



USER'S GUIDE

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INTRODUCTION

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EPA Est. # 082229-GA-001
NSF-50 / UL-1081 listed*

Congratulations on purchasing your new **ChlorKing®** saline chlorination system, we trust that this system will offer you the ultimate in swimming environments, and give you years of trouble free operation.

This user's manual will explain in detail the operation of your new system, as well as water chemistry guides, warranty information, and much more.

If at any time you need additional information on your system, please feel free to contact us.

ChlorKing® models available:



*Mini-1.25	(1.25lbs / day)	Classic-1.5	(1.5lbs / day)
*Mini-2.0	(2.0lbs / day)	Classic-2.5	(2.5lbs / day)
*Mini-2.5	(2.5lbs / day)	Classic-3.5	(3.5lbs / day)
		Classic-5.0	(5.0lbs / day)
*Chlor-1.5	(1.5lbs / day)	Classic-7.5	(7.5lbs / day)
*Chlor-2.5	(2.5lbs / day)	Classic-10	(10lbs / day)
*Chlor-3.5	(3.5lbs / day)	Classic-15	(15lbs / day)
*Chlor-5.0	(5.0lbs / day)	Classic-10	(20lbs / day)
*Chlor-7.5	(7.5lbs / day)	Classic-25	(25lbs / day)
*Chlor-10	(10lbs / day)		
*Chlor-15	(15lbs / day)		
*Chlor-20	(20lbs / day)		
*Chlor-25	(25lbs / day)		

(Lbs / day production based on amount of equivalent chlorine produced in 24 hours)

(*Mini & *Chlor systems feature reverse polarity which reduces the frequency of manual cleaning required)

WARRANTY INFORMATION

The **ChlorKing®** system carries a limited 3 year warranty

1. 3 year warranty on assembly of electrical components and cell housing.
 2. 1 year on all electrical items.
 3. 2 years or 15,000 hours, which ever occurs first, pro-rated hourly, on titanium electrodes. (Year 1 is warranted fully, thereafter pro-rated warranty applies, applicable over the full 2 year period)
- **ChlorKing®** advises that titanium electrodes will have to be replaced every 15,000 hours of operating time. Under no circumstances shall the replacement titanium electrodes exceed the original 15,000 hour warranty.
 - **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 correct maintenance of salt concentration and water chemistry.
 - **ChlorKing®** warranties of the titanium electrodes will not be honored if the system is operated in water temperatures lower than 59 degrees F.
 - **ChlorKing®** warranties of the titanium electrodes will not be honored if the system is operated in water where the salt concentration is lower than 3000 ppm.
 - 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 it's 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, 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.

SAFETY INFORMATION

PLEASE READ THE FOLLOWING SAFETY INFORMATION CAREFULLY!

WARNING!

- Only a certified technician may install and service your **ChlorKing®** system.
- Modifying your **ChlorKing®** system in anyway may cause bodily injury and will void your warranty.
- Do not allow children to operate your **ChlorKing®** system.
- Only replace components with those specified by manufacturer.
- When installing your system, ensure that power is linked to the main pump power source for the pool to ensure that your **ChlorKing®** system never operates when the pumps are off.
- All boxes on your **ChlorKing®** system contain high voltage components. Never open any box while power is “on”.

PREPARING YOUR WATER BEFORE INSTALLATION

ChlorKing® saline chlorination systems operate by utilizing the sodium chloride that has been added to the pool water, to produce sodium hypochlorite (liquid chlorine), through the process of electrolysis.

In order for your **ChlorKing®** system to operate correctly, sodium chloride (salt) must be added directly to the pool at least 24 hours before the installation of the equipment.

40lbs of sodium chloride must be added for every 1,000 gallons of pool water (ie: a 50,000-gallon pool will require 50 x 40lb bags of salt for start-up).

It is best to add the salt around the pool, and not load all salt in one section. Once the salt has been added, brush the surface of the pool continuously until the salt has all dissolved. You must never leave large amounts of salt on the surface of the pool, as this may cause damage to the pool surface.

When you add the initial load of salt, you will need to add additional chlorine, as the salt will cause a chlorine demand.

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:	4500 – 5500 ppm
Cynuric 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.

(Note that most conductivity testers require frequent calibration to ensure accurate readings, failure to calibrate the equipment will result in inaccurate readings.)

TOOLS AND PARTS REQUIRED FOR INSTALLATION

Your **ChlorKing®** system will include an installation kit comprising of the following items:

Description	Qty
Strainer 1" clear bowl with 20 mesh	1
PVC 1" ball valve Sch. 40	2
PVC 1" male adaptor Sch. 40	4
PVC nipple 1" x 2" SCH 80	2
PVC bushing 1" x 3/4" Threaded	1
PVC union 1" S EPDM w/o O-ring Sch. 80 threaded	2
Akenstrut clamps 3", 6" or 8"	2
Polypropylene valve, speed fit 3/8 x 3/8 NPTF	2
Elbow street 90, SCH 80 1"	2
Salt test strips	1

**** The CHLOR-25 system will comprise of 1½" installation kits.**

Additionally you will need the following items, not included, to complete the installation:

- 3/8" Polypropylene tubing
- 1" Flex PVC tubing
- Wall anchors
- Disconnect box, fuse box, conduit, wiring and related material to supply 220v to systems (220v systems only)

The following tools will be required to complete the installation:

Power Tools

Drill
Hammer Drill

Hand Tools

Set of sockets up to 1 1/16"
Hammer
Screw Drivers – Flat & Phillips
Wire Strippers
PVC Cutters to 1 1/4"
24" Level
2 x 8" slip joint pliers
Crescent wrench
3/4" wrench
9/16" wrench
Black Electrical Tape

Drill Bits

1 1/8" hole saw
9/16" paddle bit
Steel bit drill set
1/4" mason bit

Taps

1" NPT
3/8" NPT

Hand Tools cont..

Tape Measure
Teflon Tape
Allen Wrenches
True RMS Clamp Meter
Wire Cutters

PLUMBING YOUR SYSTEM

Your **ChlorKing®** system can be plumbed using two different methods. Both will work fine, however, the following must be taken into account before making the decision of what method to use.

1. Your **ChlorKing®** system requires a minimum of 20gpm of flow through the cell to produce the rated amount of chlorine. Be sure that if you use the pressure drop plumbing method [1] you have sufficient pressure drop across your filter to adequately flow 20gpm through the cell.
2. When using the pressure drop plumbing method [1], you are sending un-filtered water through the cell, so you need to ensure that you clean the included strainer at least 1 time per week to remove any debris. Failure to clean the strainer will result in a lack of flow, reducing chlorine production, and ultimately reducing flow to the point that the flow switch de-activates the system.
3. If you elect to use the bypass plumbing method [2], you will need to purchase a butterfly valve based on the size of the pipe you are using. This can sometimes be cost prohibitive, but the upside of this plumbing method is that you are sending filtered water through the cell, which reduces the frequency of needing to clean the strainer. Bypass plumbing method [2] also generally allows for more flow through the cell, which is recommended.
4. Remember, always ensure that the return line from the **ChlorKing®** cell is plumbed after the heater. **Never** plumb the return line before the heater as you will be sending a high ppm of chlorine through heater, which may cause damage.
5. No matter which plumbing method you use, you will always have to plumb the 3/8" cooling line into box 3 (rectifier) using filtered water. This cooling line allows the heat sink in box 3 to cool the critical components.

PRESSURE-DROP PLUMBING METHOD [1]

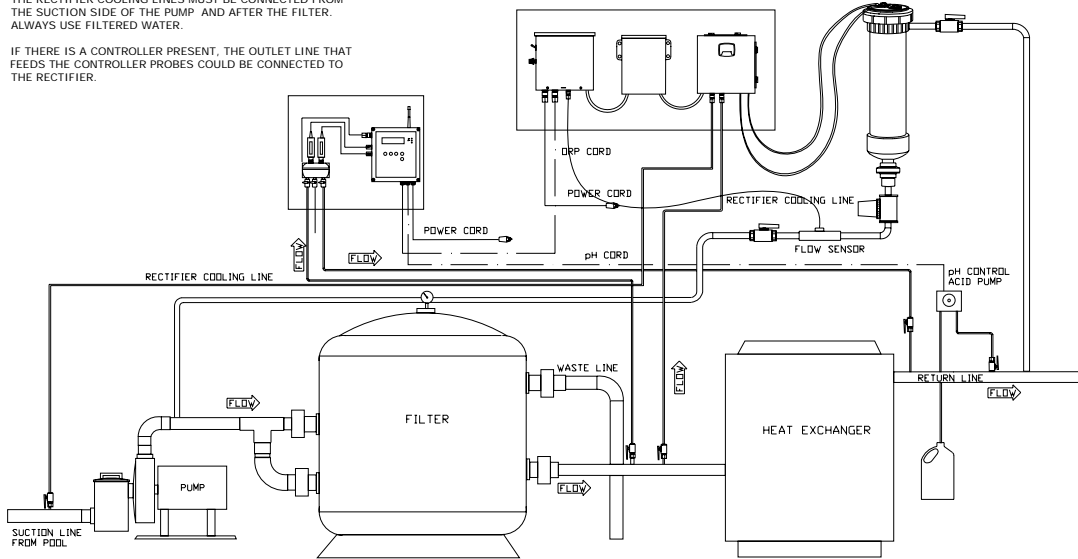
ChlorKing® power supply

ChlorKing® cell

NOTES:

THE RECTIFIER COOLING LINES MUST BE CONNECTED FROM THE SUCTION SIDE OF THE PUMP AND AFTER THE FILTER. ALWAYS USE FILTERED WATER.

IF THERE IS A CONTROLLER PRESENT, THE OUTLET LINE THAT FEEDS THE CONTROLLER PROBES COULD BE CONNECTED TO THE RECTIFIER.



BYPASS MANIFOLD PLUMBING METHOD [2]

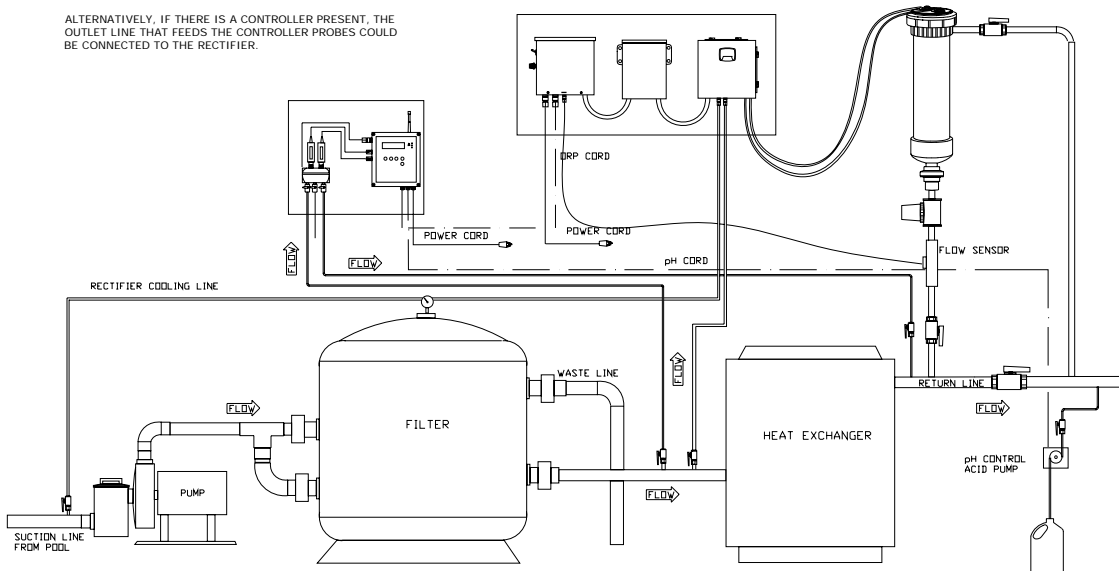
ChlorKing® power supply

ChlorKing® cell

NOTES:

THE RECTIFIER COOLING LINES MUST BE CONNECTED FROM THE SUCTION SIDE OF THE PUMP AND AFTER THE FILTER. ALWAYS USE FILTERED WATER.

ALTERNATIVELY, IF THERE IS A CONTROLLER PRESENT, THE OUTLET LINE THAT FEEDS THE CONTROLLER PROBES COULD BE CONNECTED TO THE RECTIFIER.



ELECTRICAL SPECIFICATIONS

Each **ChlorKing®** model has very specific wiring requirements based on its line voltage and amperage draw.

- Models that operate at 120v line voltage will have two cables from box 1 (power box) One is labeled 120v and the other ORP. Simply plug the 110v cord into a regular 120v power outlet that is linked to the pump power source and is active only when the pump is running, and plug the ORP cord into the outgoing ORP pigtail from your automatic controller. If you do not have a controller simply plug the cord labeled ORP into another 120v power outlet.
- Models that operate at 208 – 240v require more advanced wiring, which should only be done by a qualified electrician. 208 – 240v power needs to be run from your main breaker panel to a safety switch, then into the **ChlorKing®** main power box 1. As above, the cord labeled ORP must be plugged into a controller, or a 120v outlet.
- Your **ChlorKing®** system **must** be wired to the main pump power supply, so that if the pump is shut down, the power to your **ChlorKing®** system is lost.

The table on the following page shows each **ChlorKing®** model with its required line voltage, amperage draw, and breaker required.

ELECTRICAL SPECIFICATIONS AND FUSE SIZING

MODEL:	MAX PRIMARY AC AMPS	SYSTEM INPUT VOLTAGE	BREAKER REQUIRED
Mini-1.25	2.5	110v	10amp
Mini-2.0	3.5	110v	10amp
Mini-2.5	4.5	110v	10amp
Chlor-1.5	6.9	110v	20amp
Chlor-2.5	9.9	110v	20amp
Chlor-3.5	13.8 / 6.9	110v / 220v	20amp
Chlor-5.0	9.9	110v	20amp
Chlor-7.5	6.9	208 – 240v	20amp
Chlor-10	9.9	208 – 240v	20amp
Chlor-15	14.9	208 – 240v	30amp
Chlor-20	18.5	208 – 240v	30amp
Chlor-25	20.9	208 – 240v	30amp
Classic-1.5	5.5	110V	20amp
Classic-2.5	8.5	110V	20amp
Classic-3.5	5.8	208 – 240V	20amp
Classic-5.0	7.9	208 – 240V	20amp
Classic-7.5	7.9	208 – 240V	20amp
Classic-10	9.9	208 – 240V	20amp
Classic-15	14.9	208 – 240V	30amp
Classic-20	20.5	208 – 240V	30amp
Classic-25	24.5	208 – 240V	30amp

Fuse sizing:

Model	Fuse size and type
Mini-1.25	10amp slow blow glass fuse
Mini-2.0	10amp slow blow glass fuse
Mini-2.5	10amp slow blow glass fuse
Chlor-1.5	12amp dual element, slow blow, RK5 fuse
Chlor-2.5	15amp dual element, slow blow, RK5 fuse
Chlor-3.5	12 / 20 amp dual element, slow blow, RK5 fuse
Chlor-5.0	15amp dual element, slow blow, RK5 fuse
Chlor-7.5	15amp dual element, slow blow, RK5 fuse
Chlor-10	15amp dual element, slow blow, RK5 fuse
Chlor-15	25amp dual element, slow blow, RK5 fuse
Chlor-20	30amp dual element, slow blow, RK5 fuse
Chlor-25	30amp dual element, slow blow, RK5 fuse
Classic-1.5	10amp dual element, slow blow, RK5 fuse
Classic-2.5	15amp dual element, slow blow, RK5 fuse
Classic-3.5	10amp dual element, slow blow, RK5 fuse
Classic-5.0	10amp dual element, slow blow, RK5 fuse
Classic-7.5	15amp dual element, slow blow, RK5 fuse
Classic-10	15amp dual element, slow blow, RK5 fuse
Classic-15	25amp dual element, slow blow, RK5 fuse
Classic-20	30amp dual element, slow blow, RK5 fuse
Classic-25	30amp dual element, slow blow, RK5 fuse

STARTING THE SYSTEM

Once your **ChlorKing®** system has been successfully wired and plumbed, it is ready for use.

- Make sure that the valves to and from the cell are in the open position.
 - Make sure that you have water flowing through the water-cooled heat sink in box 3.
 - Ensure that the cord labeled ORP is either plugged into a controller or directly into a 110v outlet
1. In 110v systems, move the toggle switch located on the side of box 1, to the “on” position. With 220v systems, move the safety switch to the “on” position.
 2. Wait 10 seconds for the system to respond.
 3. Turn the black knob on the side of box 1 clockwise, and watch the amp or voltmeter on box 3 slowly increase.

(If your system is linked to an automatic ORP controller, we suggest you turn the system to maximum, which will allow for full production every time the controller calls for it. If you are running your system manually you will need to find the point at which you keep a satisfactory level of chlorine in the water. It may take several days to find this point.

- If your **ChlorKing®** system is linked to an automatic controller, remember that it will only work when the controller is in feed mode. It is also a good idea to make sure that your controller is not set in proportional band mode, instead try using double set point control (if your controller supports this function). An example of this is if you want to maintain a 700 ORP, have the controller set to turn on at 695 ORP and turn off at 705 ORP, that way your **ChlorKing®** system is not switching on and off all the time.

(Call the manufacturer of your controller to discuss how best to set your system up when working with a saline chlorination system. Most controllers also require a “gold tip” ORP probe when working with a saline chlorination system.)

GENERAL OPERATION

Your **ChlorKing®** system operates when power is activated by the main pumps, and from your ORP controller, and 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 that model, and can be adjusted by turning the black knob of the side of box 1 in a clockwise or anti-clockwise motion. Each model has a separate maximum operating amperage, as listed below. When adjusting the control knob on the side of box 1, you will notice the amperage needle of the gauge on box 3 increases or decreases.

Higher amperage = higher chlorine production.

The table below lists all available **ChlorKing®** models with each maximum amps and normal operating volts. (Both amps and volts are DC)

Mini-1.25	6.25amps @ 15v	Classic-1.5	30amps @ 5v
Mini-2.0	10amps @ 15v	Classic-2.5	50amps @ 5v
Mini-2.5	12.5amps @ 15v	Classic-3.5	70amps @ 5v
		Classic-5.0	100amps @ 5v
Chlor-1.5	30amps @ 4v	Classic-7.5	75amps @ 10v
Chlor-2.5	50amps @ 4v	Classic-10	100amps @ 10v
Chlor-3.5	70amps @ 4v	Classic-15	100amps @ 15v
Chlor-5.0	25amps @ 15v	Classic-20	100amps @ 20v
Chlor-7.5	37.5amps @ 15v	Classic-25	125amps @ 20v
Chlor-10	50amps @ 15v		
Chlor-15	75amps @ 15v		
Chlor-20	100amps @ 15v		
Chlor-25	125amps @ 15v		

- Water flow through the **ChlorKing®** cell is critical. Whether you plumbed your system in using the pressure drop or bypass method, please ensure that you have at least 20 gpm through the cell to achieve the rated chlorine production.

**** Remember, your **ChlorKing®** system is a chlorine generator, and will only operate as well as you maintain it. Careful attention must always be paid to proper chemical balancing, and regular service.**

MAINTENANCE AND CLEANING

Your **ChlorKing®** system is designed to operate 24/7 at max power, and will give you years of trouble free use if you follow these basic maintenance and cleaning instructions.

- Remember, this system produces sodium hypochlorite “liquid chlorine” from the salt that you have added to the water. It will only continue to operate correctly if salt is maintained at the correct 5000ppm level. 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.)**
- There is a strainer mounted at the bottom of your **ChlorKing®** cell, which will trap debris and stop it from entering the cell, this strainer needs to be cleaned regularly.
- The plates that are inside the PVC cell housing are the most critical part of the system. You will notice that over time a white substance (calcium minerals) will build up on the plates, especially at the top of the cell. This buildup needs to be cleaned by removing the cell from the housing and soaking it in a dilute muriatic solution (1:5) for about 10 – 15 minutes. Classic systems will need to be cleaned every week; reverse polarity systems will need to be cleaned every 3 – 6 months. **(Warranty’s will not be honored if it is determined that the cell has not been cleaned regularly.)**
- **Remember, the titanium plates that make up the cell are the most expensive part of the **ChlorKing®** system and are going to need to be replaced roughly every 15,000 hours of operating time. By ensuring that salt is always at the correct level, and plates are cleaned regularly, you will increase their “life”, thus saving you money...**

ChlorKing® offers a wide range of other products that can help you maintain salt levels in your pool, including conductivity controllers and saturated salt feeders for those pools that lose large amounts of water. Call for more info.

WATER CHEMISTRY AND TESTING

The following are the basic parameters for proper water chemistry when using a **ChlorKing®** saline chlorination system. (Please always check with your local health department about their requirements first. Local health regulations **MUST** always be followed.)

Daily checks

Free chlorine -	2 – 5 ppm
Total chlorine-	No more than 0.5 above free chlorine
Ph -	7.2 – 7.6 (7.4 is ideal)

Weekly checks

Alkalinity -	80 – 120ppm
Hardness -	180 – 300ppm
Stabilizer -	25 – 40ppm (for outdoor pools only)
Salt -	4500 – 5500ppm

Periodic checks

Phosphates -	no more than 100
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Testing can be done using your regular test kit, and the chlorine produced from your **ChlorKing®** system will read the same on your test kit as does regular chlorine.

Testing salt levels can be done using salt test strips or conductivity meters. (Please remember that storage of salt test strips is critical, as over heat may cause them to be inaccurate. Most conductivity devices require frequent calibration to be accurate.)

Call **ChlorKing®** at 1-800-536-8180 to order conductivity testers.