



SciCHLOR® ON-SITE SODIUM HYPOCHLORITE GENERATOR INSTALLATION AND OPERATION MANUAL

DISTRIBUTED BY:

SERIAL NUMBER: _____

MODEL NUMBER: _____

Thank you for purchasing our simple, cost effective and robust SciCHLOR on-site sodium hypochlorite generator. Should you have any questions or comments, please contact your local dealer or Scienco/FAST at www.sciencofast.com.

OWNER'S MANUAL

FOR USE WITH

- **SciCHLOR® 1.0** – 10 pound (4.5 kg) of hypochlorite per day
- **SciCHLOR® 2.0** – 20 pound (9 kg) of hypochlorite per day
- **SciCHLOR® 4.0** – 40 pound (18 kg) of hypochlorite per day
- **SciCHLOR® 6.0** – 60 pound (27 kg) of hypochlorite per day

GENERAL INFORMATION

The Scienco® SciCHLOR® sodium hypochlorite generator features the SciCELL® system uses a recirculating method to provide minimal operator attention and consistent chlorine strength. The Scienco® SciCHLOR® sodium hypochlorite generator maintains effective, reliable disinfection at an affordable cost with long SciCELL® life and easy maintenance. The Scienco/FAST, SciCHLOR on-site sodium hypochlorite generator, is designed to produce up to 10 Lbs. or 4.5 kg of chlorine in solution per day from salt, water and electric current. This is approximately 150 gallons or 570 liters of solution at 8000 PPM.

If you have questions regarding any Scienco® products please contact us at:

1-866-652-4539 or +1-314-756-9300

e-mail: solutions@sciencofast.com

Basic principal of operation:

The SciCHLOR on-site chlorine generator recirculates the brine solution continuously through the cell assembly to concentrate the sodium hypochlorite to strength of up to 0.8%. The gasses produced are vented outside to the atmosphere. The system is designed to reach the rated strength of chlorine after approximately 6 hours of continuous running time. The solution is ready for use at this time.

The system is able to be operated in two different modes. Both operating modes use the same technology, the difference is how the product is removed once it reaches the desired strength.

The first is “batch” mode, where the solution is concentrated to the desired strength and then the contents of the product tank are emptied into another container for use. The process then repeats to produce another “batch”.

The second mode is “continuous” operation where once the solution has reached full strength, it can be removed from the product tank at a low flow rate on a continuous basis. The system will automatically re-fill and maintain the proper strength. As the hypochlorite is used, a signal is sent to re-fill the product tank. Fresh water enters the brine section, forcing saturated brine to spill over into the product tank. The brine in the product tank is diluted with fresh water to the correct concentration. During the fill cycle, the chlorine production does not stop, but continues as normal.



The power supply and controls use high voltage power source. Only qualified, licensed personnel should perform any electrical work on this system. Electrocution may result.



Make sure power is isolated prior to opening the power supply for servicing the cell assembly.



Sodium hypochlorite is caustic. Do not mix with acids. Violent chemical reactions could result.



Wear personal protective equipment such as rubber gloves, eye and face protection when handling the sodium hypochlorite solution. The solution can be irritating to skin and eyes.



Sodium hypochlorite and brine are corrosive. Avoid putting the sodium hypochlorite solution in contact with bare metals or continued exposure to concrete.

Material Safety Data Specifications:

Product name: Sodium hypochlorite, up to 0.8% (8000 PPM).

Color: Light yellow/green.

Uses: Solution can be used as a disinfectant or bleaching agent.

WARNING Use rubber gloves and a face shield when handling the solution to avoid getting it on bare skin or in eyes. The solution is a bleaching agent, to protect clothes an apron is also recommended.

Storage: Store product in a tightly closed container. Store away from heat and direct sunlight. Container should be opaque in color and compatible with product. Avoid unnecessary agitation.

CAUTION Avoid mixing with acids. Sodium hypochlorite is corrosive to most metals, including some stainless steel. Fumes can be corrosive to metals as well.

There are no hazardous by-products created during the operation of the system per 40 CFR 261.

The product produced is considered hazardous per 49 CFR 172 with the reportable quantities being 100 Lbs. or 45 kg.

Installation:

CAUTION All electrical and plumbing work should be done by licensed personnel and done in accordance with local regulations and codes.

Unit should be installed indoors in a well-ventilated area, on a level surface, with the vent routed outside to the atmosphere. The location should allow ample space around the unit to facilitate cell removal and general cleaning. It is recommended to leave plenty of access to fill the brine tank with salt. Temperature of the interior space should not exceed 90 F (32 C). **NOTICE** It is extremely important to keep the vent clear. The cell and unit will be damaged if the vent is blocked at all.

A water supply line must be connected to the unit for refilling the tanks as the hypochlorite is used. The water supply must be filtered to 5 micron to remove fine sediment that could potentially harm the cell.

WARNING A backflow preventer must be installed in the water supply line. This is to prevent any brine solution or chlorine solution from siphoning back to, and contaminating the water supply if the pressure should drop, for any reason.

The control cabinet does not have to be located immediately next to the unit, but should be located so the cables from the control cabinet are not strained when connected to the unit. **NOTICE** *When mounting the control cabinet to a wall, it is important to leave at least 1 1/2 inches between the back of the cabinet and the wall. This space is necessary for ventilation and cooling. A 1 1/2 inch thick board, such as a 2" x 2" or 2" x 4" works well as a stand-off between the back of the cabinet and wall.*

The system can use any of the following incoming power sources:

170 VAC - 265 VAC, 47 - 63 Hz, 1 Ph. Minimum 24 amp service required.

170 VAC - 265 VAC, 47 - 63 Hz, 3 Ph. Minimum 14.8 amp service required.

342 VAC - 460 VAC, 47 - 63 Hz, 3 Ph. Minimum 7.3 amp service required.

It is very important that the incoming power remains within the above ranges. If necessary, a transformer may be used to achieve the correct voltage range. The incoming power is connected to the top terminals of the three pole breaker.

The cabinet must have space around it, so the front door may be opened as well as the entire cabinet may be swung out for service, if needed. Approximately 18 inches on the left side of the cabinet will allow the cabinet portion to be opened for access to the wiring.

The system should be kept out of direct sunlight and extreme heat. High temperatures and direct sunlight will reduce the strength of the hypochlorite. An optional heat exchanger is available if the hypochlorite could exceed 90 F (32 C).

CAUTION *Damage to the cell can result if the product solution gets too hot. Hypochlorite production will slow down as the temperature of the solution increases.*

Glossary of components:

Cell assembly - An assembly comprised of alternating anode and cathode plates, are arranged so as the product is pumped through, maximum cooling and gas removal can be achieved. The assembly has been designed to minimize the possibility for gasses to become trapped in the cell resulting in "hot spots" which can shorten the cell life and reduce capacity.

DANGER *Never allow a short circuit between the anode (dark gray plate) and the cathode (light gray/silver plates) to occur. Severe arcing and possible electrocution may occur.*

Circulating pump - A small pump made from chlorine compatible materials, continually re-circulates the product from the bottom of the product tank, through the cell, back to the top of the product tank. The product is moved fast enough to wash gasses off the surface of the anodes and cathodes. This action assures full generating capacity of the system and proper cooling of the cell assembly.

Two level float switch - The upper float sends a signal to the water fill valves to open to refill the product tank when hypochlorite is drawn out for use. The lower float also opens the water fill valves, and shuts off the power supply. This is a safety feature to protect the cell and power supply from possibly running dry and/or overheating.

Brine tank with spillover - This is a tank that contains a supply of saturated brine that is needed to produce the sodium hypochlorite in the product tank. When the water fill valves open, fresh water is introduced to this tank, forcing saturated brine up and out the spillover into the product tank.

Water fill valves - Two electrically operated valves add water to the brine tank and the product tank upon a signal from the float switch. One valve will add fresh water to the brine tank, forcing saturated brine

to flow over to the product tank. The second valve will add fresh water to the product tank to dilute the saturated brine from the brine tank to the correct concentration.

Product tank - The tank where the sodium hypochlorite is contained, mixed and concentrated.

Power supply - Supplies a continuous source of DC power to the cell for the reaction. Input power can be 220 or 240 volt, 50 or 60 Hz, single phase power or

380 volt, 50 Hz, 230 volt, 60 Hz, three phase power, but a constant 5 volt DC source of power is needed for the cell assembly. The DC side of the power supply is fused to protect against short circuits. Power supply has been tested and calibrated with equipment that complies with ANSI Z540-1, Part II.

⚠ DANGER *The power supply and controls use high voltage power source. Only qualified, licensed personnel should perform any electrical work on this system. Electrocution may result if work is attempted without properly isolating the power source.*

Optional features:

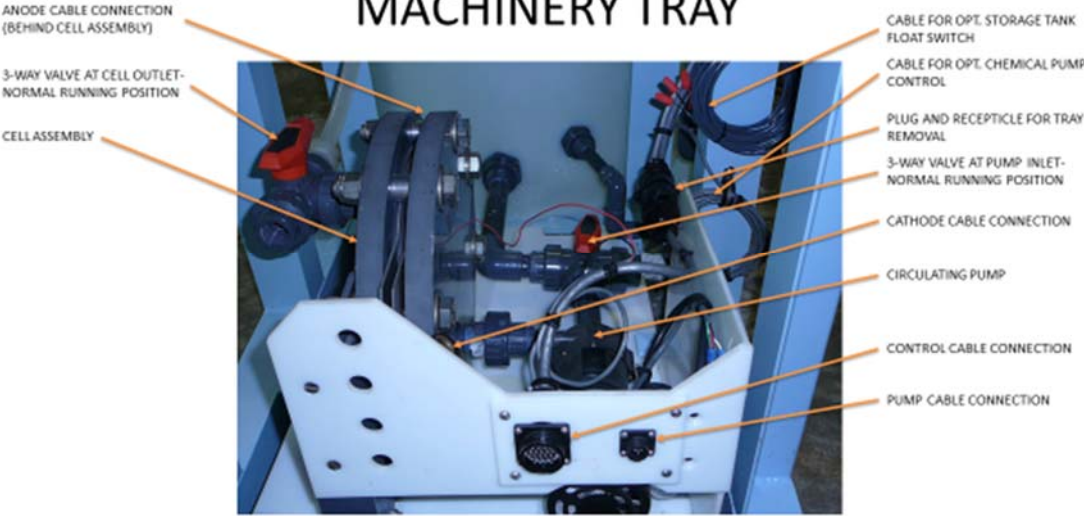
The Scienco/FAST, SciCHLOR on-site chlorine generator can be ordered with several optional features so it may better match the demands of the end user. These options are listed below.

1. Chemical feed pump to deliver the solution. The chemical feed pump offered is manufactured from chlorine and brine compatible materials and can be wired into the controls so that the feed rate may be changed from the menu screen. The pump is rated to pump against a pressure of 30 PSI or 2,070 mbar. The scale shown on the screen are the flow rates from the pump when operating at this maximum pressure. If you are operating the pump at a lower pressure, the flow rate will increase. You should verify the exact flow output of the pump by timing the flow into a container with volume measurements on it.
2. Float switch for customer storage tank. A second two level float switch, identical to the one in the product tank, can be wired into the controls to shut off the chemical feed pump when the storage tank is full and will signal the pump to start when the level in the tank drops.
3. Solenoid valve to drain product tank when operating in batch mode or continuous mode. The same solenoid used to fill the brine and product tanks, can be installed and used in the line where the solution is drawn from. When operating in batch mode, the solenoid valve can be operated from the screen when the solution is ready for use. When operating in the continuous mode, the valve will open when the chemical feed pump is running. The same operations can be achieved with a manual valve.
4. Lockout feature to stop the system when a water softener is in its regeneration cycle. If a water softener is used to remove minerals from the water used to supply the machine, it is important not to allow the regeneration brine or rinse water (mineral rich) to get into the tanks. This feature can take a signal from the water softener when the regeneration cycle begins to shut down the unit. It will remain off for a length of time that is selected by the end user so the softener may complete its regeneration cycle to eliminate the risk of the regeneration water getting into the SciCHLOR system.

SciCHLOR UNIT



MACHINERY TRAY



CONTROL CABINET



DOOR REMOVED FOR CLARITY

Starting the unit:

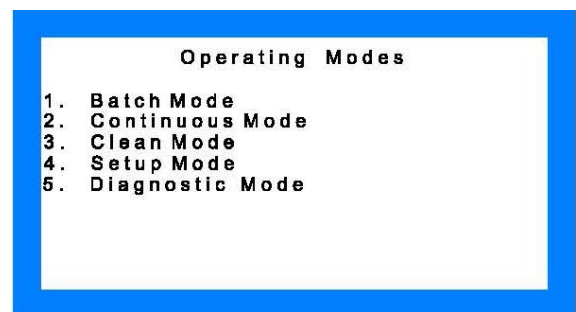
With the red heavy cables connected between the anode (dark gray plate) and the red twist-lock receptacles on the bottom of the cabinet, along with the black cables connected between the cathode (light gray/silver plates) and the black twist-lock receptacles, and the two smaller control cables connected to their respective sockets on the cabinet and unit and if the installation is complete, the unit can be started.

CAUTION *The cable connections are critical for proper operation. Loose or dirty connections will affect the strength of the solution.*

Make sure the top of the toggle switch on the power supply in the control cabinet is depressed. Turn on the small two pole breaker first, then the larger three pole breaker. The unit will start and the display the following screen:



Idle mode is the condition of the system when it has power to it and it is ready to run. When the "MENU" button is pushed, another screen will appear that will require the end user to make some choices. This screen appears below:



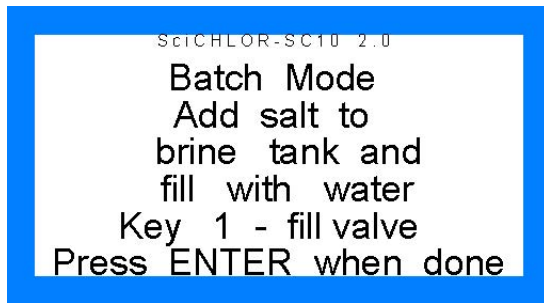
To select one of the modes listed on this screen, the number 1, 2, 3, 4, or 5 must be pushed, followed by the "ENTER" button. When starting the system for the first time, it is best to push "4" and then "ENTER" to go into the Setup Mode. In this mode, the concentration can be changed from the default concentration of 8000 PPM to a different value, if desired. The Power Save option can be turned "OFF"

if it is not needed or wanted. The default setting for this feature is "ON". To disable this feature, press the "0" key.

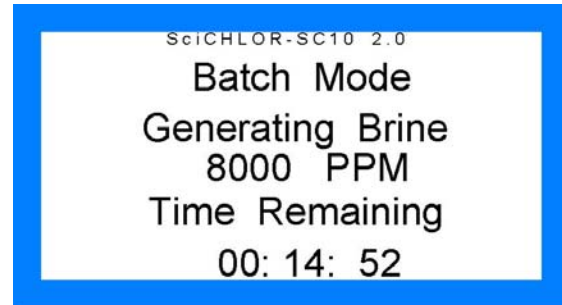
If any changes were needed and once the setup has been completed, the number corresponding to the operating mode can be depressed followed by the "ENTER" key. The operation of the "Batch Mode" and "Continuous Mode" are described below. Skip to whichever operating mode you intend to use, Batch or Continuous.

Batch Mode –

When the number "1" is depressed followed by the "ENTER" key, the next screen to be displayed will give instructions to prepare the brine tank for a batch of solution:



Salt should be added so the level is about 2 inches or 50 mm below the top of the standpipe in the brine tank. The standpipe is the vertical, 4 inch or 100 mm white, slotted pipe. This is almost completely full to the lid. Once the salt has been filled, depress the number "1" key to open the fill valve. As water enters the tank, the salt level will drop as it dissolves. It is best to keep the salt level full, so keep adding salt as it dissolves to keep the level about 2 inches or 50 mm from the top of the standpipe. There is an overflow line into the product tank. When the water level in the brine tank reaches the operating level, brine water will start to spill out of the overflow. When this happens, depress the "ENTER" button to stop the water from filling the brine tank. Once the "ENTER" button has been pushed, the following screen will show:



This feature allots a total of 15 minutes for the water to become saturated with salt. The contents of the brine tank does not have to be stirred or agitated, it just needs to set for the full 15 minutes. After the 15 minutes has passed, the system will go into the product tank fill sequence. The next screen to be displayed is:



The product tank fills with a brine solution that has the right salinity to produce a full tank of solution at the selected concentration in 6 hours. The tank is filled by short fill cycles that are repeated until the product tank is at the normal operating level. The brine tank is filled first, causing saturated brine to spill over into the product tank. The above screen will show when the brine valve is operating. Notice the

word "Brine" in the lower left corner to let the user know the brine valve should be open. The time on the bottom of the screen is the countdown until the valve shuts off. The percentage (30.7% in this case) is the percentage of the total fill time the brine valve is open. When the brine valve closes, the water valve to dilute the incoming brine opens. The screen will switch to the next one shown.

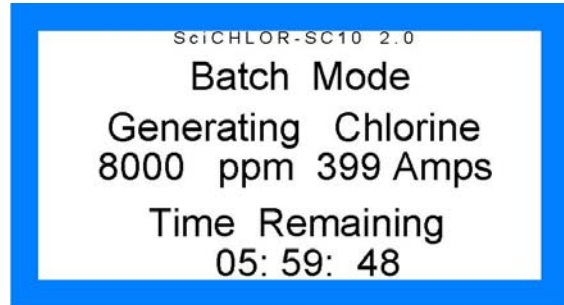


Notice that the lower left corner now says "Fresh" notifying the user that fresh water is being added to the product tank to bring the salinity to the correct concentration. This screen has the same countdown time until the valve closes, but does not show the percent open time of the fill cycle.



After the valves have gone through their fill sequence, there is a rest period to allow the water that entered the brine tank to become saturated. The rest time is 1 ½ minutes and is denoted on the lower left corner of the screen by the word "Pause". When the water level reaches the lower float on the float switch, the circulating pump will come on to make sure the solution is thoroughly mixed and is of uniform strength. When the level reaches and lifts the top float, the fill cycle will complete its sequence and the power supply will come on and chlorine production will begin.

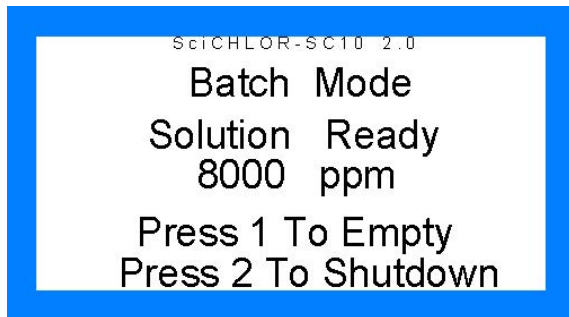
When in the chlorine generating mode, the power supply will automatically start and the generation of chlorine will commence. The screen will change to the following:



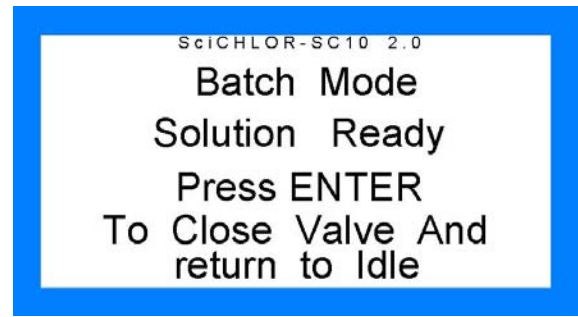
This is the period of time when the system concentrates the solution to the set strength (8000 PPM on the screen shown) in 6 hours of running time. The Amps shown as 399 is not the running amps, but rather the amperage limit. Should the unit try to pull more than 399 amps during this period of concentrating the solution, the amps will be held at 399, but the voltage will drop below 5.0. The actual running voltage and amperage can be seen on the power supply. The time remaining until the solution is ready for use is shown at the bottom. As soon as the time counts down to zero, the next screen will show up:



When "ENTER" is depressed, the next screen will appear:



If the number "1" is pressed, the manual valve may be opened and the contents of the product drained to a container. If "2" is pressed, the unit will return to the "IDLE" mode.



After the unit is drained, press "ENTER", then close the valve and the unit will return to the idle mode. From this point, the system may be restarted in either the "Batch" or "Continuous" modes.

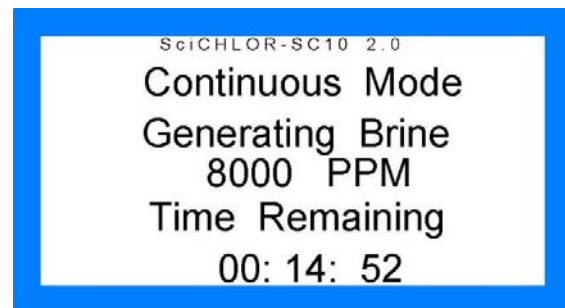
Continuous Mode –

This is the most often used operating mode. When the number "2" is depressed followed by the "ENTER" button, the next screen will display instructions to prepare the brine tank:

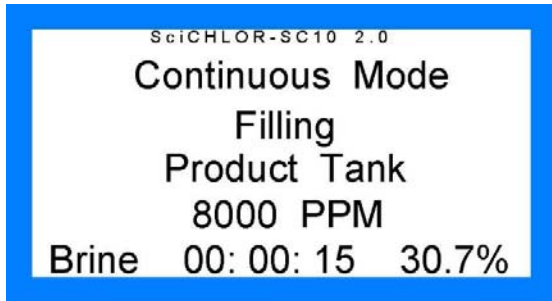


Salt should be added so the level is about 2 inches or 50 mm below the top of the standpipe in the brine tank. The standpipe is the vertical, 4 inch or 100 mm white, slotted pipe. This is almost completely full to the lid. Once the salt has been filled, depress the number "1" key to open the fill valve. As water enters the tank, the salt level will drop as it dissolves. It is best to keep the salt level full, so keep adding salt as it dissolves to keep the level about 2 inches or 50 mm from the top of the standpipe. There is an overflow line into the product tank. When the water level in the brine tank reaches the operating level, brine

water will start to spill out of the overflow. When this happens, depress the "ENTER" button to stop the water from filling the brine tank. Once the "ENTER" button has been pushed, the following screen will show:



This feature allots a total of 15 minutes for the water to become saturated with salt. The contents of the brine tank does not have to be stirred or agitated, it just needs to set for the full 15 minutes. After the 15 minutes has passed, the system will go into the product tank fill sequence. The next screen to be displayed is:



The product tank fills with a brine solution that has the right salinity to produce a full tank of solution at the selected concentration in 6 hours. The tank is filled by short fill cycles that are repeated until the product tank is at the normal operating level. The brine tank is filled first, causing saturated brine to spill over into the product tank. The above screen will show when the brine valve is operating. Notice the word "Brine" in the lower left corner to let the user know the brine valve should be open. The time on the bottom of the screen is the countdown until the valve shuts off. The percentage (30.7% in this case) is the percentage of the total fill time the brine valve is open. When the brine valve closes, the water valve to dilute the incoming brine opens. The screen will switch to the next one shown.

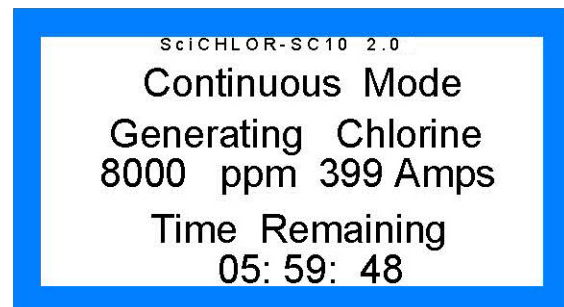


Notice that the lower left corner now says "Fresh" notifying the user that fresh water is being added to the product tank to bring the salinity to the correct concentration. This screen has the same countdown time until the valve closes, but does not show the percent open time of the fill cycle.



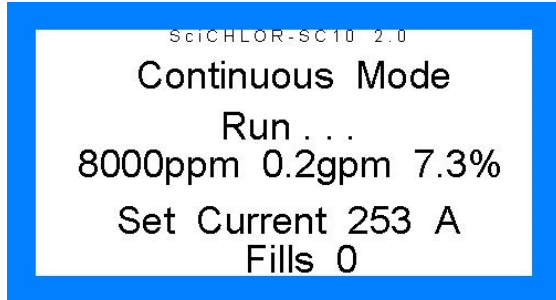
After the valves have gone through their fill sequence, there is a rest period to allow the water that entered the brine tank to become saturated. The rest time is 1 ½ minutes and is denoted on the lower left corner of the screen by the word "Pause". When the water level reaches the lower float on the float switch, the circulating pump will come on to make sure the solution is thoroughly mixed and is of uniform strength. When the level reaches and lifts the top float, the fill cycle will complete its sequence and the power supply will come on and chlorine production will begin.

When in the chlorine generating mode, the power supply will automatically start and the generation of chlorine will commence. The screen will change to the following:



This is the period of time when the system concentrates the solution to the set strength (8000 PPM on the screen shown) in 6 hours of running time. The Amps shown as 399 is not the running amps, but rather the amperage limit. Should the unit try to pull more than 399 amps during this period of concentrating the solution, the amps will be held at 399, but the voltage will drop below 5.0. The actual

running voltage and amperage can be seen on the power supply. The time remaining until the solution is ready for use is shown at the bottom. As soon as the time counts down to zero, the next screen will show up:



The solution is now ready for use. This screen shows the strength of the solution, the outflow rate from the unit (0.2 GPM or 0.75 LPM in this case), brine strength that is being used to produce the hypochlorite (7.3% in this case). The brine strength will vary as the unit continues to run. The "Set Current" is the current drawn by the unit to produce the chlorine at the desired concentration and desired outflow rate. This can vary +/- 5%. The number of times the unit has re-filled the product tank is also shown.

When the unit is operating in the "continuous" mode, a power save feature is enabled, where if there is no solution being removed from the product tank, the power supply will shut down but the circulating pump will continue to operate. When the unit senses the use of the product, the power supply will re-start and production of chlorine will once again resume. When the unit is in the "Power Save" mode, the screen will appear as this:



If the optional float switch is installed in a storage tank where the solution is being transferred to, and the tank becomes full, the chemical feed pump (if supplied by the manufacturer and wired into the control circuit) will automatically shut down. The display screen will show the following message:

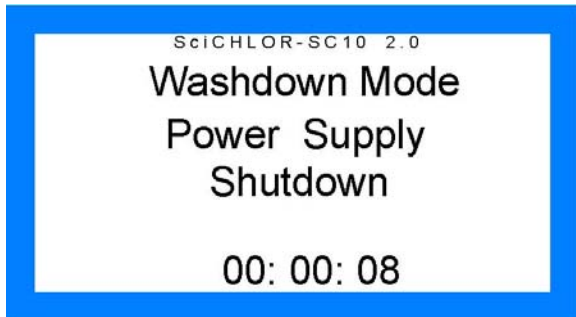


Since there is no more product being removed from the tank, after a pre-determined period of time, the unit will go into the "Power Save" mode. As the storage tank is emptied, the float switch will drop, re-starting the chemical feed. When the controls detect usage from the product tank, the unit will come back on and begin producing chlorine solution.

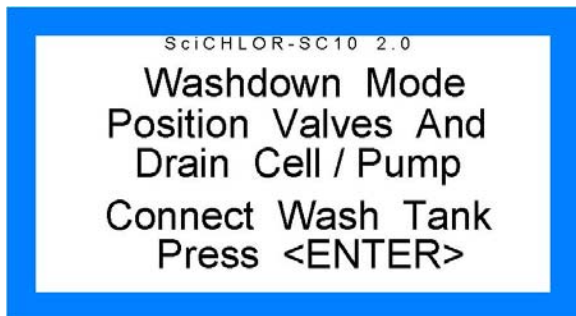
Washdown Mode –

The wash mode can be initiated when the unit is in the run sequence while operating in continuous mode or from the IDLE screen. In either case, to reach the MENU screen, just push the "MENU" key. When number 3 is depressed followed by the "ENTER" key,

the screen will display instructions to wash the cell assembly in place. The following screen will appear:



This screen notifies the operator that the power supply has been shut down. The circulating pump will continue to run for 15 seconds to expel all gasses from the cell assembly. The time shown on the bottom of the screen, counts down the 15 seconds. Once the time reaches 00:00:00, the next screen will appear:



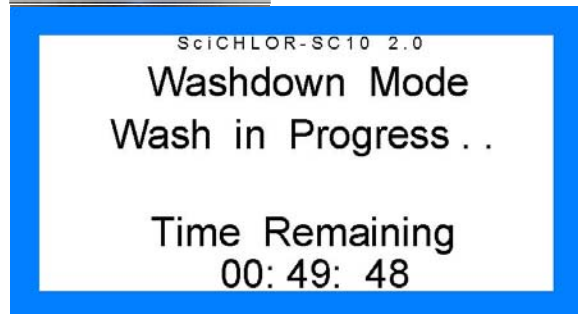
A good sequence to use when aligning the valves for washing is to rotate the three-way valve at the outlet of the cell assembly a quarter turn (90 degrees) in the clockwise direction first. Then rotate the three-way valve at the inlet to the pump a quarter turn in the counter-clockwise direction. A small amount of solution will run out of the second valve. A small, low container and some shop rags can be used to manage the spillage. The wash tank can be connected now.

Add one gallon of Mighty Mike® Industrial to the wash tank and fill the rest with clean water. Our Mighty Mike® Industrial Descaler can be purchased through your local dealer in single gallon (3.8 liter) containers or 5 gallon (19 liter) containers.

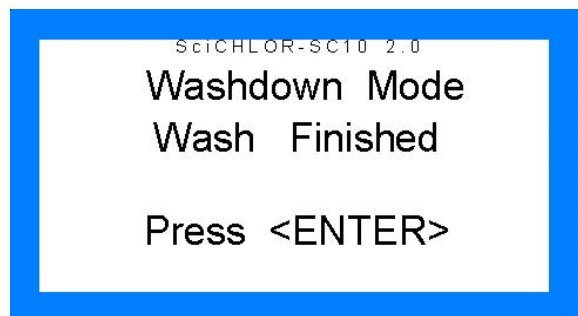
CAUTION *The descaler is acidic and can cause burns to skin and eyes. Use eye protection and gloves when handling this product. An apron is recommended to prevent stains to clothing. Wash hands after handling this product. Read and follow all instructions.*



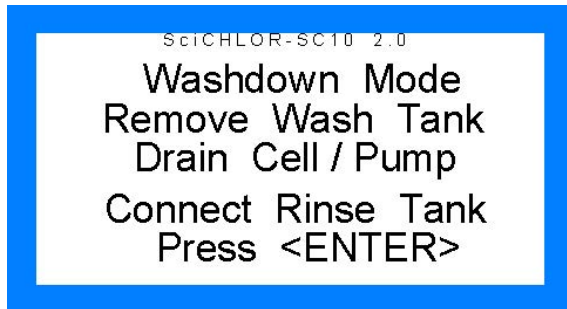
Press "ENTER" to go to the next screen:



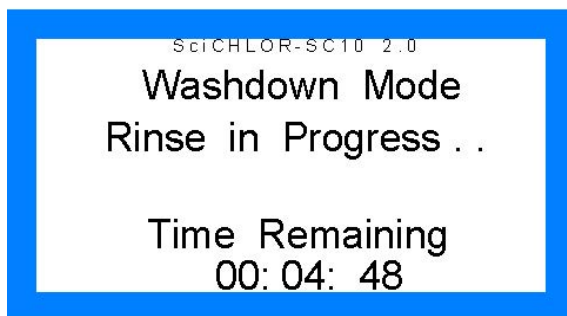
The wash cycle is timed for 1 hour. This will be ample time to remove scale deposits on the cell plates when washed on a regular basis. Upon completion of the wash cycle, the screen will change to instruct to operator on the next step:



When "ENTER" is pressed, the operator acknowledges that the wash has been completed. When the circuit board receives the acknowledgement, it will show the next screen:



As the screen instructs, the wash tank can be drained and a rinse tank be connected. If your system has come with a wash/rinse tank from Scienco/FAST, just drain the tank into a container and refill with clean water through the manual valve on the water supply line. The solution is safe to dispose of to the sewer. Once the rinse water is in the tank, press "ENTER" and the next screen will show:



The rinse procedure is 5 minutes long. When the time reaches 00: 00: 00, the next screen will advise the operator what to do:



The rinse tank and piping should be drained. Each of the three-way valves should then be returned to their original positions. When "ENTER" is depressed, the unit will resume operation in the Run mode or return to the Idle mode.

Frequently asked questions:

1. What type of salt should be used?

The preferred salt is course ground salt with a purity of 99.6% or higher. Avoid salt that does not state a purity on the bag. Avoid pressed salt pellets for water softeners, this type of salt might have binders or other ingredients that could coat and damage the cell.

2. How full should the brine tank be kept?

It is important to keep the brine tank filled above the waterline. If the salt level drops too low, the addition of more salt will cause too much saturated brine to spill over into the product tank increasing the salt

content in that tank. The additional salt content will cause the unit to produce chlorine with a much higher strength. It will be difficult for the controls to compensate for this and to maintain the concentration at the selected valve. It is always best to fill the brine tank often, with small amounts of salt rather than to let it get empty and re-fill with a large quantity.

3. Are there recommended temperatures for the incoming water?

The incoming water should be at least 55F (13C), but not more than 85F (29C). Below 55F (13C), the salt will not dissolve as fast, resulting in weak solution.

Above 85F (29C), the solution will begin to degrade quickly, even as it is being recirculated through the cell. This will result in a weak solution as well as a lower efficiency of the machine.

4. Is a water softener required?

The source water for the system should have a hardness of 1 grain per gallon (1 grain per 3.8 liter) or less. This is also 17 PPM. If it exceeds this, a water softener is recommended. If the water tests outside the described range, more frequent descaling procedures will be required. If there is iron present in the water, a softener is required. Iron deposits are detrimental to the cell.

5. In the installation section, it is stated that it is mandatory to install a backflow preventer. Why is this?

Should the incoming water pressure drop or be compromised in any way, there is a risk of the brine solution and chlorine solution siphoning back into the water supply. A backflow preventer will prevent this. A licensed plumber will know the best and accepted type for this application.

6. What is the best way to store the solution for later use?

The solution should can be stored for up to 3 weeks with minimal degradation when stored in a dark, 55 gallon (208 liter) drum. It should be stored in a location that is away from direct sunlight and heat. The solution will degrade slower if the container is left still and not agitated by moving around to different locations. The container must be kept tightly capped as well. Temperature of the storage area should be less than 85F (29C) to minimize degradation

Trouble shooting:

1. System will not come on, no display.

- **No power going to system.** **CAUTION** *All electrical and plumbing work should be done by licensed personnel and done in accordance with local regulations and codes.*
 - Check power supply and make sure the voltage is within the specified range.
 - Check breaker on front of control cabinet. Reset, if necessary.

2. Solution is weak.

- **Cell is scaled with water deposits.**
 - Wash the cell assembly as described in this manual.
- **CAUTION** *The Mighty Mike® Industrial Descaler is acidic and can cause burns to skin and eyes. Use eye protection and gloves when handling this product. An apron is recommended to prevent stains to clothing. Wash hands after handling this product.*
- **Brine tank is low on salt.**
 - If the brine tank was allowed to become so empty that the strength of the solution weakens, you must restart the unit. First dispose of the water in the brine tank and product tanks. Press the "CLEAR" button to get to the "USER CANCEL" screen. Press "CLEAR" a second time to return to the "IDLE" screen. Follow the start-up procedure in this manual to re-start the unit.
- **Incoming water is too hot.**

- Water that is too hot will degrade the chlorine as it is being concentrated in the product tank, thus slowing down the concentrating of the solution. Make sure the incoming water is between 55F (13C) and 85F (29C).

- **Incoming water is too cold.**

- Water that is too cold will not allow the brine to dissolve at a fast enough rate nor to produce brine of the correct strength to use in the product tank. A small water heater or an inline on-demand heater will help to make sure the water is within the range stated above.

- **Cable connections are dirty or loose.**

- Good connections on the cables to the anode and cathode are critical. If they are loose or dirty, the voltage to the plates will be reduced, causing a reduction in the operating amperage. Use a volt meter that can measure DC voltage and touch the leads to the plates, not the connections. If the voltage is less than 5.0, the connections are dirty or loose. Remove the cables, then clean and renew the connections.

- **Sensor wire connections are either dirty, loose or broken.**

- The sensor wires are the small white and black wires that attach directly to the anode and cathode plates. If the sensor wire connections are not properly made, there will be a low voltage and low current condition to the cell plates. This will cause reduced chlorine production. Renew the sensor wire connections.

3. Solution is too strong.

- **Brine tank was allowed to get too low and then too much salt was added at one time to refill to the operating level.**
 - When the salt level in the brine tank is allowed to drop below the waterline and salt is then added, the brine that is displaced by the additional salt will cause a higher concentration of brine in the product tank. The higher concentration will cause a chlorine strength well over the setpoint. This is often accompanied by the voltage on the power supply display to be less than 5.0 as the controls are trying to slow down the chlorine production.

4. Power supply in the control cabinet is not supplying power and "OTP" is displayed.

- **Power supply shut down due to high temperature.**
 - There is a source of heat near the control cabinet that needs to be eliminated.
 - Fans on the side of the control cabinet are either not working or the filter element on the supply fan is dirty and needs to be cleaned/replaced.
 - Control has been mounted tight against a wall without a space for air movement or cooling behind it or around it. Make sure the control cabinet is mounted as described in this manual.

5. Product tank overflows.

- **Circuit board is too hot.**
 - This is usually due to the conditions listed in number 4 above. The circuit board is often affected before the

LIMITED WARRANTY

During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions, and if the equipment has been installed and is being operated and maintained in accordance with the written instructions provided by Scienco/FAST, Scienco/FAST will repair or replace at its discretion such defective parts free of charge. Defective parts must be returned by owner to Scienco/FAST's factory postage paid, if so requested. The cost of labor and all other expenses resulting from replacement of the defective parts and from installation of parts furnished under warranty and regular maintenance items such as descalers shall be borne by the owner. This warranty does not cover general system misuse, or components, which have been damaged by improper installation or environment and any components that have been disassembled by unauthorized persons, or damaged due to altered or improper wiring or overload protection.

This warranty applies only to the SciCHLOR® system and does not include any of the structure wiring, plumbing or drainage system. Scienco/FAST reserves the right to revise, change, or modify the construction and/or design of the SciCHLOR® system, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in present equipment. Scienco/FAST is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defect in design, material, or workmanship, or delays in delivery, replacements or repair. Scienco/FAST is not responsible for the cost of shipping returned or replacement parts under warranty.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED. Scienco/FAST SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO

power supply would be. When the board gets too hot, the program will "freeze" when it is required to perform a function. This is most often when the float switch calls for re-filling of the product tank and board "freezes" in the re-filling action. The remedies are listed above under number 4.

6. Power supply in the control cabinet is not supplying power and "OVP" is displayed.

- **Sensor wire connections are either dirty, loose, broken or installed on the wrong plate.**
 - The sensor wires are the small white and black wires that attach directly to the anode and cathode plates. If these wires are installed incorrectly or if the connections are loose or broken, the power supply will display "OVP". There should be a "-" label on the wire that attaches to the cathode plate and a "+" label on the wire that attaches to the anode wire. Check and renew the connections.
- **Red and black cable connections are loose or dirty.**
 - If the sensor wires are properly attached, but the heavy cable connections are loose or dirty, there will be a low voltage condition at the plates. The sensor wires are sending a message to the power supply to increase the output voltage so the plates will have 5.0 volts on them, but if the power supply reaches its maximum voltage output without reaching 5.0 volts on the plates and sensor wires, it will shut down and display "OVP".

REPRESENTATIVE OR PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR ASSUME FOR Scienco/FAST, ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS.