CHLOR SALINE CHLORINATOR

Models covered in this manual:

CHLOR2.0MSM, CHLOR3.0MSM, CHLOR5.0MMSM
CHLOR7.5SM, CHLOR10SM. CHLOR12.5SM
CHLOR15SM, CHLOR20SM, CHLOR25SM

Installation, Operation Manual, and Parts Manual

CHLORMSM

CHLORSM

Manufacturer:

ChlorKing Inc
2935 Northeast Parkway
Atlanta, GA 30360

1-800-536-8180

This manual is subject to change at any time based on system improvements, design changes, authorized modifications, or new information. Please consult ChlorKing for the latest revision.

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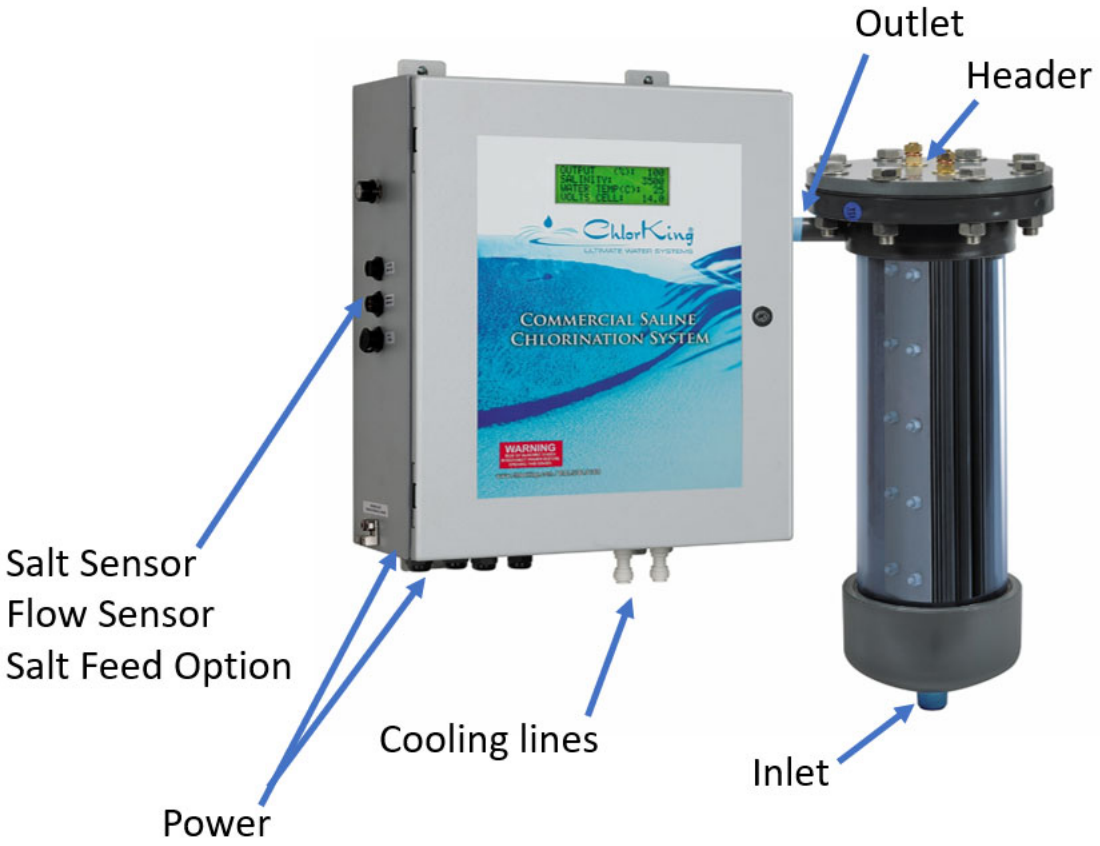
DESCRIPTION

GENERAL INFORMATION

The ChlorKing® SM Series Saline Chlorination system is the most electrically efficient on-site sodium hypochlorite generator offered by ChlorKing®. The system is designed for commercial swimming pool applications and is capable of producing up to 28 pounds of equivalent chlorine per day, depending on the model. The system manufactures bleach continuously from a salt concentration of 3500 to 5000 ppm added to the pool. The ChlorKing® system is designed for commercial service and can be operated 24 hours a day or controlled by any pool controller. All models have digital displays that show system status, pool salt concentration, and temperature. Models are available in non-reverse and reverse polarity.



PRINCIPALS OF OPERATION

Electrolytic Cell Assembly

The electrolytic cell assembly consists of a clear PVC cell housing containing an electrolytic cell made from precious metal coated cell plates. Pool water from the pool circulation system is directed through the cell in an off-line installation. The pool water, maintained between 3500 and 5000 ppm salt concentration is converted in the electrolytic cell to sodium hypochlorite. The sodium hypochlorite is then circulated to the pool and combines with organics and further combines to form salt to be used again by the electrolytic cell. This is called a closed loop system because the salt is used repeatedly and is only lost through splash-out, backwashing, and dilution.

Power Supply and Control Box

The power supply provides the current to the electrolytic cells to produce the rated amount of sodium hypochlorite. The power supply uses switched-mode technology, currently the most electrically efficient method of producing current for an electrolytic cell. The power supply houses all the safety features to prevent system operation in the event of a malfunction.

Salt Control

Salt control can be added to the ChlorKing® SM Series Chlorinator. The ChlorKing® SM Series Chlorinator monitors the salt concentration of the pool water and will only allow the system to generate chlorine if the salt concentration is above 3000 ppm to protect the system from low salt. The system uses a non-contacting toroidal sensor to monitor salt concentrations. The toroidal probe is connected to the power supply. The LCD displays the salt concentration. The controller is factory programmed to prevent chlorinator operation in the event of low salt and can be used to automate salt concentrations in the pool with the addition of a Saturated Salt Feeder, peristaltic pump, and relay box.

ChlorKing® Acid Wash

The ChlorKing® Classic SM System (non-reverse polarity) is supplied with a clean in place Acid Wash System. The clean in place Acid Wash System makes cell maintenance quick and easy. The Acid Wash System is available for purchase with reverse polarity systems.

GENERAL SPECIFICATIONS

SODIUM HYPOCHLORITE PRODUCTION:

Model Designation	Sodium Hypochlorite Production (lbs/day)	Rated Power in DC Amps	Rated Pressure	Minimum Water Flow Rate (gpm)	Inlet Diameter (Inches)	Outlet Diameter (Inches)
CHLOR2.0MSM	2.2lbs/day	40	50 psi	20 gpm	1 inch	¾ inch
CHLOR3.0MSM	3.0lbs/day	28	50 psi	20 gpm	1 inch	¾ iinch
CHLOR5.0MSM	6lbs/day	40	50 psi	20 gpm	1 inch	1 inch
CHLOR7.5SM	8lbs/day	50	50 psi	20 gpm	1 inch	1 inch
CHLOR10.0SM	11lbs/day	50	50 psi	20 gpm	1 inch	1 inch
CHLOR12.5SM	14lbs/day	50	50 psi	20 gpm	1 inch	1 inch
CHLOR15.0SM	17lbs/day	100	50 psi	20 gpm	1 inch	1 inch
CHLOR20.0SM	22lbs/day	100	50 psi	20 gpm	1-1/2 inch	1-1/2 inch
CHLOR25.0SM	28lbs/day	100	50 psi	20 gpm	1-1/2 inch	1-1/2 inch
CHLOR7.5CSM	8lbs/day	50	50 psi	20 gpm	1 inch	1 inch
CHLOR10.0CSM	11lbs/day	50	50 psi	20 gpm	1 inch	1 inch
CHLOR15.0CSM	17lbs/day	100	50 psi	20 gpm	1 inch	1 inch
CHLOR20.0CSM	22lbs/day	100	50 psi	20 gpm	1 inch	1 inch
CHLOR25.0CSM	28lbs/day	100	50 psi	20 gpm	1 inch	1 inch

ELECTRICAL REQUIREMENTS:

Model Designation	AC Input Voltage	Phases	Frequency	Amps	Fuse Size	GFCI Breaker*	Control Signal**
CHLOR2.0MSM	110	1	50/60Hz	4		15	120v, 1amp
CHLOR3.0MSM	110	1	50/60Hz	6		15	120v, 1amp
CHLOR5.0MSM	110	1	50/60Hz	8		15	120v, 1amp
CHLOR7.5SM	110 to 240	1	50/60Hz	15/7.5	20	20	120v, 1amp
CHLOR10.0SM	110 to 240	1	50/60Hz	15/7.5	20	20	120v, 1amp
CHLOR12.5SM	110 to 240	1	50/60Hz	15/7.5	20	20	120v, 1amp
CHLOR15.0SM	208 to 240	1	50/60Hz	15	20	30	120v, 1amp
CHLOR20.0SM	208 to 240	1	50/60Hz	15	20	30	120v, 1amp
CHLOR25.0SM	208 to 240	1	50/60Hz	15	20	30	120v, 1amp

CHLOR7.5CSM	100 to 240	1	50/60Hz	15/7.5	20	20	120v, 1amp
CHLOR10.0CSM	100 to 240	1	50/60Hz	15/7.5	20	20	120v, 1amp
CHLOR15.0CSM	208 to 240	1	50/60Hz	15	20	30	120v, 1amp
CHLOR20.0CSM	208 to 240	1	50/60Hz	15	20	30	120v, 1amp
CHLOR25.0CSM	208 to 240	1	50/60Hz	15	20	30	120v, 1amp

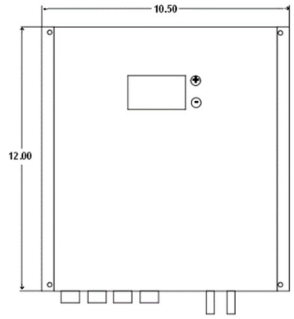
*Per local code.

**These systems require a 120 VAC control signal from a chemical feed controller or from a standard 15 amp wall outlet.

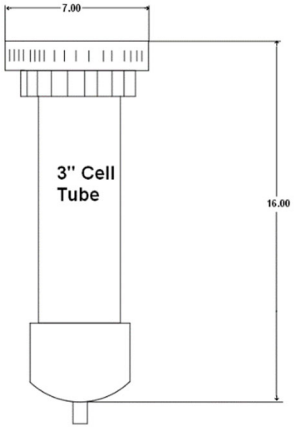
SPACE REQUIREMENTS:

CHLOR2.0MSM, CHLOR3.0MSM, and CHLOR5.0MSM

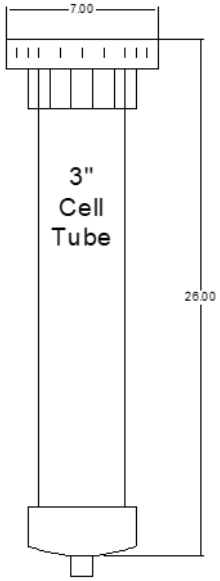
600 W Power Supply



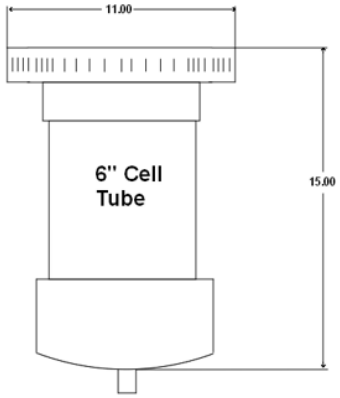
2.0lb Cell Tube



3.0lb Cell Tube

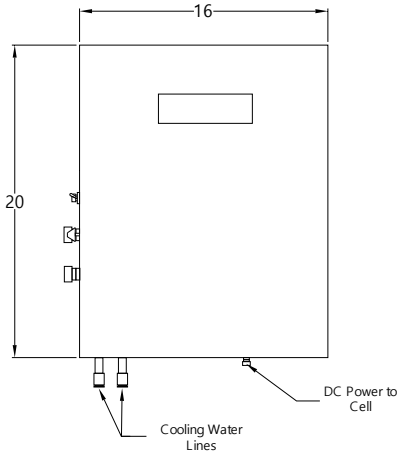


5.0lb Cell Tube

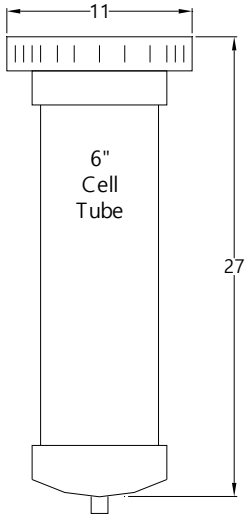


CHLOR7.5SM, CHLOR10.0SM, and CHLOR12.5SM

1200 W Power Supply

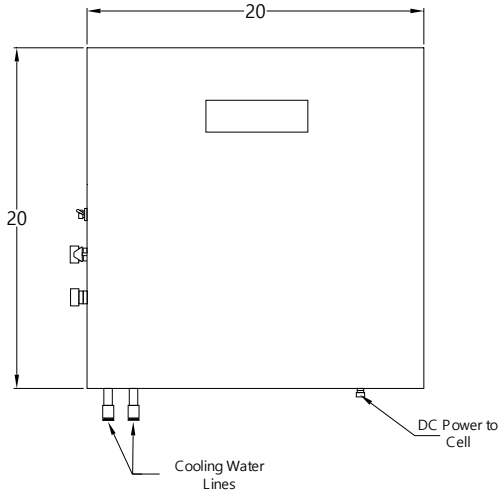


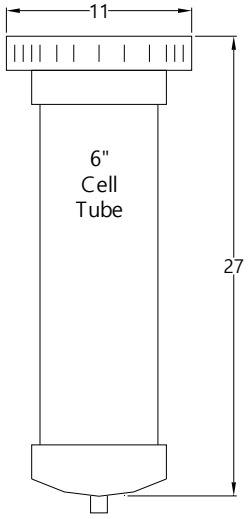
7.5lb, 10.0lb, and 12.5lb Cell Tube

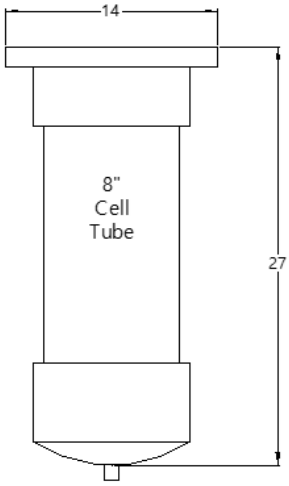


CHLOR15SM, CHLOR20.0SM, and CHLOR25.0SM

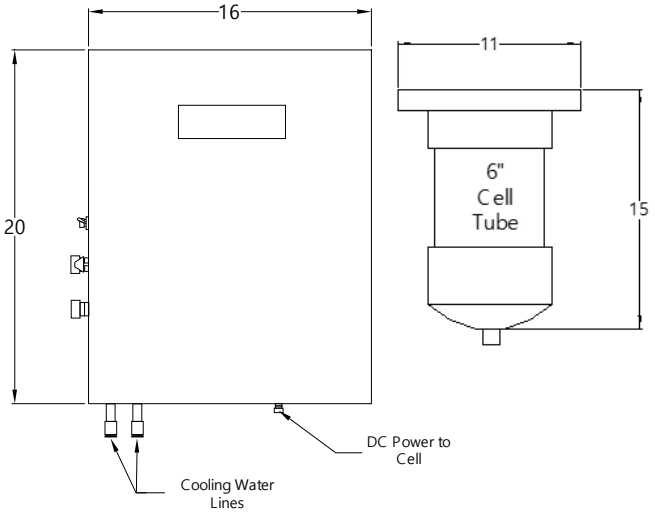
2400 W Power Supply	15lb Cell Tube	20lb and 25lb Cell Tube



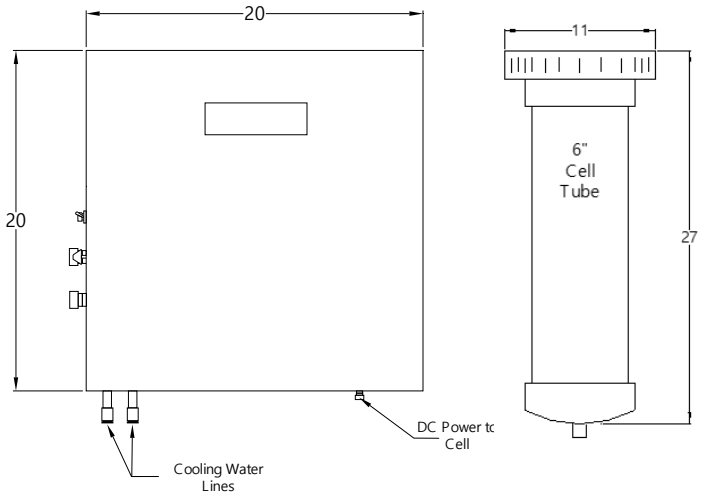




CHLOR7.5CSM and CHLOR10.0CSM



CHLOR15.0CSM, CHLOR20.0CSM, and CHLOR25.0CSM

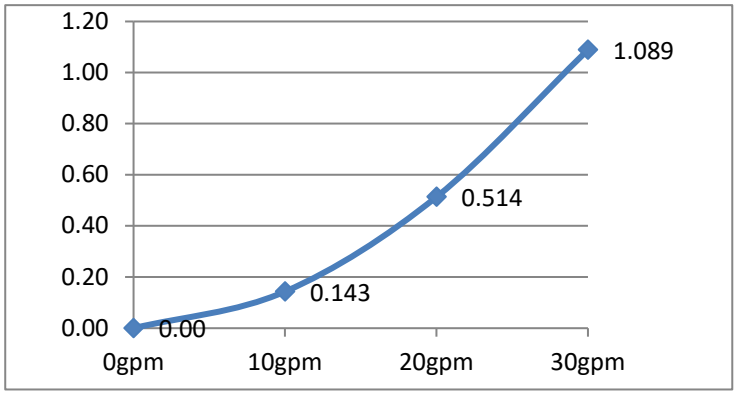


SIZING GUIDELINES

Chlorinator sizing must comply with local codes. Please contact your local health department for specific requirements or contact your local ChlorKing® representative for assistance.

HEAD LOSS DATA

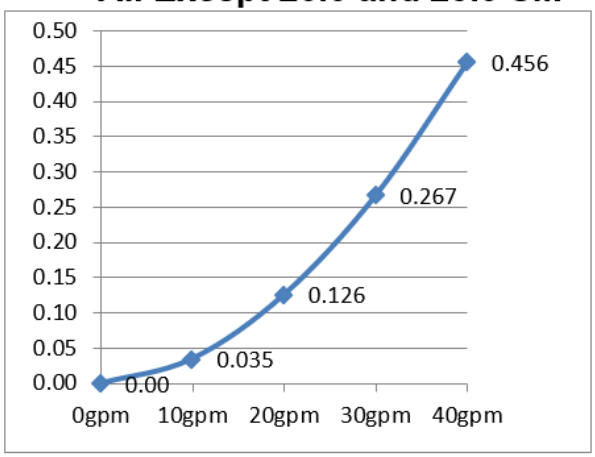
Head loss data reported in ft.H2O



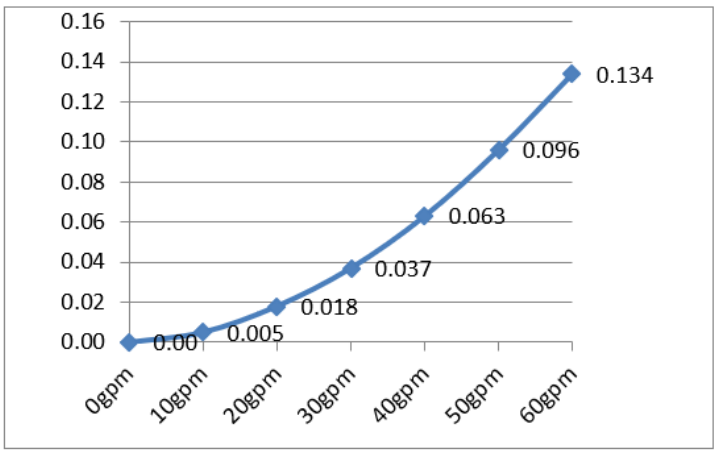
Head Loss Data for CHOR2.0MSM and CHLOR3.0MSM.

Head loss data reported in ft. H2O

All Except 20.0 and 25.0 SM



20.0 and 25.0SM



INSTALLATION

UNPACKING

Units are shipped from the factory. In the event of damages during shipping, it is the responsibility of the customer to notify the carrier immediately and to file a damage claim. Open the crate carefully and examine all material inside. Check against the parts list to be sure that all items are accounted for and intact.

STORAGE

When storing units, use the original packaging and store under a shelter to protect the contents from weather.

SAFETY CONSIDERATIONS

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WHEN INSTALLING, OPERATING, AND MAINTAINING THIS EQUIPMENT, KEEP SAFETY CONSIDERATIONS FOREMOST. USE PROPER TOOLS, PROTECTIVE CLOTHING, AND EYE PROTECTION WHEN WORKING ON OR INSTALLING THE EQUIPMENT. FOLLOW THE INSTRUCTIONS IN THIS MANUAL AND TAKE ANY ADDITIONAL SAFETY MEASURES APPROPRIATE. BE EXTREMELY CAREFUL IN THE PRESENCE OF HAZARDOUS SUBSTANCES.
THE PERSONNEL RESPONSIBLE FOR INSTALLATION, OPERATION, AND MAINTENANCE OF THIS EQUIPMENT MUST BE FULLY FAMILIAR WITH THE CONTENTS OF THIS MANUAL.
ANY SERVICING OF THIS EQUIPMENT MUST BE DONE WITH THE UNIT FULLY OFF AND DISCONNECTED FROM THE POWER SOURCE AND ALL PRESSURE BLED FROM THE LIQUID LINES.

WARNING

- **CHLORKING® SYSTEMS ARE INTENDED TO BE INSTALLED ACCORDING TO ALL LOCAL AND NATIONAL REGULATIONS.**
- **CONNECT THE EQUIPMENT ASSEMBLY TO A CIRCUIT PROTECTED BY A GROUND-FAULT CIRCUIT-INTERRUPTER.**
- **ONLY A CERTIFIED TECHNICIAN MAY INSTALL AND SERVICE THE CHLORKING® SYSTEM.**

- **MODIFYING THE CHLORKING® SYSTEM IN ANY WAY MAY CAUSE BODILY INJURY AND WILL VOID THE WARRANTY.**
- **DO NOT ALLOW CHILDREN TO OPERATE THE CHLORKING® SYSTEM.**
- **ONLY REPLACE COMPONENTS WITH THOSE SPECIFIED BY THE MANUFACTURER.**
- **WHEN INSTALLING THE SYSTEM, ENSURE THAT POWER IS LINKED TO THE MAIN PUMP POWER SOURCE FOR THE POOL TO ENSURE THAT THE CHLORKING® SYSTEM NEVER OPERATES WHEN THE PUMPS ARE OFF.**
- **ALL BOXES ON THE CHLORKING® SYSTEM CONTAIN HIGH VOLTAGE COMPONENTS. NEVER OPEN ANY BOX WHILE THE POWER IS ON.**
- **THE SYSTEM HAS THE POTENTIAL TO RELEASE HIGH DOSES OF CHORINE. USE CAUTION WHEN HANDLING, SERVICING, OR OPERATING THE EQUIPMENT.**
- **DO NOT ENERGIZE OR OPERATE THE SYSTEM IF THE CELL HOUSING IS DAMAGED OR IMPROPERLY ASSEMBLED.**
- **CORD CONNECTED AT TIME OF MANUFACTURE**
    - **DANGER – Risk of injury**
        - **Replace damaged cord immediately**
        - **Do not bury cord**

CONSIGNES DE SÉCURITÉ IMPORTANTES
LISEZ ET SUIVEZ TOUTES LES INSTRUCTIONS

CONSERVEZ CES INSTRUCTIONS

LORS DE L'INSTALLATION, DE FONCTIONNEMENT ET L'ENTRETIEN DE CET ÉQUIPEMENT, GARDEZ LES CONSIDÉRATIONS SUR LA SÉCURITÉ AVANT TOUT. UTILISER DES OUTILS APPROPRIÉS, DES VÊTEMENTS DE PROTECTION ET LUNETTES DE PROTECTION LORSQU'ILS TRAVAILLENT SUR OU À L'INSTALLATION. SUIVEZ LES INSTRUCTIONS DE CE MANUEL ET PREND LES MESURES DE SÉCURITÉ SUPPLÉMENTAIRES APPROPRIÉES. SOYEZ VIGILANTS EN PRÉSENCE DE SUBSTANCES DANGEREUSES.
LE PERSONNEL CHARGÉ DE L'INSTALLATION, DE FONCTIONNEMENT ET D'ENTRETIEN DE CE MATÉRIEL DOIT ÊTRE PARFAITEMENT FAMILIARISÉ AVEC LE CONTENU DE CE MANUEL.
AUCUNE OPÉRATION DE MAINTENANCE DE CET ÉQUIPEMENT DOIT ÊTRE FAITE AVEC L'UNITÉ ENTIÈREMENT ÉTEINT ET DÉBRANCHÉE DE L'ÉLECTRICITÉ ET TOUTE LA PRESSION SAIGNÉ À PARTIR DES LIGNES DE LIQUIDES.

MISE EN GARDE

- **CHLORKING ® SYSTEMES SONT DESTINES A ETRE INSTALLES SELON TOUS LES REGLEMENTS LOCAUX ET NATIONAUX.**

- **CONNECTER LE MONTAGE DE L'ÉQUIPEMENT SUR UN CIRCUIT PROTÉGÉ PAR UN DISJONCTEUR DE FUITE À LA TERRE.**
- **SEUL UN TECHNICIEN CERTIFIE PEUT INSTALLER ET ENTRETENIR LE CHLORKING ® SYSTEM.**
- **MODIFIANT LA CHLORKING ® SYSTEM EN QUELQUE SORTE PEUT CAUSER DES LESIONS CORPORELLES ET LA GARANTIE ANNULATION.**
- **NE LAISSEZ PAS LES ENFANTS A EXPLOITER LE CHLORKING ® SYSTEM.**
- **REMPLACEZ UNIQUEMENT LES COMPOSANTS AVEC CELLES SPÉCIFIÉES PAR LE FABRICANT.**
- **LORSQUE VOUS INSTALLEZ LE SYSTEME, S'ASSURER QUE LA PUISSANCE EST LIEE A LA SOURCE D'ALIMENTATION DE POMPE A MAIN POUR LA PISCINE POUR VOUS ASSURER QUE LE SYSTEME CHLORKING ® FONCTIONNE JAMAIS QUAND LES POMPES SONT HORS SERVICE.**
- **TOUTES LES CASES SUR LE CHLORKING ® SYSTEME CONTIENNENT DES COMPOSANTS HAUTE TENSION. NE JAMAIS OUVRIR N'IMPORTE QUELLE BOÎTE TANDIS QUE L'APPAREIL EST ALLUMÉ.**
- **LE SYSTÈME A LA POSSIBILITÉ DE LIBÉRER DES DOSES ÉLEVÉES DE CHLORE. SOYEZ PRUDENT LORS DE MANIPULATION, ENTRETIEN OU FONCTIONNEMENT DE L'ÉQUIPEMENT.**
- **NE PAS METTRE SOUS TENSION OU FAIRE FONCTIONNER LE SYSTÈME SI LE BOÎTIER DE LA CELLULE EST ENDOMMAGÉ OU MAL ASSEMBLÉ.**
- **CORDON CONNECTE AU MOMENT DE LA FABRICATION**
    - **DANGER-RISQUE DE BLESSURE**
        - **REMPLACEZ IMMEDIATEMENT LE CORDON D'ALIMENTATION**
        - **NE PAS ENFOUIR LE CORDON**

PLAN AHEAD

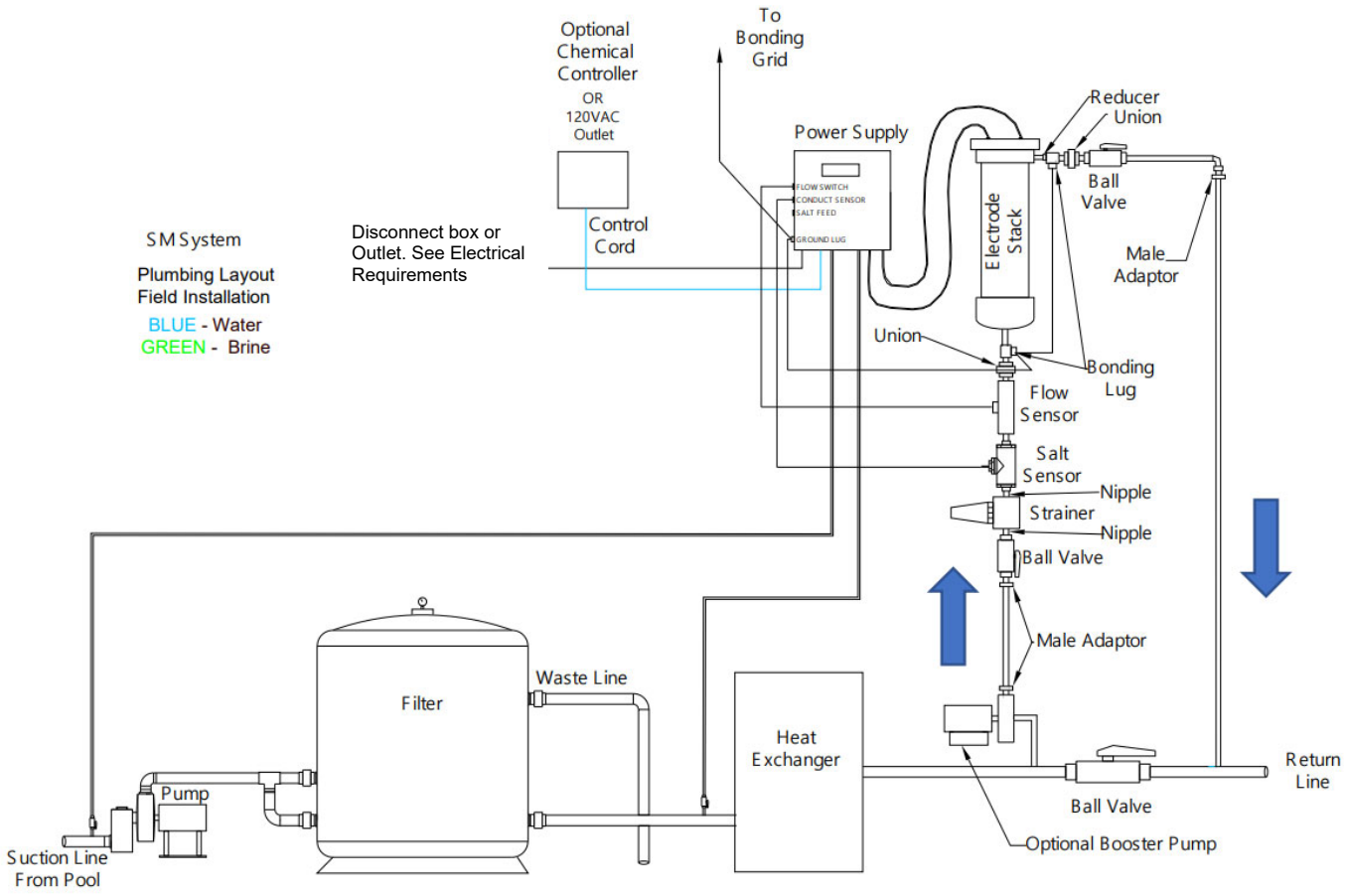
Almost every pump room encountered is different. It is imperative to have prior knowledge of the facility in which the unit is to be installed and to evaluate what type of tools, wall anchors, etc. will be needed to make the installation as problem free as possible.

ADDITIONAL PARTS REQUIRED FOR INSTALLATION

Polypropylene tubing, both ½ and 3/8 inch
1 or 1-1/2 inch PVC tubing or pipe
PVC fittings as needed
Anchors and mounting hardware
Possible valve or booster pump to create inlet flow

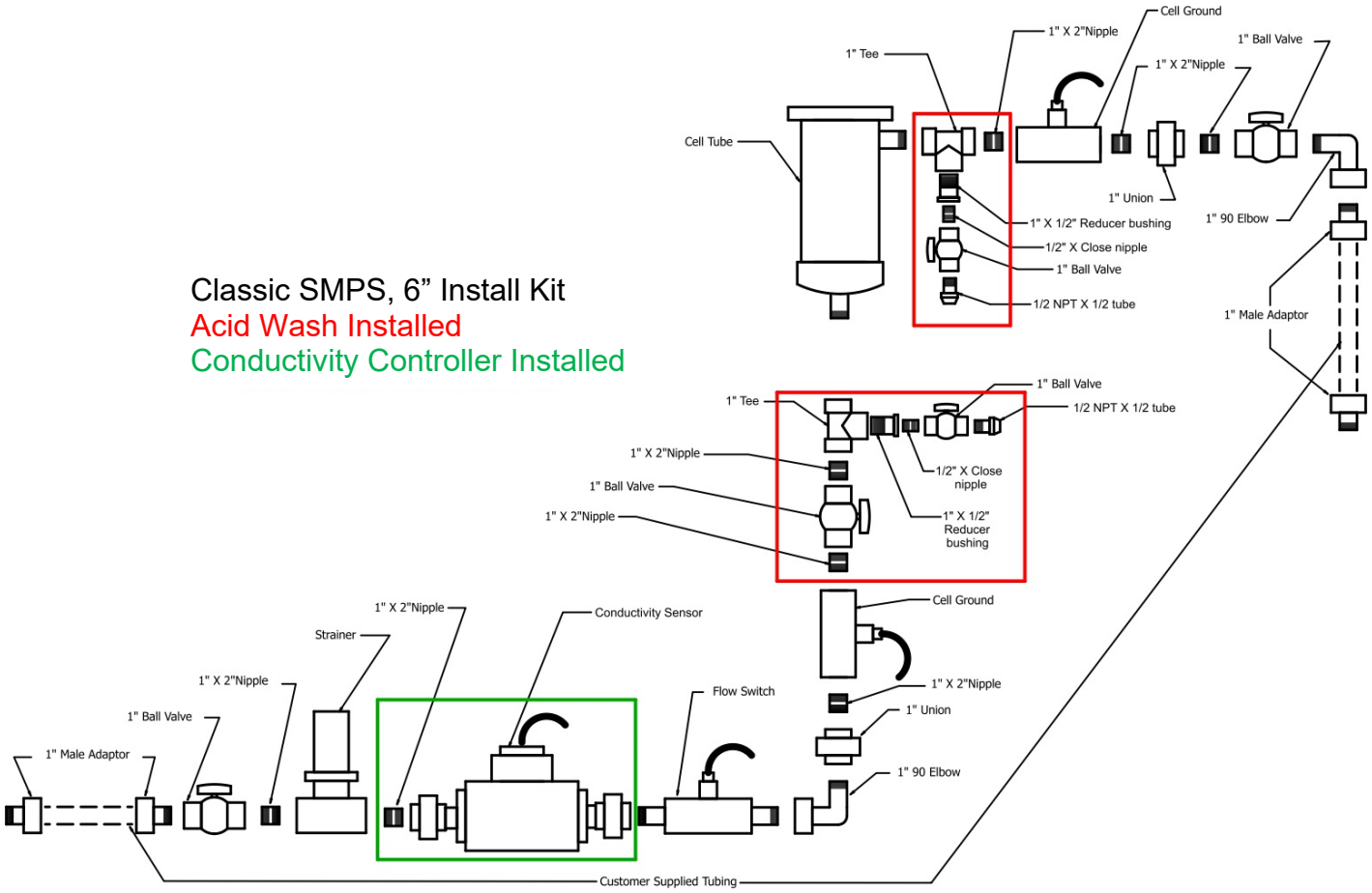
INSTALLATION AND ASSEMBLY DIAGRAM

Install the parts found in the installation kit in the order shown in the following diagram.
NOTE: The flow switch must be installed with the arrow facing the bottom of the cell tube.



Chor7.5CSM, Chlor10.0CSM, Chlor15.0CSM, Chlor20.0CSM, Chlor25.0CSM
Assembly Diagram

Classic SMPS, 6” Install Kit
Acid Wash Installed
Conductivity Controller Installed



POWER SUPPLY INSTALLATION

WARNING

THE MOUNTING LOCATION OF THE UNIT MUST BE AT LEAST 1.5 METERS FROM THE POOL.

NEVER TRY TO SUPPORT THE WEIGHT OF THE POWER SUPPLY OR ELECTROLYTIC CELL USING ONLY DRYWALL ANCHORS.

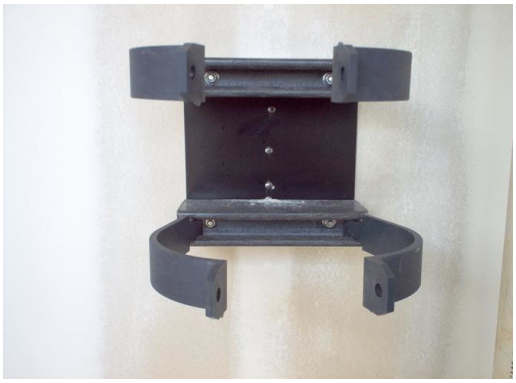
Locate a space on the wall, in the equipment room, that will accommodate the dimensions of the system. Mount the power supply to the wall using appropriate hardware. The power supply must be installed no more than 8 feet from the cell housing to ensure that the cables will reach the cell.

ELECTROLYTIC CELL INSTALLATION

WARNING

THE MOUNTING LOCATION OF THE ELECTROLYTIC CELL MUST BE AT LEAST 1.5 METERS FROM THE POOL.

Install the cell mounting bracket to the wall using appropriate hardware. Ensure that the wall mount is level. Mount the electrolytic cell and tube to the mounting backboard. Ensure that the cell and tube are mounted within 8 feet of the power supply and that nothing is installed above the cell tube. The cell may need to be removed for service.



PLUMBING THE SYSTEM

The ChlorKing® system is installed offline and requires a minimum of 20 gpm of flow through the electrolytic cell to achieve the rated production of chlorine. The installation requires a pressure differential to achieve 20 GPM flow. The cell housing must be installed as the last component in the return line of the pool, after all other equipment.

PLUMBING THE POWER SUPPLY COOLING LINES

The power supply cooling lines also require a differential. Plumb the cooling lines from the return line to pump suction. The cooling lines on the power supply use 3/8 inch tubing. See installation diagram.

SYSTEM WIRING

WARNING

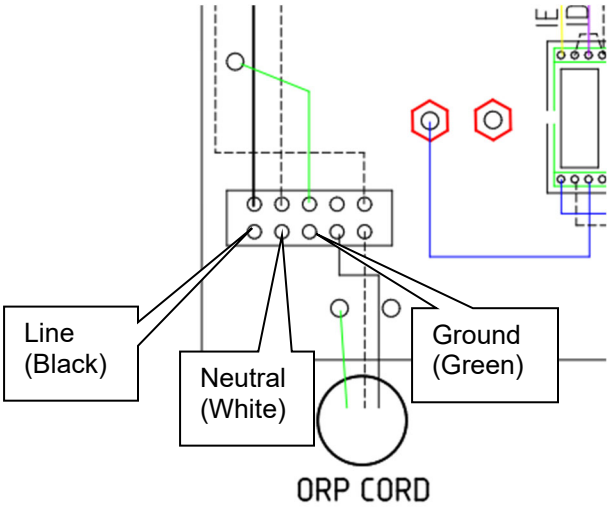
THE EARTH TERMINALS AND THE EQUIPMENT BONDING WIRE MUST BE CONNECTED. THE ELECTRICAL SUPPLY MUST MATCH THE SYSTEM RATED VOLTAGE AND CURRENT. ENSURE THAT POWER IS LINKED TO THE MAIN PUMP POWER SOURCE FOR THE POOL TO ENSURE THAT THE CHLORKING® SYSTEM NEVER OPERATES WHEN THE POOL PUMPS ARE OFF.

For ease of service, it is recommended that a manual disconnect box be installed between the electrical service and the system.

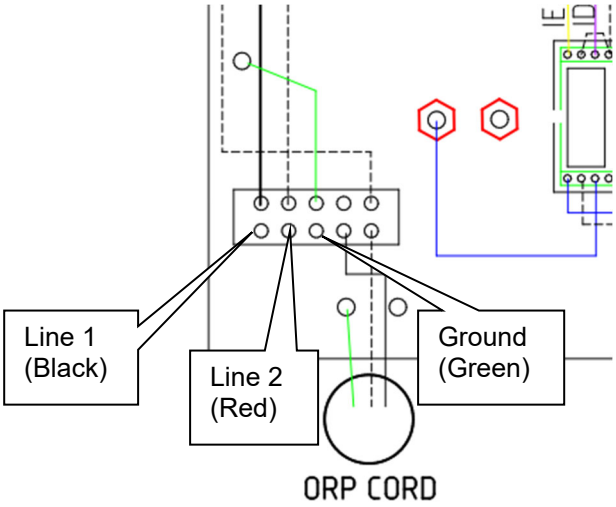
For 2.0lb through 5.0lb Systems:
Connect the black power cord to a 120 VAC electrical outlet. Ensure that the electrical service is protected by a ground fault circuit interrupter and is rated for the model that is installed.

For 7.5lb through 25lb Systems:
Connect the electrical supply from the pool equipment room to the terminal block on the lower left side of the power supply enclosure. Ensure that the electrical service is protected by a ground fault circuit interrupter and is rated for the model that is installed. Chlor7.5 models to Chlor12.5 models can be wired with 110V or 208/240V. Chlor15.0 models to Chlor25.0 models use 208/240V only. See Electrical Requirements.

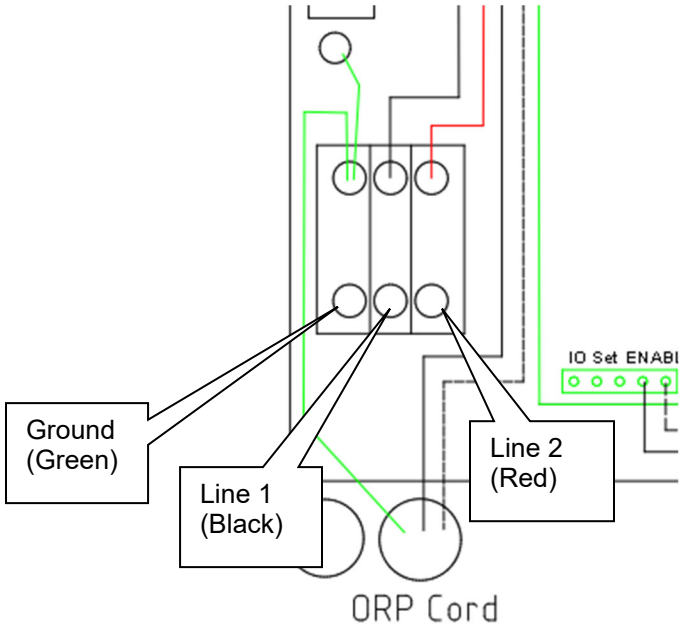
7.5 Through 12.5: 110V



7.5 Through 12.5: 208/240V



15.0 Through 25.0: 208/240V Only



Connect the blue control cord to a chemical feed controller or for manual operation, to a 120 volt AC outlet. When connecting to a chemical feed controller, be sure the controller is set to continuous feed and not set on proportional control. Proportional control will reduce the life of power supply components.

Connect the four pin salt sensor connector to the four pin connector labeled SALT SENSOR.

Connect the two pin flow switch connector to the two pin terminal labeled FLOW SWITCH.

Connect the connector from the power supply to the connector on the cell.

The terminal labeled FEED SALT is used with the optional Saturated Salt Feeder. When using the optional Salt Feeder, plug the cable from the Saturated Salt Feeder Relay Box to the terminal marked FEED SALT.

NOTE: Never remove the cables from the top of the cell. Always disconnect the cell with the connector.

BONDING THE SYSTEM

All ChlorKing® systems include cell-bonding assemblies. These assemblies are included in the install kit. The bonding assemblies must be connected with a minimum of 8 AWG bonding wire. Connect the bonding wire from the top cell grounding assembly to the bottom cell grounding assembly and then from the bottom cell grounding assembly to the bonding lug located on the outside of the power supply. The bonding lugs on the power supply are clearly marked with a decal that reads “Bonding Lugs”. Connect the second bonding lug on the power supply to the bonding grid at the facility.

INSTRUCTIONS FOR ADDING SALT FEED RELAY

The salt feed relay is optional. Mount the salt feed relay box to the wall close enough to the power supply so that the patch cord will connect to the FEED SALT connector on the power supply. Plug the relay box into a 120 VAC outlet. Plug the peristaltic pump used for feeding salt into the output plug on the relay box.

OPERATION

PREPARING THE WATER

ChlorKing® saline chlorination systems operate by electrolyzing sodium chloride (salt) that has been added to the pool into sodium hypochlorite (liquid chlorine). In order for the ChlorKing® system to operate salt must be added directly to the pool at least 24 hours before the system is started.

40 pound of salt must be added for every 1,000 gallons of pool water to reach 5000 ppm. See salt addition chart in this manual.

Once the salt has been added, brush the surface of the pool continuously until the salt has dissolved. Never leave large amounts of salt on the surface of the pool.

Only use pure NACl. Do not use salt with additives. Contact your dealer or ChlorKing® for a list of approved salt.

Your pool water should be balanced in the following range before turning your ChlorKing® system on:

Chlorine:	2 – 5 ppm
Total Chlorine:	No more than 0.5 ppm above free chlorine
Ph:	7.2 – 7.6
Alkalinity:	80 – 120
Hardness:	180 – 280 ppm
Salt:	3500 – 5000 ppm
Cyanuric acid:	20 – 50 ppm (Outdoor Pools only)
Phosphates:	Less than 100 ppm

Use standard test kits to check water chemistry and use either a conductivity tester or salt test strip to check saline levels.

STARTING THE SYSTEM

Confirm that the salt concentration is between 3500 to 5000 PPM.

Confirm that the valves to and from the cell are in the open position and water is flowing through the cell tube.

Make sure that water is flowing through the water-cooled heat sink.

Ensure that the **BLUE** cord is plugged either into a controller or directly into a wall outlet.

Be sure the **BLACK** cord is plugged in or the disconnect box is in the on position.

Confirm that the output control knob located on the left side of the power supply is turned fully clockwise for SM models. For MSM, use the +/- to turn the system to 100% output. Depending on the model, the system will begin producing chlorine in 10 to 60 seconds.

If the ChlorKing® system is linked to a chemical feed controller, adjust the output to the system maximum, which will allow for full production every time the controller calls for it. If the system is being operated manually, adjust the system to find the point at which chlorine levels are maintained to the desired level. This may take several days of monitoring.

ChlorKing® systems connected to a chemical feed controller will only operate when the controller is in feed mode.

NOTE: Make sure that the chemical feed controller is not set in proportional mode or system damage may occur. Ensure the controller has NO on/off times in the programming.

SYSTEM OPERATION

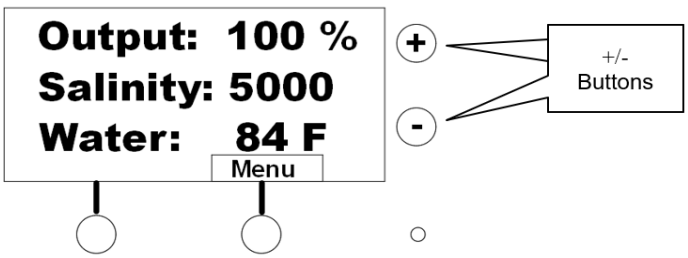
ChlorKing® systems operate when both the main power supply and blue control cord have power applied to them. The ChlorKing® system will continue to operate for as long as power is applied from those two sources.

The system has an output range of 5-100% of the rated chlorine production for the model installed and can be adjusted by turning the black knob on the side of power supply box in a clockwise or anti-clockwise direction or by pressing the +/- on the MSM models.

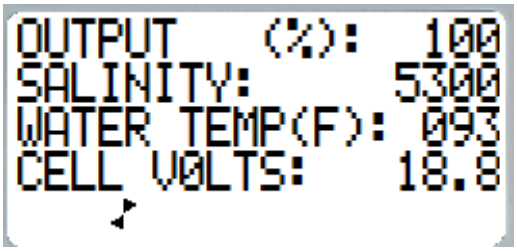
DISPLAY INFORMATION

Normal Operation
During normal operation the display will have the following information available:

MSM Models

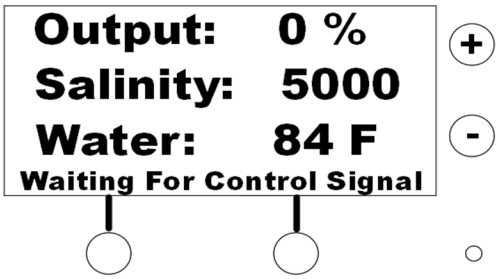


SM Models

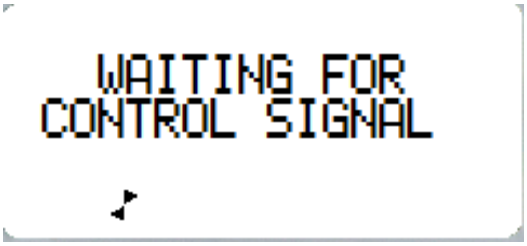


Waiting for Control Signal
This sceen is displayed when the system is waiting for a signal on the blue cord from an external source such as a chemical feed controller. The system will not generate chlorine until this signal is received.

MSM Models

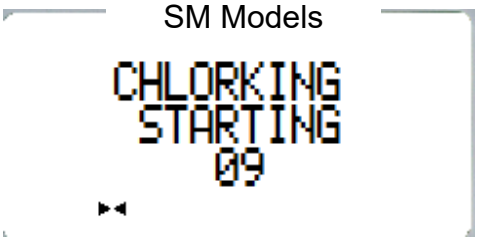


SM Models

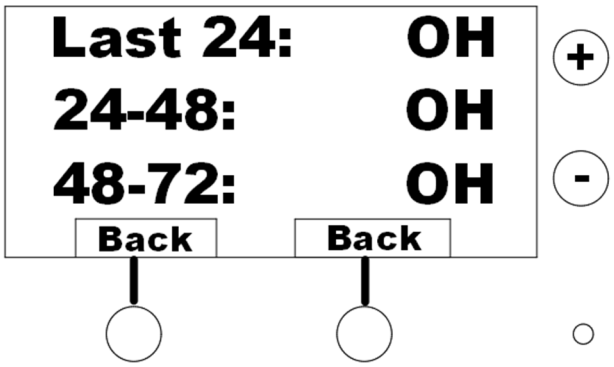


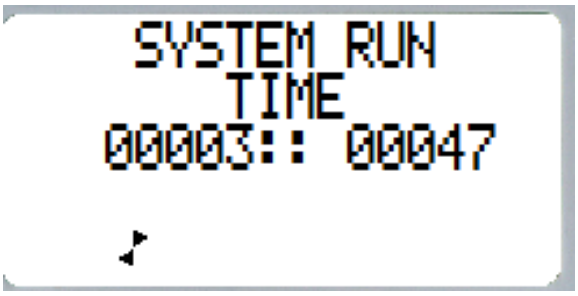
Countdown on Screen
SM models will display countdown before operation. In order to prevent the system from being cycled on and off rapidly, the system has start delay of 60 seconds. During this delay the screen below is displayed.

SM Models

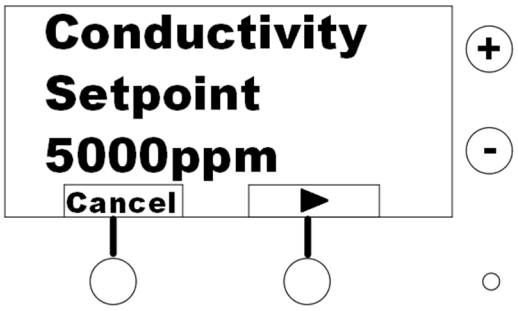


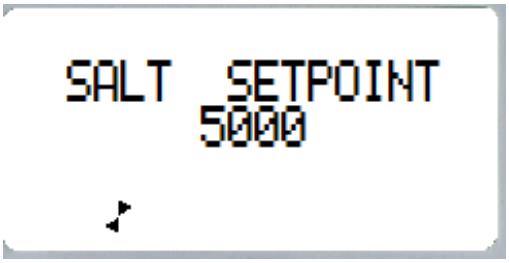
System Run Time
Daily system run time can be viewed on the MSM model by selecting Menu / Run Time. SM model by pressing and holding the “A” button on the microcontroller for 5 seconds.





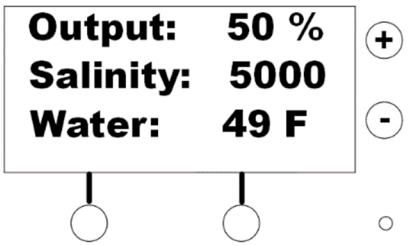
Salt Setpoint
This system is capable of controlling the salt concentration of the pool with the addition of an optional external relay. The factory set point for salt is 5000 ppm. The salt set point can be adjusted to any value between 3000 and 7000 ppm. To access the salt set point screen on the MSM, select Menu then Setpoint to adjust. For the SM model, press and hold the “B” button on the microcontroller for 5 seconds and use the up down buttons to adjust the salt set point.



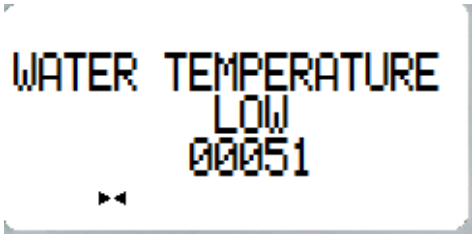


Low Temp
This screen will be displayed if water temperature drops below 59º F. The system will continue to generate chlorine. Prolonged operation at high system outputs and temperatures below 59º F is not recommended. Adjusting the system output to 50% or less will eliminate this screen. The MSM screen Temp display will flash.

MSM Models



SM Models



TROUBLESHOOTING

CONTACT TECHNICAL SUPPORT

Technical resources can be found at www.chlorking.com/tech or call 1-800-536-8180, option 1 to connect with technical support.

A customer service ticket can be submitted by using the Customer Service Form at www.chlorking.com/contact-us or by sending an email to techsupport@chlorking.com.

Technical support will need the system model number and system serial number to assist you. Please have these ready when you call. The model number and serial number are located on the data plate. The data plate is located on the left side of the power box and shown below.

ORDERING PARTS

Parts can be ordered at www.chlorking.com/replacement-parts, by emailing service@chlorking.com or by calling 1-800-536-8180.

You will need the system model number and system serial number to order parts. Please have these ready when you call. The model number and serial number are located on the data plate. The data plate is located on the left side of the power box and shown below.

Technical support continued on the next page.

Advanced troubleshooting support available within the QR Code:

Resources

TROUBLESHOOTING CHLOR

SCENERIO	POSSIBLE CAUSE	CORRECTIVE ACTION
Low Salt	Improper testing method	Confirm salt using a secondary method and add as directed by salt addition chart.
	Possible leak in the vessel	Consult leak detection for repair.
	Extreme dilution or backwash	Investigate daily & weekly procedures and correct as needed.
No Flow	Circulation Pump is OFF	Ensure circulation pump is flowing at the rated GPM.
	Inlet or Outlet Ball Valve to the Cell in OFF Position	Ensure the cell inlet and outlet ball valves are in the open position.
	Clogged Inlet Strainer	Isolate the cell by closing the ball valves and clean and inspect inlet strainer. Replace as needed.
	No Pressure Differential	Confirm the inlet and out to the cell have a pressure differential that supplies 20GPM to the cell inlet.
	Unplugged or Failed Flow Switch	Inspect the flow switch connection and replace as needed.
No Power to Display	Breaker in OFF position	Ensure breaker in the ON position.
	MSM Models, BLACK cord not in a live outlet	Use a voltmeter to confirm the outlet is 120v output.
Not at 100% Output	Turn CHLOR unit to 100&	For MSM models, use the + on the front display. For SM models, turn the potentiometer to 100%
	Failed Cell	See Advanced Troubleshooting Manual in QR Code.
PSU Overheat	No Flow Through the Cooling Lines	Ensure valves open to colling lines. Refer to Installation Instructions
	Failed Power Supply	See Advanced Troubleshooting Manual in QR Code.
Waiting for Control	Confirm blue cord is receiving signal from controller	Put controller into a manual feed Plug BLUE cord into a 120v outlet
	Failed Control Relay or Controller	See Advanced Troubleshooting Manual in QR Code.

MAINTENANCE

ChlorKing® systems are designed to operate 24 hours a day and 7 days a week at maximum production rates and will give you years of trouble free use if you follow these basic maintenance and cleaning instructions.

This system produces sodium hypochlorite from the salt added to the water. It will only continue to operate correctly if salt is maintained at a minimum level of 3500 ppm. Low salt will lower the amount of chlorine produced, and cause damage to the electrolytic cell.
Warranty's will not be honored if it is determined that salt has been run low.

The titanium plate life is dependent on run time and water conditions. Making certain the salinity is maintained at the correct level and the plates are cleaned as needed will result in the best performance.

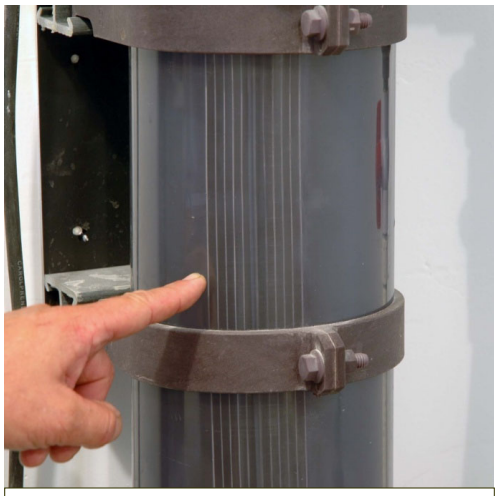
Maintain the CHLORSM by following STEPS 1 – 6:

1. **Check salt concentration.**
   Salt must be maintained between 3500 to 5000 ppm. Confirm the CHLOR salinity display reading with a manual salt test weekly. Adjust the salt concentration as needed to maintain the desired level. Reference salt addition chart on page 34.

2. **Test the flow switch for proper operation at least once a month.**
   To test the flow switch, close the lower cell isolation valve stopping flow to the cell. Immediately check to see if the system shut off. If the system does not shut off, immediately open the valve. **Do not allow the system to operate with the valve closed.** Replace a defective flow switch immediately.

3. **Clean the strainer as often as needed.**
   To clean the strainer, disconnect power from the system, close the lower cell isolation valve and then close the upper cell isolation valve. Unscrew the strainer cover. Allow pressure to release slowly. Remove the strainer screen, clean the screen and reinstall.

4. **Evaluate the cell condition weekly.**
   Visually inspect the cell tube for leaks and the cell stack for calcium build up. Check the connections at the top of cell and clean as needed. Clean when calcium build up is present. Instructions beginning on page 29.



This electrode stack is in excellent condition and does not require cleaning.

A cell stack with calcium bridged plates that requires cleaning.

5. **Visually inspect the power supply once every month.**
   Open the enclosure and visually check for any abnormal conditions such as burned wires, loose connections, or corrosion.

6. **Operate the system to verify performance once every month.**
   Turn the system on.
   Adjust the control knob to the full off position and note that the amps displayed on the meter go to zero.
   Adjust the control knob to the maximum position and verify that amps go to maximum.
   Adjust the control knob to the desired setting.

Instructions for Cleaning the Cell on the following Pages

WARNING

Read all cautions and directions provided with the muriatic acid used. Always add acid to water. Use only with adequate ventilation. If strong odor is noticed, STOP, ventilation is inadequate. Leave area immediately. If the work area is not well ventilated, you MUST use a properly fitted and maintained NIOSH approved respirator for acid fumes.

To clean the cell manually, disconnect power from the system, close the lower cell isolation valve and then close the upper cell isolation valve. Disconnect the cables from electrolytic cell. Remove the bolts holding the electrolytic cell stack in the cell tube and lift the cell out of the cell tube. Immerse the cell in a solution with a 4 to 1 water and muriatic acid mixture. Leave the cell in the muriatic acid solution until the cell is clean. Do not leave the cell in the muriatic acid solution any longer than necessary to clean the cell. Reassemble the cell stack in the tube and reconnect the cables to the top of the cell stack.

Instructions for Cleaning the Cell with ChlorKing® Acid Wash System

Acid Wash Operation

Turn off the power to the chlorinator to be serviced. Close the lower and upper cell tube ball valves [1] and [2]. Always close the lower ball valve [1] first to avoid damaging the cell tube.

Open the lower and upper acid wash ball valves [3] and [4]. Drain the water from the cell tube into a bucket. Connect the acid wash tank and pump to the acid wash valves [3] and [4] as shown.
Fill the acid wash tank with 4 gallons of water and 1 gallon of muriatic acid.

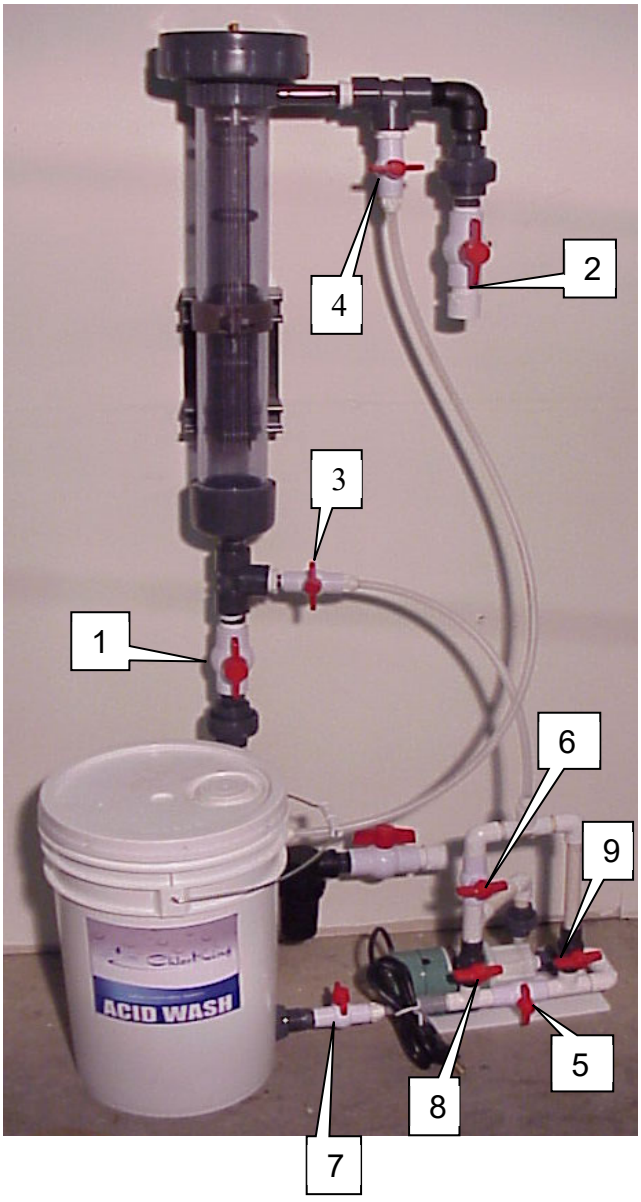
Open the white wash valves [5] and [6]. Open the tank feed valve [7].

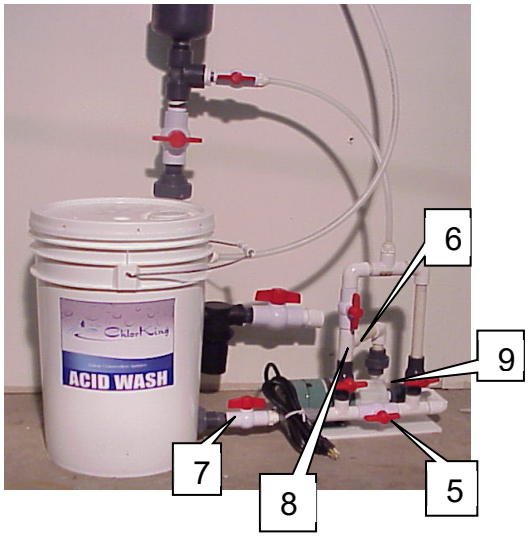
Plug the Acid Wash pump in to a 120 VAC source and start the wash cycle. Allow the pump to run until the cell is clean.

When the cell is clean, leave the Acid Wash pump running and open the grey drain valves [8] and [9] and close the white valves [5] and [6]. The cell tube will now drain into the wash tank. When the cell is empty, unplug the pump immediately. Do not let the pump run dry.

Close all acid wash valves [3], [4], [5], [6], [7], [8] and [9]. Open the 2 cell tube valves [1] and [2]. Restart the system.

NOTE: All acid wash valves must be closed prior to restarting the system or damage to the acid wash tank may occur.



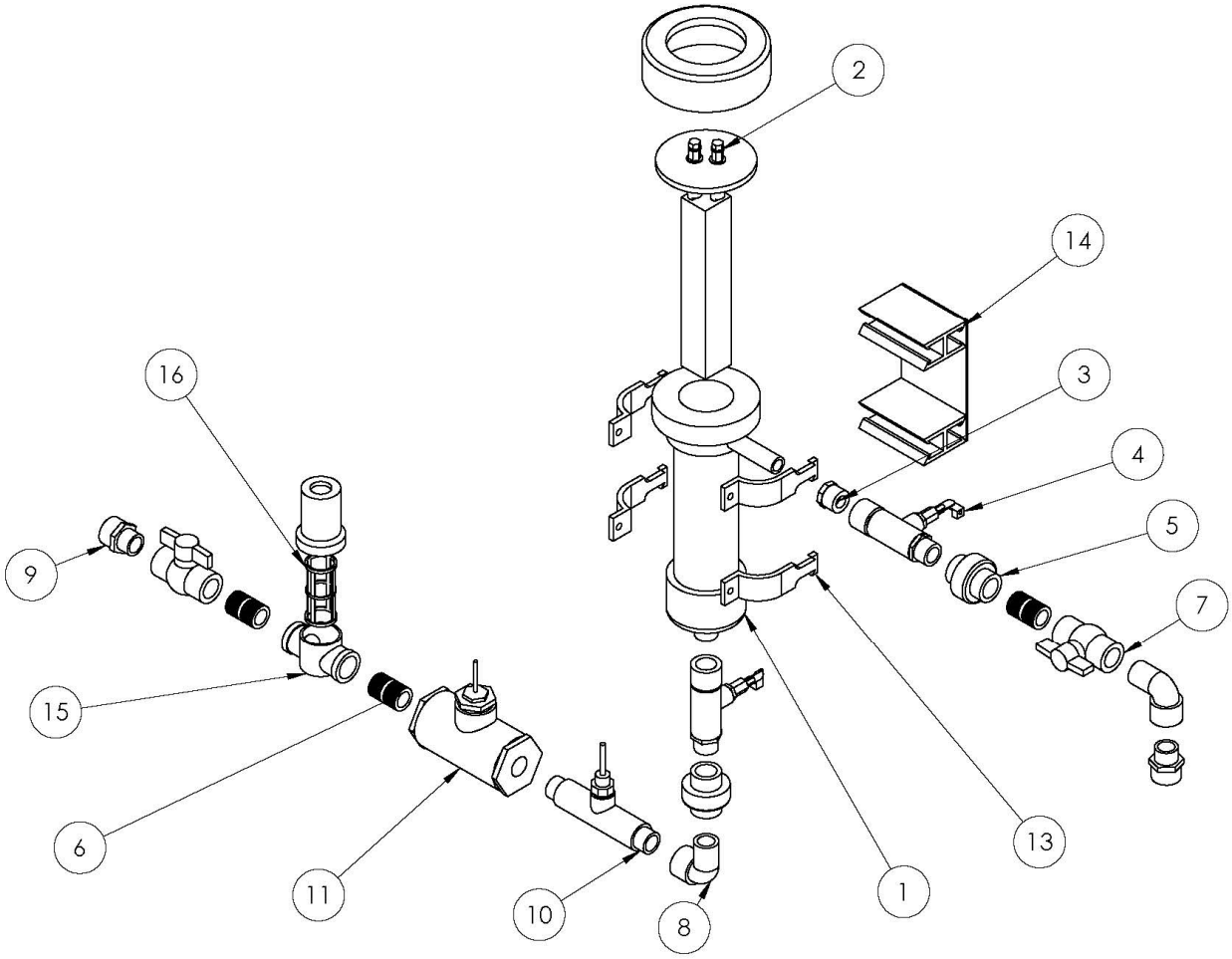


PARTS GUIDE

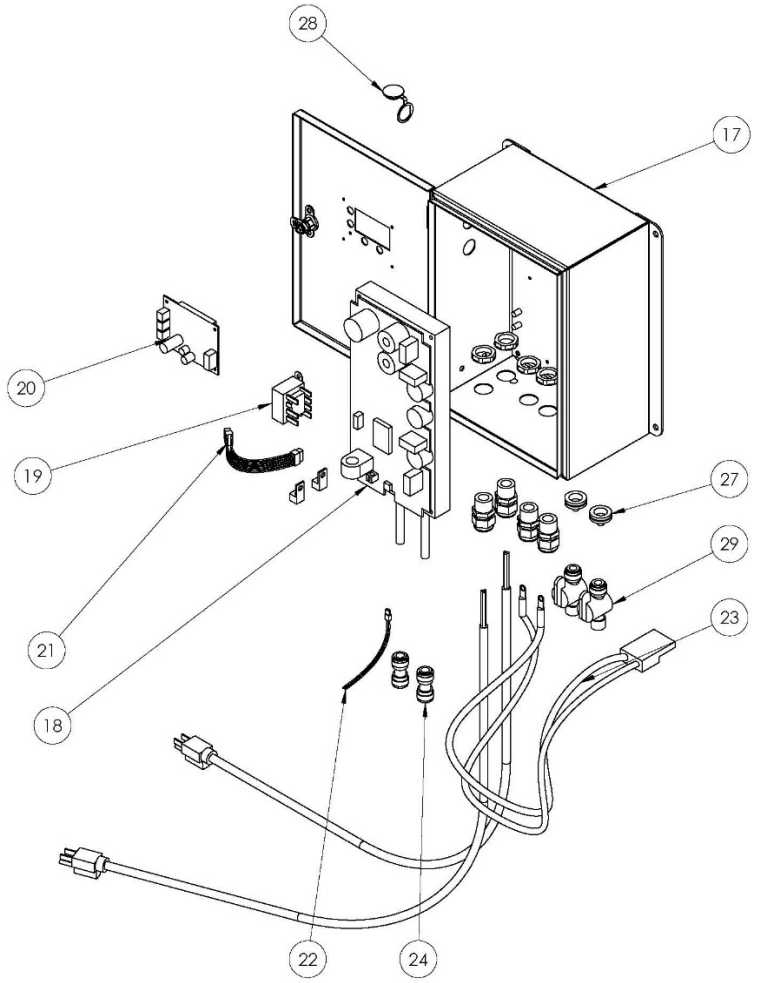
POWER SUPPLY TO CELL CHART

		POWER SUPPLY		
		KITPBAC600	KITPBAC1200	KITPBAC2400
CELL	2.0	◉		
	3.0	◉		
	5.0	◉		
	7.5		◉	
	10.0		◉	
	12.5		◉	
	15.0			◉
	20.0			◉
	25.0			◉

CHLOR2.0-3.0SM

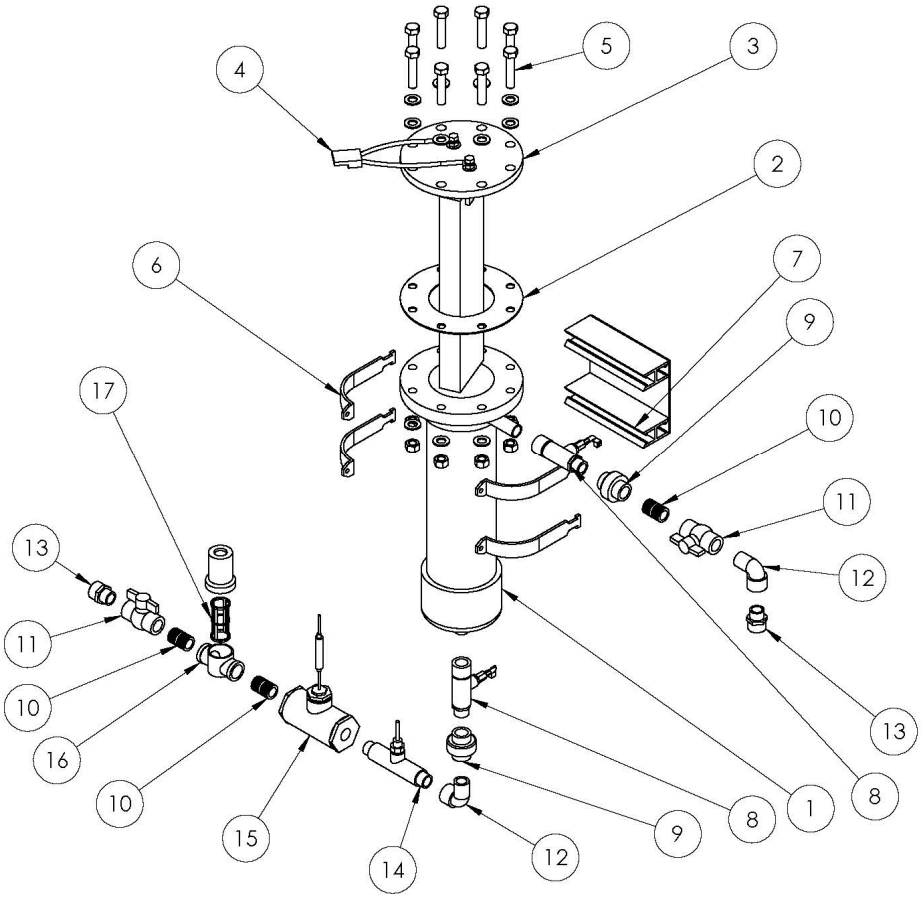


ITEM NO.	MODEL	PART NUMBER	DESCRIPTION	QTY.
1A	CHLOR 2.0SM	CH3MT	CELL HOUSING 3" MICRO	1
1B	CHLOR 3.0SM	CH3	CELL HOUSING 3"	1
2A	CHLOR 2.0SM	ESTK2.0T	ELECTRODE STACK 2.0T	1
2B	CHLOR 3.0SM	ESTK3.0MSM	ELECTRODE STACK 3.0MSM	1
3	ALL	439-131	3/4" X 1" BUSHING	1
4	ALL	CELLGROUND	CELL GROUND 1"	2
5	ALL	8058-010	PVC UNION SCH 80	2
6	ALL	884-020	PVC NIPPLE 1X2	3
7	ALL	QVC1010TSEW	PVC BALL VALVE 1 SCH40 T	2
8	ALL	SL100-90	ELBOW STREET 90 BANJO	2
9	ALL	436-010	PVC MALE ADAPTER 1"	2
10	ALL	FSKHARWILAMSC	FLOW SWITCH KIT	1
11	ALL	KITBEIN75MSC	COND SENSOR W/T & MSC	1
13	ALL	PCR300	AKENSTRUT 3"	2
14	ALL	BB3CELLE	BACK BOARD FOR CELL TUBE	1
15	ALL	RV19043	STRAINER 1"	1
16	ALL	10549	STRAINER SCREEN	1



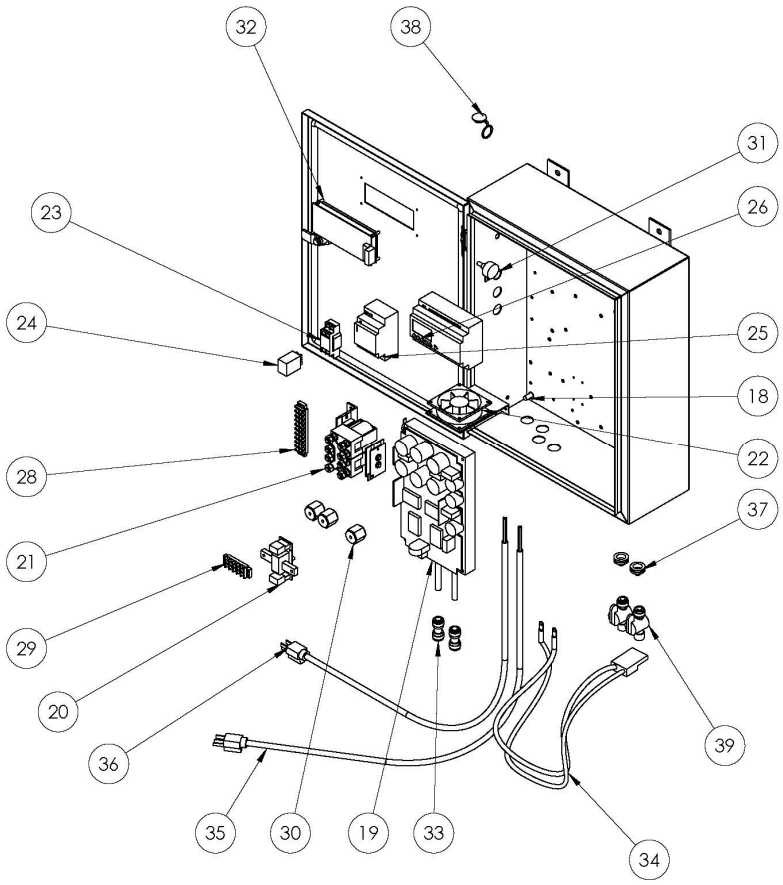
KITPBAC600

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
17	KITLHC233116	ENCLOSURE WITH DECALS	1
18	XA1S3825	POWER SUPPLY WATER COOLED	1
19	KITFD4240MSM	TRANSFORMER .250VA TRIAD	1
20	XDISP600	LCD FOR 600-WATT WATER COOLED	1
21	H600W10PC	HARNESS 600-WATT 10 PIN	1
22	H600W2P	HARNESS 600-WATT 2 PIN TMI	1
23	HRCSM600	HARNESS SWITCH MODE 600	1
24	PP0412W	PP UNION 3/8 X 3/8 TUBE	2
25	1830060-BLU-10	POWER CORD 18AWG BLUE	1
26	123MSJTOW4	POWER CORD 12AWG BLACK	1
27	U952231-100	GROMMET	2
28	GCE4295	COVER, PANEL MOUNT	1
29	PPSV011223W	PP VALVE 3/8 TUBE X 3/8 NPT	2



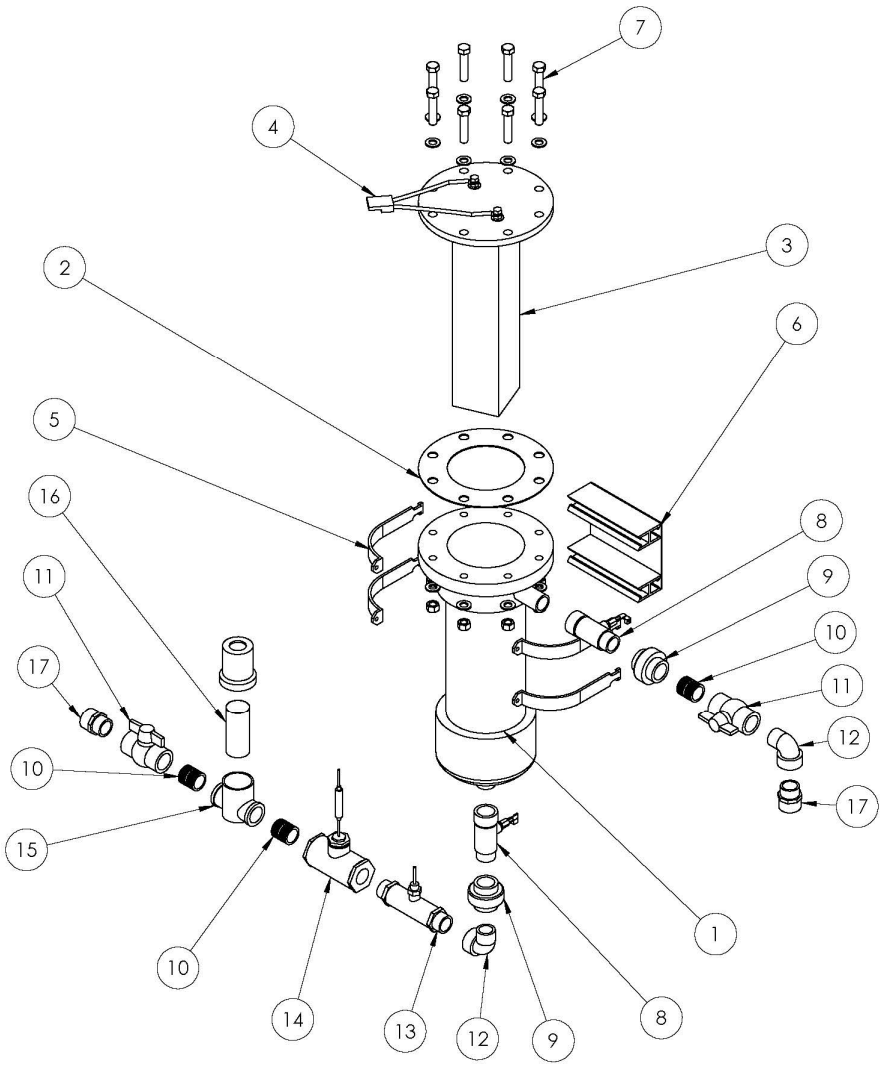
CHLOR5.0-15.0SM

ITEM NO.	MODEL	PART NUMBER	DESCRIPTION	QTY.
1A	5.0	CH6M	CELL TUBE	1
1B	7.5, 10.0, 12.5, 15.0	CH6	CELL TUBE	1
2	ALL	NR201-060	GASKET 6 NEOPRENE RUBBER	1
3A	5.0	ESTK5.0MSM	ELECTRODE STACK 5.0MSM	1
3B	7.5	ESTK7.5SM	ELECTRODE STACK 7.5SM	1
3C	10.0	ESTK10SM	ELECTRODE STACK 10SM	1
3D	12.5	ESTK12.5SM	ELECTRODE STACK 12.5SM	1
3E	15.0	ESTK15.0SM	ELECTRODE STACK 15.0SM	1
4A	5.0	KITHCHSM600	HARNESS TO POWER SUPPLY	1
4B	7.5, 10.0, 12.5	KITHCHSM1200	HARNESS TO POWER SUPPLY	1
4C	15.0	KITCHSM2400	HARNESS TO POWER SUPPLY	1
5	ALL	KITSSBOLT	BOLT KIT FOR CELL TUBE	1
6	ALL	PCR600	AKENSTRUT CLAMP 6	2
7	ALL	BB6CELL	BACK BOARD FOR CELL TUBE	1
8	ALL	CELLGROUND	CELL GROUND 1"	2
9	ALL	8058-010	PVC UNION SCH 80	2
10	ALL	884-020	PVC NIPPLE 1X2	3
11	ALL	QVC1010TSEW	PVC BALL VALVE 1 SCH40 T	2
12	ALL	SL100-90	ELBOW STREET 90 BANJO	2
13	ALL	436-010	PVC MALE ADAPTER 1"	2
14	ALL	FSKHARWILAMSC	FLOW SWITCH KIT	1
15	ALL	KITBEIN75110MSC	CONDUCTIVITY SENSOR W/T & MSC	1
16	ALL	RV19043	STRAINER 1"	1
17	ALL	10549	STRAINER SCREEN	1



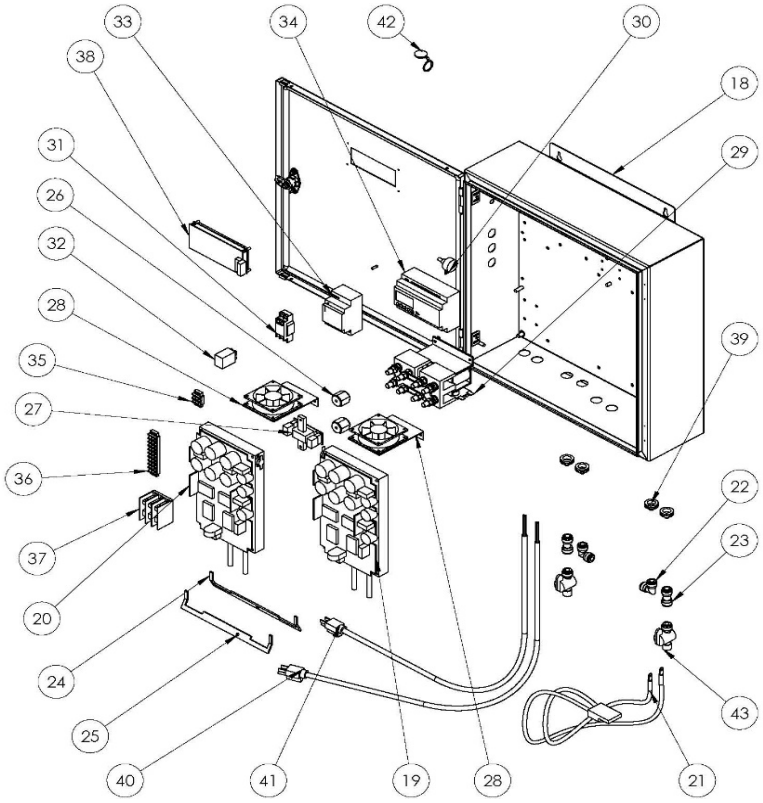
KITPBAC1200

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
18	KITCSD20166LG	ENCLOSURE WITH DECALS	1
19	KITXA1S3772	POWER SUPPLY SM 24V 50A 1200W	1
20	XXCVC	CONTROLLER CURRENT/VOLTAGE	1
21	SW822-40	CONTACTOR 120 AC 100 AMP REVERSE	1
22	F8025H24B-FSR	FAN 80 X 25 24 VOLT DC	1
23	27E895	RELAY SOCKET DIN RAIL DPDT	1
24	LY2AC110120	RELAY 120V 10A DPDT	1
25	DSP30-24	POWER SUPPLY 30W 24V DC	1
26	88974161	CONTROLLER XD26 24VDC M3	1
27	TB100-10SP	TERMINAL BLOCK 10 POS 18AWG	1
28	TB100-05SP	TERMINAL BLOCK 5 POS 18AWG	1
29	2165	STANDOFF LARGE	3
30	KITPOTSERVICESM2400	POTENTIOMETER / RHEOSTAT	1
31	LCD204	LCD DISPLAY	1
32	PP0412W	PP UNION 3/8 X 3/8 TUBE	2
33	HRCSM1200	HARNESS TO CELL	1
34	1830060-BLU-10	POWER CORD 18AWG BLUE	1
35	123MSJTOW4	POWER CORD 12AWG BLACK	1
36	U952231-100	GROMMET	2
37	GCE4295	COVER, PANEL MOUNT	1
38	PPSV011223W	PP VALVE 3/8 TUBE X 3/8 NPT	2
39*	KITLCD204HARNESS	CABLE TO LCD DISPLAY (NOT SHOWN)	1
40*	PKES90B1/4	REPLACEMENT POTENTIOMETER KNOB (NOT SHOWN)	1



CHLOR20.0-25.0SM

ITEM NO.	MODEL	PART NUMBER	DESCRIPTION	QTY.
1	ALL	CH8	CELL TUBE	1
2	ALL	NR201-080	GASKET 8 NEOPRENE RUBBER	1
3A	CHLOR 20.0SM	ESTK20.0SM	ELECTRODE STACK 20.0SM	1
3B	CHLOR 25.0SM	ESTK25.0SM	ELECTRODE STACK 25.0SM	1
4	ALL	KITCHSM2400	HARNESS TO POWER SUPPLY	1
5	ALL	PCR800	AKENSTRUT CLAMP 8	2
6	ALL	BB8CELL	BACK BOARD FOR CELL TUBE	1
7	ALL	KITSSBOLT	BOLT KIT FOR CELL TUBE	1
8	ALL	CELLGROUND112	CELL GROUND 1-1/2"	2
9	ALL	8058-015	PVC UNION 1-1/2"	2
10	ALL	886-020	PVC NIPPLE 1-1/2 X 2	3
11	ALL	QVC1015TSEW	PVC BALL VALVE 1-1/2"	2
12	ALL	SL150-90	ELBOW STREET 90 1-1/2" BANJO	2
13	ALL	FSKHARWIL112MSC	FLOW SWITCH ASSEMBLY 1-1/2"	1
14	ALL	KITBEIN75110MSC112	CONDUCTIVITY SENSOR W/T & MSC 1-1/2"	1
15	ALL	98775K59	STRAINER 1-1/2"	1
16	ALL	98775K401	REPLACEMENT SCREEN	1
17	ALL	436-015	PVC MALE ADAPTER 1"	2



KITPBAC2400

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
18	KITCSD20206LG	ENCLOSURE WITH DECALS	1
19	KITXA1S37722400RIGHT	POWER SUPPLY SM 24V 50A 1200W RIGHT	1
20	KITXA1S37722400LEFT	POWER SUPPLY SM 24V 50A 1200W LEFT	1
21	HRCSM2400	HARNESS TO CELL	1
22	PP0312W	POLYPROPYLENE UNION ELBOW CONNECTED WITH TUBING	2
23	PP0412W	PP UNION 3/8 X 3/8 TUBE	2
24	BUSSBARSMN2400	BUSS BAR SWITCH MODE NEGATIVE 2400	1
25	BUSSBARSMP2400	BUSS BAR SWITCH MODE POSITIVE 2400	1
26	2165	STANDOFF LARGE	2
27	XXCVC	CONTROLLER CURRENT/VOLTAGE	1
28	F8025H24B-FSR	FAN 80 X 25 24 VOLT DC	2
29	SU192-21	CONTACTOR 240AC 300 AMP REVERSE	1
30	KITPOTSERVICESM2400	POTENTIOMETER / RHEOSTAT	1
31	27E895	RELAY SOCKET DIN RAIL DPDT	1
32	LY2AC110120	RELAY 120V 10A DPDT	1
33	DSP30-24	POWER SUPPLY 30W 24V DC	1
34	88974161	CONTROLLER XD26 24VDC M3	1
35	TB100-02SP	TERMINAL BLOCK 2 POS 18AWG	1
36	TB100-10SP	TERMINAL BLOCK 10 POS 18AWG	1
37	1413400	TERMINAL BLOCK 3 POLE 115A600V	1
38	LCD204	LCD DISPLAY	1
39	U952231-100	GROMMET	4
40	1830060-BLU-10	POWER CORD 18AWG BLUE	1
41	123MSJTOW4	POWER CORD 12AWG BLACK	1
42	GCE4295	COVER, PANEL MOUNT	1
43	PPSV011223W	PP VALVE 3/8 TUBE X 3/8 NPT	2
44*	KITLCD204HARNESS	CABLE TO LCD DISPLAY (NOT SHOWN)	1
45*	PKES90B1/4	REPLACEMENT POTENTIOMETER KNOB (NOT SHOWN)	1

ACCESSORIES

PART NUMBER	COMPONENT	DESCRIPTION
CHLORKING5000TDS-WV	TDS Controller	The ChlorKing® 5000 TDS Controller automates the process of controlling Total Dissolved Solids (TDS).
CHLORKING 5000 HHS	Salt Meter	The ChlorKing® 5000 HHS is a handheld, digital toroidal salt tester.
PUMPBOOSTER	Booster Pump	Booster pump HP determined by return line pressure.
SSFEEDER30S	Brine Tank	Used to introduce salinity back-of-house. Requires a CHLORKING5000RB and a PUMPSF5.
PUMPSF5	Brine Pump	Used to introduce salinity back-of-house. Requires a CHLORKING5000RB and SSFEEDER.
CHLOR5000RB	Relay Box	Relay box to introduce salinity back-of-house. Requires a SSFEEDER30S and a PUMPSF5.

Visit www.chlorking.com to view other products available

CHLORSM	The CHLORSM is designed for commercial swimming pool applications and is capable of producing up to 28 pounds of equivalent chlorine per day with 3,500 to 5,000 ppm salinity in the body of water.
LOW PRESSURE HIGH OUTPUT UV	The Sentry Aqua Guard system is a low pressure, high output, amalgam, ultraviolet light sterilizer. Available in Supplemental or Secondary disinfection.
NEXGEN	On-Ste sodium hypochlorite generator designed for commercial swimming pool application. The NEXGEN is capable of producing up to 120lbs of chlorine per day and can treat up to six bodies of water.

WARRANTY INFORMATION

The ChlorKing® system carries a limited 3-year warranty.

1. 3-year warranty on assembly of the system.
2. 1 year on all electrical items, cell tubes, and production tanks.
3. 2 years pro-rated monthly, on titanium electrodes. (Year 1 is warranted fully, thereafter pro-rated warranty applies, applicable over the full 2-year period. Applicable on electrode stacks where full price has been paid).

- **ChlorKing®** advises that titanium electrodes will have to be replaced based on operating run time and water conditions.

- **ChlorKing®** warranties will not be honored should it be shown that the operating and maintenance procedures have not been followed, particularly with regard to the cleaning frequency program.

- **ChlorKing®** warranties of the titanium electrodes will not be honored if the system is operated in water temperatures lower than 59 degrees F.

- During the warranty period the customer shall return the defective component, freight prepaid, accompanied by the original invoice or proof of purchase, and **ChlorKing®** shall at its sole discretion elect to repair or replace the defective component and return it to the customer, freight pre-paid.

ChlorKing® accepts no responsibility other than to repair or replace a defective component, and this warranty specifically excludes product failure due to accidental damage, abuse, misuse, and negligence, damage due to non-compliance of the operating manual or unauthorized alterations or modifications to the system. **ChlorKing®** accepts no responsibility and is not liable for any extended warranties or variations to this warranty offered by re-sellers of **ChlorKing®** systems.

SALINITY ADDITION CHART

Pounds of Sodium Chloride Needed To Be Added To Achieve 5000 PPM

Gallons of Pool or Spa Water

PPM LEVEL OF SALINTY	1,000	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000
0	42	83	167	250	333	417	500	583	665	750	833	916	1000	1083	1166	1250
200	40	80	160	240	320	400	480	560	640	750	800	880	960	1040	1120	1200
400	38	77	153	230	307	383	460	537	613	669	766	843	920	996	1073	1150
600	37	73	147	220	293	367	440	513	587	660	733	806	880	953	1026	1100
800	35	70	140	210	280	350	420	490	560	630	700	770	840	910	980	1050
1000	33	67	133	200	267	333	400	467	533	600	665	733	800	866	933	1000
1200	32	63	127	190	253	317	380	443	507	570	633	696	760	823	886	950
1400	30	60	120	180	240	300	360	420	480	540	600	660	720	780	840	900
1600	28	57	113	170	227	283	340	397	453	510	567	623	680	736	793	850
1800	27	53	107	160	213	267	320	373	427	480	533	587	640	693	746	800
2000	25	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750
2200	23	47	93	140	187	233	280	327	373	420	467	513	560	606	653	700
2400	22	43	87	130	173	217	260	303	347	390	433	477	520	563	606	650
2600	20	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600
2800	18	37	73	110	147	183	220	257	293	330	367	403	440	477	513	550
3000	17	33	67	100	133	167	200	233	267	300	333	367	400	433	467	500
3200	15	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450
3400	13	27	53	80	107	133	160	187	213	240	267	293	320	347	373	400
3600	12	23	47	70	93	117	140	163	187	210	233	257	280	303	327	350
3800	10	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
4000	8	17	33	50	67	83	100	117	133	150	167	183	200	217	233	250
4200	7	13	27	40	53	67	80	93	107	120	133	147	160	173	187	200
4400	5	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
4600	3	7	13	20	27	33	40	47	53	60	67	73	80	87	93	100
4800	2	3	7	10	13	17	20	23	27	30	33	37	40	43	47	50
5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Warranty Registration Card

Please complete and return to activate ChlorKing® warranty
Please mail or fax to ChlorKing® inc. P.O. Box 80823, Atlanta, GA, 30366 Fax: 770-685-6576

Dealer Name: _____

Address:_____City:_____

State: _____Zip:_____Tel:_____

Installation site of equipment:_____

Address:_____City:_____

State: _____Zip:_____

Date of purchase:_____ Serial number:_____

1. Pool size:_____ 2. Pool finish:_____

3. Indoor / Outdoor:_____ 4. Heated: Yes / no

5. Filter Type:_____ 6. Pool Age:_____

7. New or existing pool:_____ 7. Controller installed: Yes / No

8. If controller installed, what make and model: _____