FROM HAYWARD/GOLDLINE. IF A WARRANTY BECOMES VOID, YOU STILL MAY PURCHASE SERVICE AND/OR TELEPHONE TECHNICAL SUPPORT AT THE THEN CURRENT TIME AND MATERIAL RATES.**



# ELECTROLYTIC CHLORINE GENERATOR BASIC POOL MAINTENANCE REQUIREMENTS

WEEKLY

MONTHLY

QUARTERLY

Refer to **[www.goldlinecontrols.com](http://www.goldlinecontrols.com)** for latest manual revisions, additional information and helpful service.



North Kingstown, RI 02852 USA