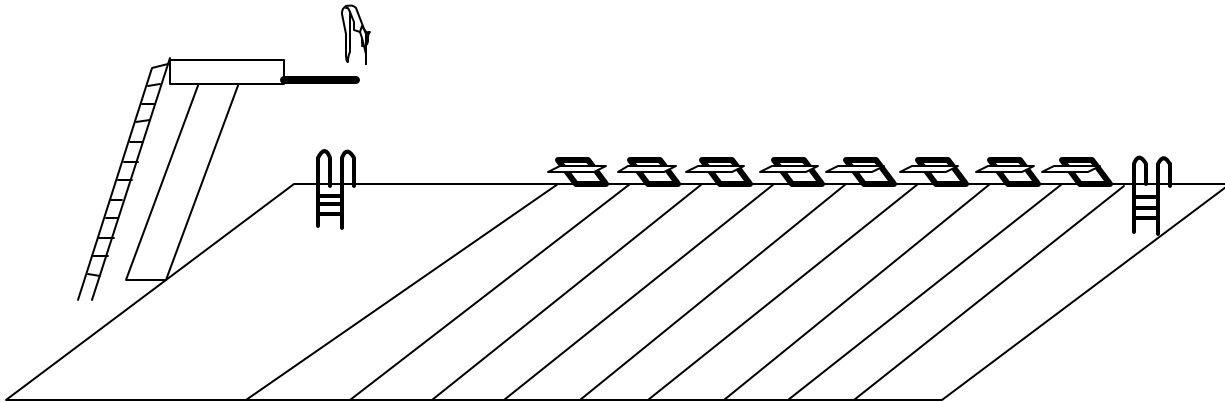


Commercial Chlorine Generating Device

LECTRANATOR II

“The Next Generation”

POOL PILOT PROFESSIONAL



REGISTRATION NO. 26962 PEST CONTROL PRODUCTS ACT

**COMMERCIAL
Operation / Installation Manual**

IMPORTANT
READ THE LABEL AND THIS MANUAL BEFORE INSTALLING & OPERATING

PLEASE RETAIN THIS MANUAL FOR FUTURE REFERENCE

LECTRANATOR SYSTEMS, INC. • 2770 – 24TH AVENUE N.E. • CALGARY • ALBERTA • T1Y 6V7
www.lectranator.com

Section 1a – GENERAL PRODUCT INFORMATION

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POOL PILOT PROFESSIONAL

by LECTRANATOR SYSTEMS, INC.

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Section 1b – GENERAL PRODUCT INFORMATION

LECTRANATOR II

POOL PILOT PROFESSIONAL
by LECTRANATOR SYSTEMS, INC.

Record The Following Information

Installer: _____

Date of installation: _____ Project Name: _____

AP-600 Power Supply:

Serial Number: # A _____ # B _____ # C _____ # D _____ # E _____
F _____ # G _____ # H _____ # I _____ # J _____

CC-30 Cell(s)

Serial Number: # A 1 _____ # B 1 _____ # C 1 _____ # D 1 _____ # E 1 _____
Serial Number: # A 2 _____ # B 2 _____ # C 2 _____ # D 2 _____ # E 2 _____
Serial Number: # A 3 _____ # B 3 _____ # C 3 _____ # D 3 _____ # E 3 _____
Serial Number: # F 1 _____ # G 1 _____ # H 1 _____ # I 1 _____ # J 1 _____
Serial Number: # F 2 _____ # G 2 _____ # H 2 _____ # I 2 _____ # J 2 _____
Serial Number: # F 3 _____ # G 3 _____ # H 3 _____ # I 3 _____ # J 3 _____

Customer Assistance...

HOTLINE: 1.866.517.7584 or 1.403.291.9845

FAX: 1.403.291.1023

Visit Us On The Internet @

<http://www.lectranator.com>

Manufactured for

Lectranator Systems, Inc.

2770 – 24 Avenue N.E. • Calgary • Alberta T1Y 6V7, Canada.

LECTRANATOR II

POOL PILOT PROFESSIONAL
by LECTRANATOR SYSTEMS, INC.

NOTICE TO USER:

This control product is to be used only in accordance with the directions on this label. It is an offence under the Pest Control Products Act to use a control product under unsafe conditions.

Section 1c – GENERAL PRODUCT INFORMATION

IMPORTANT SAFETY INSTRUCTIONS READ AND FOLLOW ALL INSTRUCTIONS

INSTALLATION AND EQUIPMENT RELATED

Installation of LECTRANATOR II POOL PILOT PROFESSIONAL:

When installing and using your AP600 Power Supply, basic safety precautions must always be followed, including the following:

1. Follow all aspects of the local and National Electrical Code(s) when installing your Power Supply.
2. For outdoor installations, mount your Power Supply to ensure the least amount of direct exposure to rain, garden sprinkler water, direct sunlight or any corrosive environment.
3. **WARNING** – Risk of electrical shock. Install your 220 – 240 VAC Power Supply a safe distance from the inside wall of the pool or spa using non-metallic plumbing. Consult Local Electrical Code.
4. All field-installed metal components such as rails, ladders, drains or similar hardware within 3m (10') of the pool, spa or hot tub shall be bonded to the equipment grounding bus with copper conductors not smaller than No. 8 AWG in the U.S.A. and No.6 AWG in Canada.
5. **CAUTION** – Maintain water chemistry in accordance with manufacturer's instructions.
6. **WARNING** – To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times. Children should not use spas, hot tubs or pools without permanent adult supervision.

Equipment Related

220 – 240 Volt Models (fixed wiring)

- 1 A wire connector is provided on your Power Supply to connect a minimum No. 8 AWG solid copper bonding conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe or conduit within 1.5m (5') of the unit.
- 2 A bonding terminal is located inside your Power Supply. To reduce the risk of electrical shock, this terminal must be connected to the grounding means provided in the electrical supply panel with a continuous copper wire equivalent size to the circuit conductors supplying your Power Supply.
- 3 A C.S.A. approved disconnection device from the power source, with a contact separation of at least 3mm (0.12") in all poles, must be incorporated in the fixed wiring for permanently wired units.

SAVE THESE INSTRUCTIONS

Section 1d – GENERAL PRODUCT INFORMATION

Technical Specifications

AP600 POWER SUPPLY

Power In: 220VAC/9A, 50/60 Hz

Power Out: To each CC-30 Cell – 14 Amps (DC)

Housing: Weather protected Metal Box

Weight: 43.1 kg (95 lbs.)

Dimensions: 71.1 cm x 40.8 cm x 30.5 cm
(28" L x 16" W x 12" D)

APPROVALS: ETL LISTED
C.S.A.
P.C.P.26962
NSF50 (59116)

CHLORINE CELL MODEL CC-30

Housing: Molded High-Impact PVC

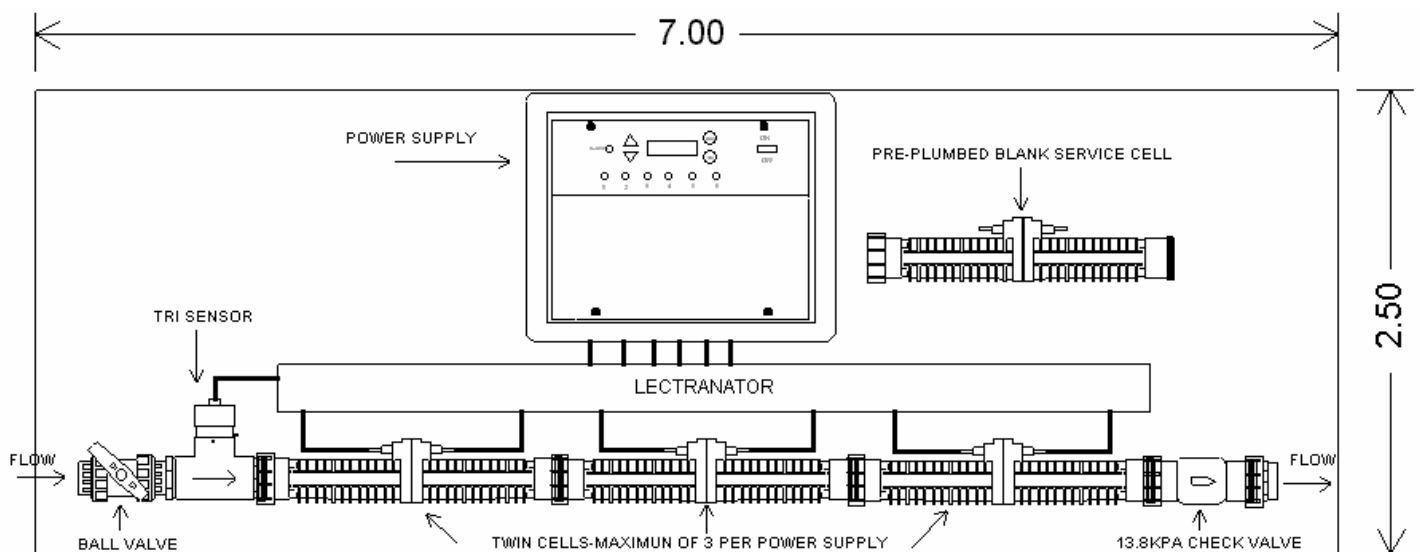
Length: 42.5cm (17") (CC-30)

Weight CC-30: 2.0 kg (4.4 lbs.) (CC-30)

Dimensions: 42.5 cm x 10 cm x 5.7 cm
(17" x 4" x 2.25" – CC-30)

DC Cord: 3.66m (12') Cell Cord
Pressure Drop: 2.4 PSI per leg of 3 @25 US gpm
Life Expectancy: CC-30 Cell – Equivalent of
1000 lbs. (±) of Chlorine Gas

TYPICAL LECTRANATOR II, POOL PILOT PROFESSIONAL, BOARD MOUNTED SYSTEM



Section 2a – INSTALLATION

Main Components

POWER SUPPLY converts incoming AC power to a Low Voltage DC current, which energizes the Cell(s).

ELECTROLYTIC CELL(S) receives the Low Voltage DC current from the Power Supply that initiates the electrolytic process and allows chlorine to be produced. This process converts salt (Sodium Chloride) to 100% Pure Sodium Hypochlorite (Liquid Chlorine) which in turn sanitizes your pool. The salt then reverts back to the dissolved state and the process is repeated over and over again.

TRI-SENSOR ASSEMBLY(S) ensures that adequate flow, [4.5 m³/hr. (20 U.S. gpm) per flow leg], minimum salt [2.5 g/l (2500 PPM)] and water temperature are satisfactory to prevent abusive conditions for the cell(s) to operate.

MANIFOLD ASSEMBLY. The Cell(s) and Flow Detector(s) are both pre-plumbed in a bypass Manifold Assembly which allows a more efficient chlorine/bromine transfer to the water while regulating proper water flow of 5.7 m³/hr (25 U.S. gpm) per cell/leg. Custom manifolds and pre-assembled systems can be made according to the actual floor plan of the equipment room.

Locating and Mounting the Power Supply (s) and Cell(s)

Where the Power Supply(s) and cell(s) are NOT factory board mounted, including pre-wiring and pre-plumbing, the following procedures should be followed

CAUTION: Due to the weight of the Power Supply(s), it is recommended to have another person assist you when marking and mounting the Power Supply(s).

The Power Supply(s) should be set on a vertical surface away from excessive exposure to heat and moisture. Ensure that you are attaching the Power Supply brackets to a solid wall surface or wall stud. Failure to mount the Power Supply properly may result in the dislodging of the Power Supply, which can cause serious injury.

Ensure a clear area behind the Power Supply for proper convection cooling and a clear area in front of the Power Supply so that the front access door can swing open completely.

There is 3.6 m (12') of **Cell and Tri-sensor cords** provided with the unit. Ensure the cells and tri-sensors are within that distance from the control panel with enough slack to allow for service or maintenance. Each cell is provided with 50mm (2") unions for easy access for service or inspection. Ensure that the unions are all installed with the male/female half unions on the same side of the cell body. This will allow a uniform design for replacement when needed.

AP600 Power Supply Connections

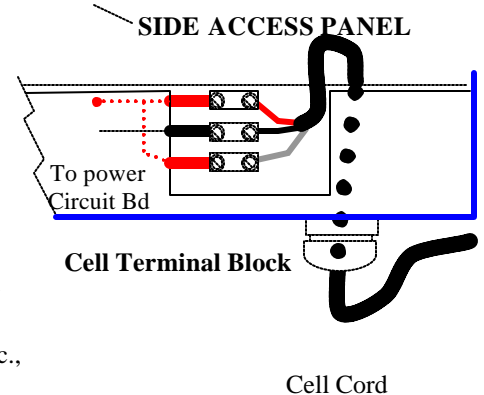
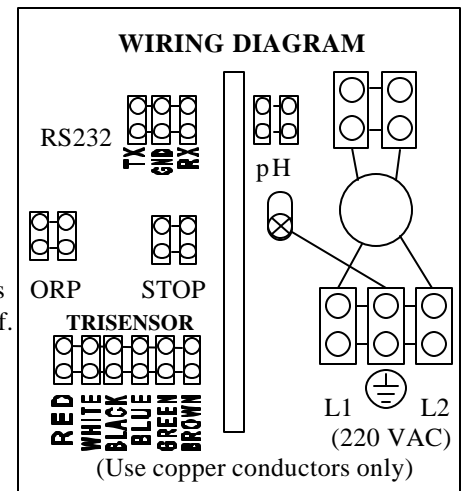
Electrical Connections

Wiring. An electrical access panel is located on the right side of the control center for the input power, Tri-Sensor and optional PPM/ORP (or PPM only controller). Removal of the internal cover is not necessary for this installation. Your "AP600" Control Panel's "ON/OFF circuit breaker is rated for 220 - 240 VAC @ 16 Amps, 50/60 Hz. input. This Wiring Diagram is also attached to the side access panel. **Ensure that the circuit breaker is set to OFF.** Connect your 220 VAC input wiring to the circuit panel with at least 12 amps of service for each AP600 power supply. (A 20 amp breaker is recommended for accessory items and potential future expansion.) Ensure that this circuit is GFCI protected and should be interfaced with the main circulation pump. This ensures when the filter pump is turned off, the "AP600" will be protected and also turned off.

Tri-Sensor Cord. The gray Tri-sensor cord is attached into the electrical access box. Remove the side access panel, route the Tri-sensor cord through the strain relief connector and connect to the terminals marked for the flow (Red, White), temperature (Black, Blue) and salt sensors (Green, Brown). The opposite end of the cord is connected to the Tri-sensor head plug. The Tri-sensor and head plug are keyed so that they must be matched up before securing. Align the key and insert the head plug onto the Tri-sensor. Do not force this connection as the pins can be damaged. Once inserted, secure the locking rings and tighten.

Cell Cord. Depending on the model, there will be (2) – (6) cell cords provided with the control center. Ensure that the cell cord is plugged firmly onto the cell terminals.

Labeling and Markings: To avoid mismatching or crossing cell terminals, ensure that each cell and cell cord is appropriately labeled with markings to identify them. Lectranator Systems Inc. recommends using a marking system of A-1, A-2, A-3, etc... for each cell and cell cord, then marking the Power Supply with "PS A" and Tri-sensor with "TS A". If additional units are used, they should be labeled B-1, B-2, B-3, PS B, TS B, etc., C-1, C-2, C-3, PS C, TS C, etc. to ensure that no wires or cords become crossed.



ORP/PPM Connections and Fuse Locations

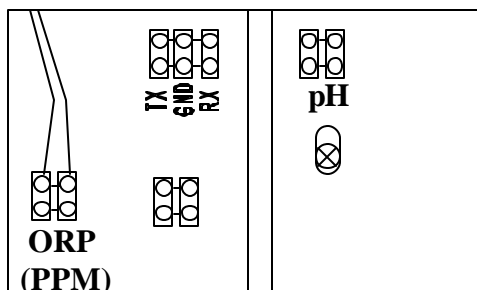
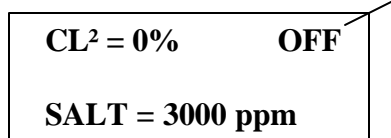
ORP/PPM CONNECTIONS

When an **ORP/PPM (or PPM only) chemical controller** is interfaced to your “AP600”, the controller will regulate the purifier Output. The controller wires will attach to the terminal block, marked ORP, located on the left side electrical access box. Adjust your output level to 0%. As the controller measurement falls below the set point, the “AP600” is activated to produce chlorine until the set point is satisfied. Check with your local commercial guidelines for minimum and maximum ORP/PPM levels.



NOTE: THE REMOTE CONNECTIONS ARE COMPATIBLE WITH EITHER DRY CONTACT CLOSURE OR SOLID STATE RELAY. DO NOT ENERGIZE THESE INPUTS! DAMAGE TO THE CONTROL PANEL WILL OCCUR AND THE WARRANTY WILL BE VOIDED.

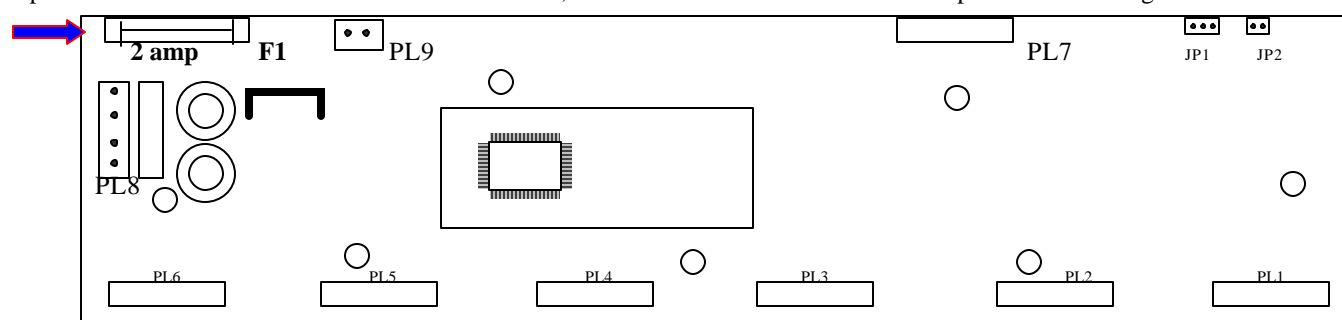
Display will toggle between ORP ON and OFF



FUSE LOCATIONS

There are very few user serviceable parts internally. The only parts that may be serviced are the following fuses. Note that either US AGC or European 5 x 20 mm sized fuses may be used. Follow instructions on page 12 to access the fuses.

MAIN CONTROL BOARD CIRCUIT FUSE. The Control Board Circuit Fuse protects the microprocessor chip and is located on top left corner of the Main Controller Circuit Board, marked **F1**. This is a standard 2-amp 250V fast acting fuse.

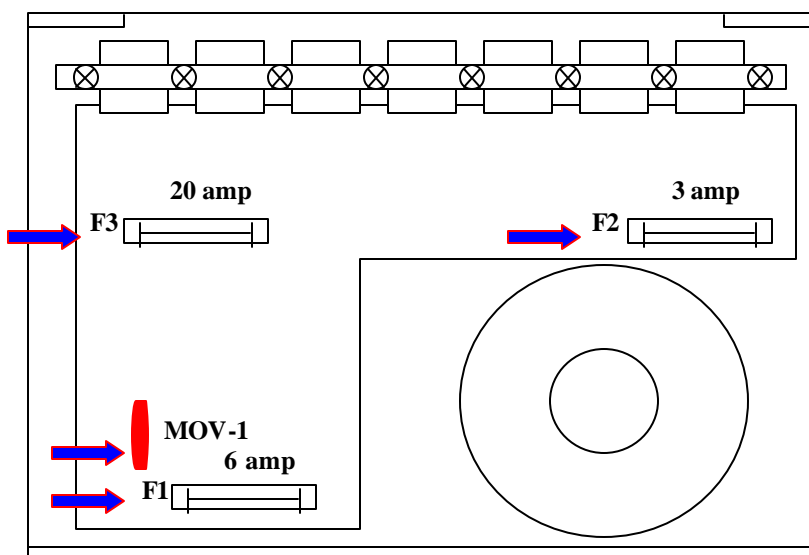


MAIN CONTROL BOARD (1)

CELL FUSE. The Cell Fuse protects the Cell from over power conditions and is located at the upper left side of the circuit board, marked **F3**. This is a standard 20-Amp 250V fast acting fuse.

CONTROL FUSE. The Control Fuse protects The cooling fans and control circuit from over power conditions and is located at the upper right side of the circuit board, marked **F2**. This is a standard 3-Amp 250V fast acting fuse.

MAIN AC POWER FUSE. The Power Fuse protects the circuit board from incoming power surges and is located on the bottom left side of the circuit board, marked **F1**. This is a standard 6-Amp 250V fast acting fuse and MOV-1. If this fuse is replaced and blows again, return the circuit board for repair or replacement.



POWER CIRCUIT BOARD (S)

Section 3a – OPERATION

AP 600 Power Supply

Power Supply

The power supply panel provides a full information display. There are several soft touch buttons that allows control of the system.

ON/OFF POWER CIRCUIT BREAKER – this main switch activates and deactivates the power going to the control center.

When extreme power surges occur, the circuit breaker will trip to the off position.

To reactivate, turn fully off, and then back on.

UP BUTTON: Press to increase the rate of sanitizer production. Also used in conjunction with the SERVICE button to step through the menu selections.

DOWN BUTTON: Press to decrease the rate of sanitizer production. Also used in conjunction with the SERVICE button to step through the menu selections.

SERVICE BUTTON: Press to enter the SERVICE MENU. Use the UP and DOWN buttons to scroll and the SERVICE button to select the function. The lists of functions in order are as follows:

ENABLE/DISABLE ALARM: Use UP/DOWN and SERVICE to select the desired state of the audible alarm.

SET REVERSING TIME: Use UP/DOWN and SERVICE to choose the reversing time. The reversing time can be set to reverse polarity every 1, 2, 3, 4, 6, 8, 12 or 16 hours of cell run time. The factory setting is 4 hours.

FORCE REVERSE: This will immediately exit the service program and force all the cells to reverse in sequence.

CALIBRATE SALT: The measured salt level will display. Use UP and DOWN to change the salt reading to match the actual value in the pool. Press SERVICE when done, which will immediately exit the Service mode.

REPLACE CELL: This feature displays cell operating ampere-hours and also indicates when a cell needs to be replaced. The display will show “Replace Cell “X””. After replacing a cell, have your service provider reset the ampere-hour clock to “0”.

SET POWER LEVEL: Use UP/DOWN and SELECT to the power level of 8 amps or 6.5 amps, depending on the sanitizer requirements of the pool. This is factory preset based on YOUR installation and should only be changed on the advice of your supplier or Lectranator Systems Inc.

ENGLISH/METRIC UNITS: Use UP/DOWN and SELECT to choose the system of units displayed.

FAHRENHEIT/CELCIUS DEGREES: Use UP/DOWN and SELECT to choose the unit of temperature displayed.

EXIT SERVICE MODE: Returns to normal operation.

*Note that after completing a function, the next function in sequence will be displayed for selection. This does not apply with those functions that exit service mode upon completion (FORCE REVERSE and CALIBRATE SALT)

TEST BUTTON: Press to initiate the test sequence. The Test display advances automatically in the following sequence:

Power Level

Reversing Time

Water Temperature

Condition of CELL 1/2, CELL 3/4 then CELL 5/6 (cell voltage, current and elapsed cell ampere-hour)

* Note: Wherever there is no CELL connected to the control center, the display will show “CELL “X” not found”.

After cycling through the sequence, the controller will resume normal operation.

AUDIBLE ALARM: The alarm will sound when there is not flow or low salt. Entering TEST or SERVICE will temporarily silence the alarm. The alarm can be turned off in Service mode, but will be re-enabled if power is turned off and on again.

EXTERNAL SHUTOFF: A terminal block is provided in the connection box for an external shutoff. These contacts are normally closed, and sanitizer production will cease if they are opened,

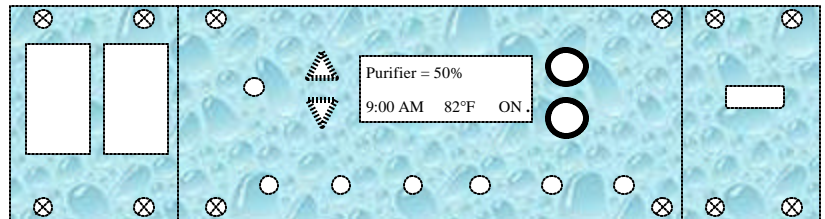
ORP/PPM CONTACTS: There is a terminal block in the connection box for an ORP/PPM controller. Closed contacts override the controller setting and produce sanitizer as long as the ORP/PPM contacts remain closed. If a controller is used, its contacts will be connected to this terminal block.

* Note that the contacts are compatible with either a dry contact closure or a solid sated relay.

PH CONTACTS: If a pH controller is installed, its feeder contacts will be connected to a terminal block within the connection box.

TRI-SENSOR ASSEMBLY: The Tri-sensor terminal block is in the connection box. The wiring diagram shows where to connect each colored wire.

RS-232: This is for future expansion of “transmit and receive remote functions”.



Section 3b – OPERATION

Pool Water Preparation

Salt Requirements

It is important that a salt residual of 2800 to 3000 ppm be maintained at all times for peak efficiency. The amount of salt required depends on the size of the pool and the present salt level. We recommend the use of **Tabex LectraClor™** or **AutoSoft™** blended salts for all indoor applications. **Tabex LectraClor™** and **AutoSoft™** salts contain pure Sodium Chloride (NaCl) without Iodine or the Anti-Caking additive, Yellow Prussiate of Soda (YPS) that can cause a localized tint to the water or yellow staining on pool/spa surfaces. For outdoor pools/spas we recommend the use of **Tabex LectraClor Plus™** or **AutoSoft Plus™** blended salts, as they contain the proper amount of stabilizer needed to maintain a proper cyanuric acid (CYA) level within the recommended range when added according to the salt chart on the box.

Granular Salt, Solar Salt or Water Conditioner Pellets, can also be used but will have different dissolve rates. In the event that the salt you use contains Iodine or Yellow Prussiate of Soda (YPS), constant brushing **may** help the dissolve rate and **may** help to prevent staining due to the additives in the salt.

NOTE: Do not use Rock Salt due to its high levels of impurities.

First, determine the salt level, using a digital salt tester or a drop test kit, and then use the chart below to determine the amount of salt to add. Before adding salt to the pool for the first time, turn your Power Supply's Output Setting to "OFF" (0%), then with the main filter pump running, pour the salt around the perimeter of the pool. **DO NOT POUR DIRECTLY INTO A SKIMMER OR GUTTER DEVICE.** Circulate your water for a minimum of 24 hours to allow the salt to completely dissolve before turning your Power Supply's Output Setting "ON".

Occasionally, salt may be lost due to bather splash out, filter backwashing, rain or makeup water dilution, or leaks. As you perform your periodic maintenance checks, if the salt residual falls below 2800 ppm, add the proper amount of salt to reestablish the optimum range.

KILOGRAMS AND POUNDS (LBS) OF SALT NEEDED FOR 3000 PPM RESIDUAL									
SALT Level Before Addition	Pool/Spa Volume in Liters and U.S. Gallons (USG)								
	378 (100)	3,780 (1000)	37,800 (10,000)	94,500 (25,000)	189,000 (50,000)	378,000 (100,000)	566,000 (150,000)	755,000 (200,000)	1,886,800 (500,000)
0 ppm	1.1 (2.5)	11.3 (24.9)	113 (249)	283 (623)	566 (1245)	1132 (2490)	1698 (3735)	2264 (4980)	5659 (12450)
500 ppm	.95 (2.1)	9.5 (20.8)	95 (208)	236 (519)	472 (1038)	943 (2075)	1415 (3113)	1886 (4150)	4716 (10375)
750 ppm	.85 (1.9)	8.5 (18.7)	85 (187)	212 (467)	425 (934)	849 (1868)	1273 (2801)	1698 (3735)	4245 (9338)
1000 ppm	.76 (1.7)	7.6 (16.6)	76 (166)	189 (415)	377 (830)	755 (1660)	1132 (2490)	1509 (3320)	3773 (8300)
1500 ppm	.57 (1.3)	5.7 (12.5)	57 (125)	141 (311)	283 (623)	566 (1245)	849 (1868)	1132 (2490)	2829 (6225)
2000 ppm	.4 (1)	3.8 (8.3)	38 (83)	95 (208)	189 (415)	377 (830)	566 (1245)	755 (1660)	1886 (4150)
2250 ppm	.3 (1)	2.8 (6.2)	28 (62)	71 (156)	141 (311)	283 (623)	425 (934)	566 (1245)	1415 (3113)
2750 ppm	.1 (1)	1.0 (2.1)	10 (21)	23 (52)	46 (103)	95 (208)	141 (311)	189 (415)	471 (1037)

Start Up Procedures

Keep the circuit breaker on your "AP600" in the OFF position until you get your water clear, blue, and properly balanced.

1. After balancing your water chemistry according to the Water Chemistry Parameters section on page 9 of this manual, add the proper type and amount of salt, as instructed in the Salt Requirement Chart above and circulate 24-hours prior to starting your "AP600".
2. Your "AP600" runs in conjunction with the main filter pump so that whenever the pump and circuit breaker are on, the Output Setting Light will be GREEN to indicate power is being sent to the Control Panel. The output level light will show the setting to which the unit is adjusted. The GREEN cell lights will be on whenever that cell is energized to produce purifier.
3. For the first two weeks, test the water more frequently for proper Purifier levels. Raise or Lower the Output Control Setting as needed, according to your test results.

Section 3c – OPERATION

Monitoring and Maintenance

Water Chemistry - VERY IMPORTANT NOTE! We recommend the following water chemistry ranges and periodic checks to monitor your systems efficiency. (Check expiry date of test kit reagents as test results may be inaccurate if used after that date.)

Daily Checks: <i>(Ideal)</i>		Bi-Weekly Checks:			
Free Chlorine:	1.0 – 3.0 ppm (pool)	Calcium Hardness:	200 - 240 ppm (pool)	Salt Residual:	2800 – 3000 PPM
	3.0 – 5.0 ppm (spa)		140 - 160 ppm (spa)	Langelier's Index:	± 0.3 pH of saturation (max.)
Or Bromine:	2.0 – 4.0 ppm (pool)	Total Alkalinity:	100 - 120 ppm (pool)	Monthly or as required, perform a visual cell inspection for wear, scale or debris	
	3.0 – 5.0 ppm (spa)		80 - 100 ppm (spa)		
pH:	7.2 – 7.8	Cyanuric Acid:	40 – 60 PPM		

CHLORINE/BROMINE REQUIREMENTS: During Peak chlorine/bromine Demand it may be necessary to increase your chlorine/bromine output by increasing your Output Dial setting. Conversely, during low chlorine/bromine Demand, you can decrease your Output Dial to a lower setting. For extremely heavy chlorine/bromine Demand or to assist your chlorine/bromine, you can supplement with a *Non-Chlorine Shock* containing DUPONT OXONE™ such as Tabex Shock 'N Swim™ or equivalent. **Caution:** Chlorine levels maintained consistently above 3.0 ppm may cause or contribute to corrosion of pool equipment.

pH: When your pH falls below the accepted range, your chlorine/bromine is used up very quickly. For pH levels higher than the accepted range, your chlorine/bromine becomes much less effective. Improper pH also contributes to the strong smell, red eyes, dry itchy skin and brittle hair conditions usually associated with “too much chlorine”. To decrease pH, use muriatic acid or dry acid. To increase pH, use sodium carbonate. Mix, and add it directly to the pool/spa water. DO NOT add directly to the skimmer. This may cause immediate scaling of the cell. For specifics and how much to add, please read and follow package instructions.

CALCIUM HARDNESS AND TOTAL ALKALINITY: Your LECTRANATOR II POOL PILOT PROFESSIONAL system provides 100% pure sodium hypochlorite and does not affect the calcium hardness or total alkalinity levels. When you start up and maintain your pool with proper water chemistry, it stays balanced much easier, until influenced by adding other ancillary chemicals or “out of balance” make-up water. If **calcium hardness** is low, use one of the many chemicals available to increase the level. If **calcium hardness** is high, greater attention must be given to keeping alkalinity and pH at the lower end of the recommended ranges or scaling may occur. For specifics on how much to add, please read and follow package instructions. Dilution may be required. To decrease **total alkalinity**, use muriatic acid. To increase **total alkalinity**, use bicarbonate of soda. Mix, and add it directly to the pool/spa water. DO NOT add bicarbonate of soda to the skimmer. This may cause immediate scaling of the cell. For specifics on how much to add, please read and follow package instructions

CYANURIC ACID (STABILIZER/CONDITIONER): Cyanuric acid (chlorine stabilizer) prevents the rapid breakdown of chlorine by sunlight. Regulations may exist regarding the use of cyanuric acid; please consult your pool professional. If not using a blended salt containing cyanuric acid, use the following chart to determine the amount of cyanuric acid needed. This calculation may also be done manually, as follows: Add cyanuric acid to attain desired range of 40 – 60 ppm. NOTE: 10 grams of cyanuric acid per 1000 L of water = 10 ppm of cyanuric acid.

NOTE: For bromine or indoor pools, it is not necessary to maintain a stabilizer level to protect the sanitizer from the sun's UV rays. We do however recommend, in ALL cases, to maintain a minimal 10 – 15 PPM of cyanuric acid to protect metallic fixtures and surfaces from possible corrosion.

GRAMS/KILOGRAMS AND POUNDS (LBS) OF CYANURIC ACID NEEDED FOR 50 PPM RESIDUAL									
Cyanuric Acid Level Before Addition	Pool/Spa Volume in Liters and U.S. Gallons (USG)								
	378 (100)	945 (250)	1890 (500)	3780 (1000)	18,900 (5,000)	37,800 (10,000)	94,500 (25,000)	189,000 (50,000)	378,000 (100,000)
0 ppm	19gr (.04)	47gr (.10)	94gr (.21)	189gr (.42)	945gr (2.1)	1.9kg (4.2)	4.7kg (10.4)	9.4kg (20.8)	18.9kg (41.6)
10 ppm	15gr (.03)	38gr (.08)	75gr (.17)	151gr (.34)	756gr (1.7)	1.5kg (3.4)	3.8kg (8.3)	7.6kg (16.6)	15.1kg (33.3)
20 ppm	12gr (.02)	30gr (.06)	60gr (.14)	120gr (.27)	605gr (1.4)	1.2kg (2.7)	3.1kg (6.6)	6.1kg (13.3)	12.1kg (26.6)
30 ppm	8gr (.016)	19gr (.04)	38gr (.08)	76gr (.17)	378gr (.8)	760gr (1.7)	1.9kg (4.2)	3.8kg (8.3)	7.6kg (16.6)
40 ppm	4gr (.01)	9gr (.02)	19gr (.04)	38gr (.08)	189gr (.4)	380gr (.8)	900gr (2.1)	1.9kg (4.2)	3.8kg (8.3)

SODIUM BROMIDE (OPTIONAL) 50 PPM

Where cyanuric acid is unavailable or its use is restricted, bromine can be used as alternative to chlorine. Bromine is more resistant to breakdown by sunlight than chlorine and, can therefore be used for outdoor pools. The LECTRANATOR II POOL PILOT PROFESSIONAL System will convert sodium bromide to bromine in much the same way it converts sodium chloride to chlorine. To produce bromine, we recommend initially adding 50 grams of sodium bromide for every 1000 L (4 pounds for every 10,000 gallons) of pool/spa water capacity. Thereafter, add 20 grams of sodium bromide for every kilogram of salt (1 pound of sodium bromine for every 50 pounds of salt) added to the pool. Remember; for the LECTRANATOR II POOL PILOT PROFESSIONAL System to operate properly, the pool/spa water must contain the recommended level of salt. When used, sodium bromide is added **in addition** to the normal amount of salt required.

SALT RESIDUAL: Your Power Supply works most efficiently with salt levels between the above-recommended ranges. Low salt will cause premature deterioration on the Cell blades. It is important that a minimum salt level of 2800 ppm be maintained at all times. Maintaining less than 2800 ppm salt may result in damage to the chlorine conversion cell and may affect its useful lifetime. High salt levels, above 6000 ppm have been known to cause corrosion on metallic fixtures. When recommended salt levels are exceeded, reduce the salt concentration by dilution.

LANGELIER'S INDEX: (or Saturation Index) A mathematical formula used by Pool Professionals to ensure that your total water chemistry does not fall into a corrosive or aggressive condition. Either condition can cause premature damage to the Cell(s), any of your other equipment as well as your pool/spa surfaces.

VISUAL CELL INSPECTION: Once per month (or as often as necessary) the cells should be removed and inspected for scale build up or debris on the cell blades.

REMOVING THE CELL: Turn OFF the AC ON/OFF circuit breaker on the power supply face panel. Turn OFF the AC power to booster pump, if applicable. Stop the flow of water through the cell leg(s) by closing the influent/effluent ball valves. Disconnect the DC cell cord(s) from cell body. Slowly, undo unions on either end of each cell and “slide” out the entire cell assembly. The titanium Cell blades, seen inside the Cell body, should be straight and clear of any debris between the blades. Your Power Supply is designed to automatically self-clean calcium scale build up within the Cell. However, certain conditions can cause a heavier scale build up that exceeds the self-cleaning capability and would need to be cleaned manually by the method described in the next section.

MANUAL CELL CLEANING:

With the Cell removed as described above, use a garden hose nozzle to spray off as much loose scale and debris as possible. Any remaining calcium scale can be treated with a mixture of one (1) part Muriatic Acid into four (4) parts water OR by using Tabex Lectra Clean™ (full strength). Pour the solution in a container high enough to cover the Cell blades.

Remove the Cell cord and immerse the Cell so that the blades are completely covered in the solution for no more than 15 minutes intervals. Drain and flush with fresh water and re-inspect. Repeat the immersion if necessary. Follow all manufacturer directions.

CAUTION: ALWAYS ADD ACID TO WATER, never water to acid.

NEVER USE ANY SHARP OBJECTS TO REMOVE SCALE. Scraping or scratching the titanium blade's edge or surface will allow chemical attack of the blade and cause premature failure of the Cell(s) and will void your warranty.

FILTER BACKWASHING:

As a precautionary measure, we recommend turning OFF the circuit breaker on the AP600, turning off the booster pump (if used) and isolating the Lectranator system by closing influent/effluent valves, when backwashing the filtration system.

Section 4a – TROUBLE SHOOTING AND SERVICING

TROUBLE SHOOTING

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
1) Insufficient chlorine/bromine Production.	A) The test kit reagents are old or expired. B) The unit is set too low in relation to demand. C) The chlorine/bromine demand/bather load has increased. D) Chlorine/bromine loss due to intense sunlight E) The body of water being sanitized leaks. F) Low Salt.	A) Retest with new Reagents. B) Turn up the output setting. C) Same solution as (B) or add a Non-Chlorine Shock which contains DUPONT OXONE™ such as Tabex Shock 'N Swim™, or equivalent. D) Check your stabilizer level and adjust if needed. If on Bromine, replenish bromine residual. E) Repair the leak and rebalance as needed. F) Check the residual salt level and adjust as needed.
2) Scale Build-up within the Cell.	A) The water being sanitized contains high pH, total alkalinity and calcium hardness levels.	A) Calculate Langelier Index to assure balanced water. Adjust chemicals if needed and clean the Cell(s) as described on page 10.
3) DC Plug and Cell Terminals Burned.	A) The Cell plug is not securely pushed onto the cell terminals, allowing moisture to seep into the plug. B) DC plug or cell pins were “wet” when connected. C) The Cell terminals leak.	A) Ensure the Cell cord plug is pressed completely onto the Cell terminal.. Clean the terminals with a clean cloth to remove all dirt. B) Ensure plug and pins are COMPLETELY dry before connecting. C) Contact the factory for Status/Procedures.
4) Premature Cell Failure (Requires replacement Cell)	A) Abnormally high Cell usage due to an insufficient Stabilizer (Cyanuric acid) level.. B) Debris in the Cell. C) Excessive chlorine/bromine demand.	A) Check the stabilizer level as recommended and adjust. B) Inspect the Cell monthly and clean debris if needed. C) Consult your dealer or Lectranator Systems, Inc.
5) White Flakes in the Water.	A) This occurs when excessive calcium hardness is present.	A) Visually inspect Cell(s) for scale build-up and clean the cell as described on page 10. Adjust your water chemistry as needed.
6) No Green Lights with Power to the Control Panel.	A) On/Off Circuit Breaker tripped.. B) Control Panel Circuit Board Fuse Blown.	A) Reset the On/Off Circuit Breaker Switch. B) Replace Fuse. See page 6 for fuse rating and location.
7) “NO FLOW” Message.	A) Insufficient Flow (below 4.5 m³/hr/20 US gpm) B) The Flow Detector wire is loose.	A) Ensure your Filter, Manifold Screen and Cell are clean of debris. Ensure there are no valves diverting flow away from the cell. B) Check each end for tightness onto the terminals.
8) “LOW SALT” Message. (Chlorine/bromine is still generating)	A) Low salt.	A) Check residual salt level and adjust if needed.
9) “LOW AMPS” Message.	A) Very cold pool water. B) The Cell is scaled. C) Possible Cell failure.	A) Lower output until the water temp. is above 16°C/60°F. B) See #2 of this section. C) Have the Cell tested by your retailer and replace if needed. Also see #4 of this section.
10) No GREEN CELL Light (Cell Life Depleted).	A) Low Cell Amperage. B) The Cell Cord is Disconnected from the Cell. C) Fuse Blown on Power Module.	A) Have the Cell tested by your retailer and replace if needed.. B) Ensure that the cord is firmly pressed onto the cell. C) Replace Fuse. See page 6 for fuse rating and location.
11) REMOTE ORP/PPM OR REVERSE POLARITY NOT ACTIVATING.	A) Loose connections B) Controller or components are defective.	A) Check and tighten connections. B) Check with product manufacturer.

Section 4b – TROUBLE SHOOTING AND SERVICING

SERVICING

NOTE: a Qualified Service Technician should perform All trouble shooting and repairs.

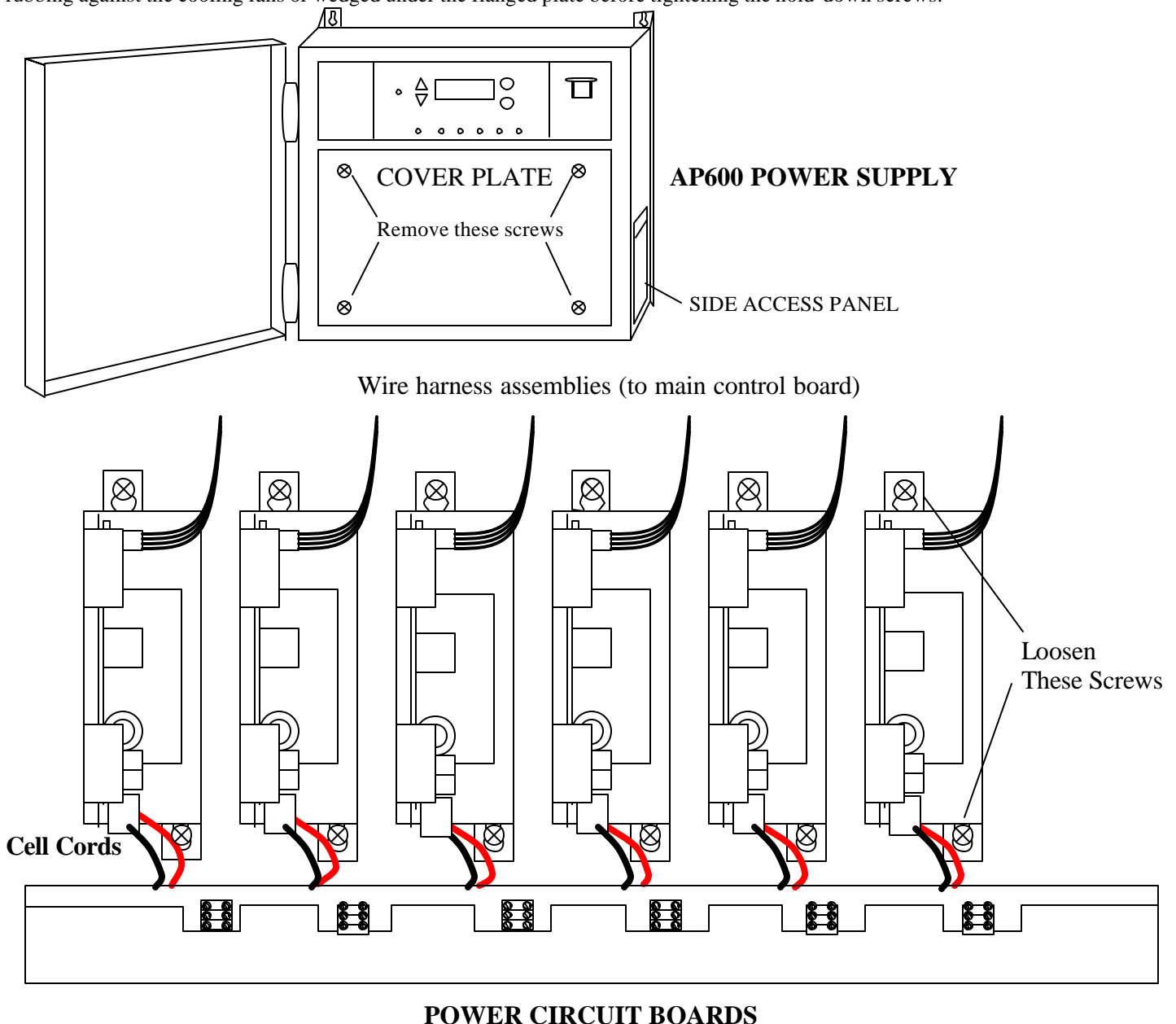
Accessing the Power Circuit Boards to replace the Board or Fuses:

CAUTION: BEFORE SERVICING, TURN OFF ALL POWER TO THE AP600 POWER SUPPLY, AT THE MAIN PANEL CIRCUIT BREAKER!

The front cover plate is held on using four (4) screws. Remove all four screws and lift off cover plate to access the circuit boards.

Power Circuit Board – The circuit boards are mounted vertically to the back of the control center. Each board uses two hold down screws to attach the power board angle flange to the back plate, locations shown below. Using a long shaft Phillips head screwdriver, loosen both screws but do not remove. Remove the top wire assembly and the front cell cable connections. Slide the flange to match the keyholes and pull out until you can reach and disconnect the rear power connectors, then remove fully. To replace any defective fuses on the circuit board, refer to the diagram on page 6 to locate the fuses and amp ratings.

The top wire assembly and circuit board have matching connectors to indicate proper alignment. Ensure proper installation before latching the connection. Reverse these steps to re-install the Power Circuit Board. Ensure that the cords and cables are secure and not rubbing against the cooling fans or wedged under the flanged plate before tightening the hold-down screws.



Section 4c – TROUBLE SHOOTING AND SERVICING

To obtain service for your LECTRANATOR II Model 7200 system, contact the Authorized Dealer/Service Centre listed below, or:

LECTRANATOR SYSTEMS, INC.

**2770 – 24th AVENUE N.E.
CALGARY • ALBERTA • CANADA • T1Y 6V7
Phone: 403.291.9845 • (Toll Free) 1.866.517.7584
Fax: 403.291.1023 • (Toll Free) 1.800.301.7104**

If warranty service is being requested, you must provide a copy of your registered warranty card as proof of purchase. Warranty service cannot be performed without this document.

AUTHORIZED DEALER

WHEN CALLING FOR SERVICE – Please have the following information ready:

- 1. Control Panel(s) Model No.:** _____
- 2. Chlorine Cell(s) Serial Numbers:** _____
- 3. Installation Date (MM/DD/YY):** _____
- 4. Warranty Registration Number:** _____