



XGEN

Installation, Operation, and Maintenance Manual



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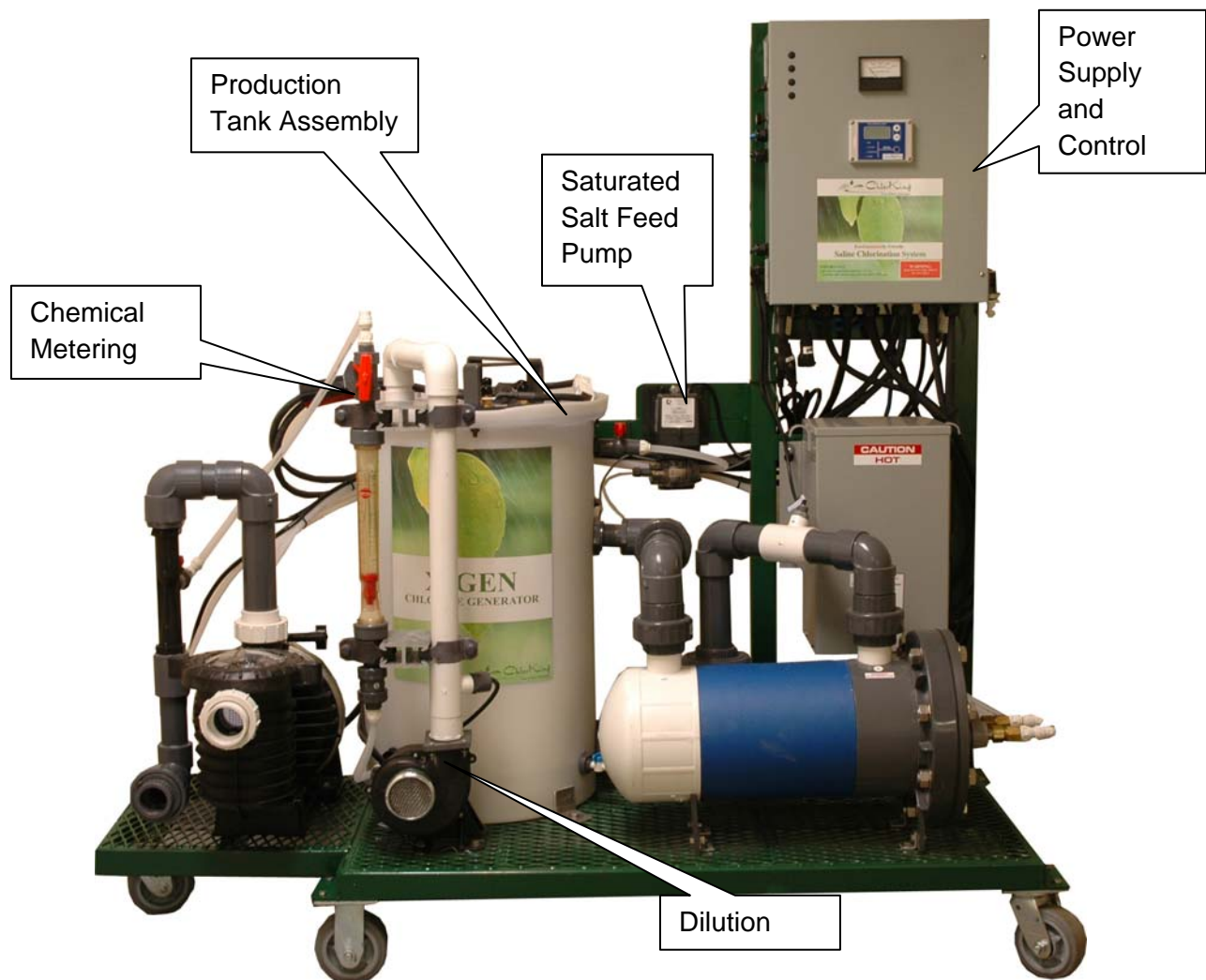
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SECTION 1 DESCRIPTION

1.1 GENERAL INFORMATION

The XGEN system is an on-site sodium hypochlorite generator designed for commercial swimming pool applications. The equipment is available either modular or mounted on a skid for easy installation. The XGEN is capable of producing up to 40 pounds of equivalent chlorine per day. The system manufactures bleach continuously from a salt concentration of 5000ppm and uses the water from the pool as a raw material. This unique feature eliminates issues with high TDS levels and requires less salt as raw material than traditional methods. The XGEN is designed for commercial service and can be run 24 hours a day or controlled by any pool controller. The basic components of the XGEN are outlined in **Figure 1**.

Figure 1



1.2 PRINCIPALS OF OPERATION

Production Tank Assembly (See Figure 1)

The production tank assembly consists of a polyethylene tank, one or two electrolytic cells, a circulation pump and heat exchanger. Pool water from the return line is fed into the production tank. The circulation pump circulates water through the electrolytic cells and heat exchanger. The water in the tank is maintained at a 5000-ppm salt concentration. The electrolytic cells produce a 1666 ppm to 2500-ppm sodium hypochlorite solution. The sodium hypochlorite is then pumped to the pool at flow rates from .35 gpm to 2.0 gpm. The number of cells in the tank and the flow rate through the tank dictate the amount of sodium hypochlorite produced. Sodium hypochlorite can be produced from 10 gpd to 40 gpd. The sodium hypochlorite is then pumped to the pool for use in disinfection. The heat exchanger has fresh pool water pumped through the coils to maintain tank temperatures of no more than 10 degrees F above the pool water.

Dilution Fan (See Figure 1)

Production of sodium hypochlorite with this method produces hydrogen as a byproduct. The dilution fan pumps fresh air into the production tank to dilute the hydrogen and force it out the vent. The vent must be vented to outside atmosphere.

Saturated Salt Feeder (Not Shown)

The saturated salt feeder supplies the production tank with a constant supply of salt to produce sodium hypochlorite. Salt is used at the rate of 2 pounds per pound of equivalent chlorine produced or 3 pounds per pound of equivalent chlorine produced depending on production quantity selected. The saturated salt feeder is filled manually. Salt is pumped using standard peristaltic chemical feed pumps.

Chemical Metering (See Figure 1)

Chemical metering is accomplished using an industrial diaphragm pump, a venturi with booster pump or a peristaltic pump. The pump or venturi is adjusted to provide the flow rate necessary to deliver the rated production of chlorine to the pool.

Power Supply and Control Box (See Figure 1)

The power supply provides the current to the electrolytic cells to produce the rated amount of sodium hypochlorite. The power supply houses all the safety features to prevent system operation in the event of a malfunction.

1.3 GENERAL SPECIFICATIONS

SODIUM HYPOCHLORITE PRODUCTION:

XGEN 20 - Up to 20 pounds per day
XGEN 40 – Up to 40 pounds per day

ELECTRICAL REQUIREMENTS:

XGEN 40

240 volts single phase
60 amps
60 Hz

XGEN20

240 volts single phase
40 amps
60Hz

FUSING

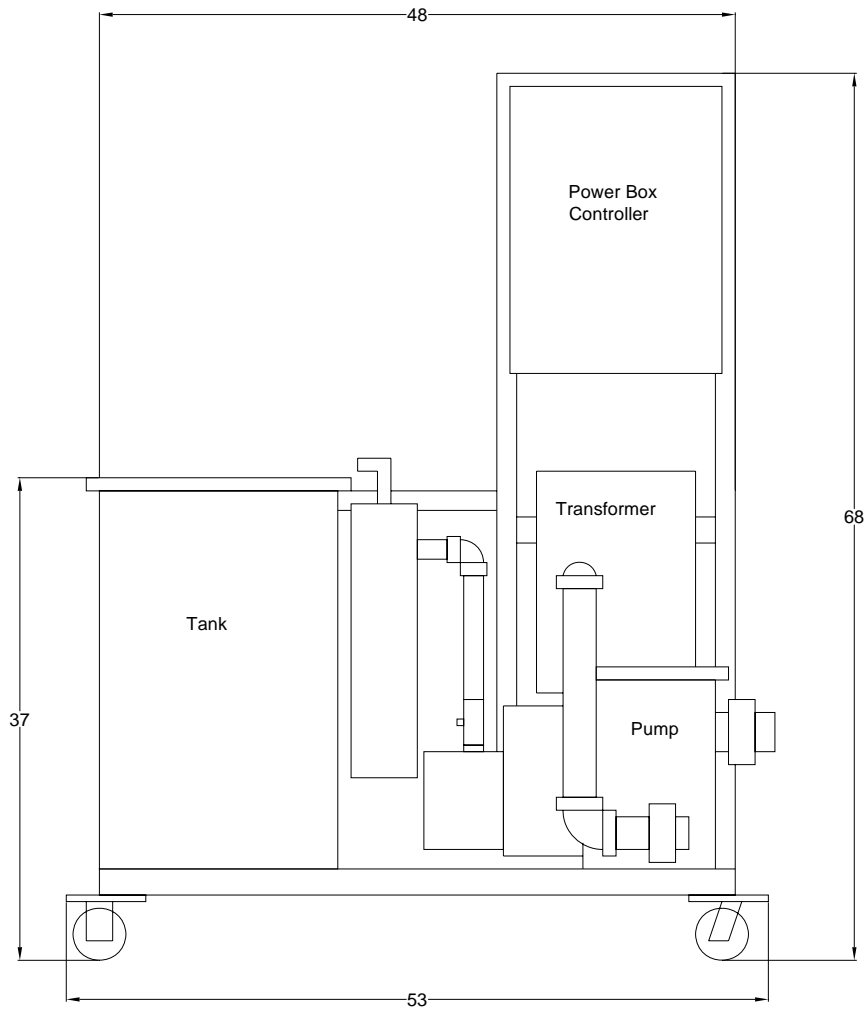
Power Supply XGEN 40 – 60 amps
Power Supply XGEN 20 – 40 amps
Circulation Pump – 8 amps
Chemical Metering Pump – 8 amps

SIZING GUIDELINES

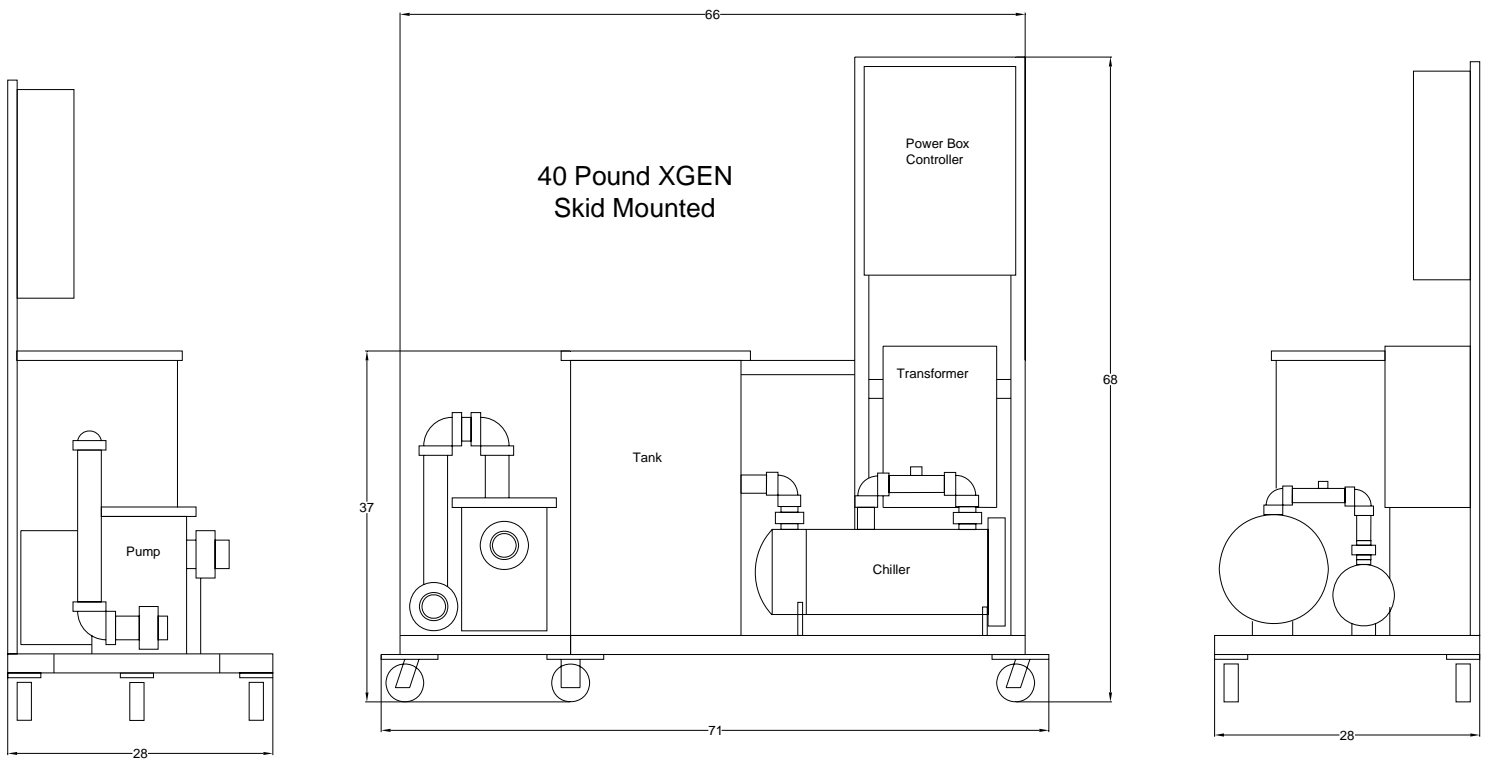
Chlorinator sizing must comply with local codes. Please contact your local health department for specific requirements or contact your local ChlorKing representative for assistance.

MINIMUM SPACE REQUIREMENTS:

Skid mounted XGEN shown on **Page 6**. ChlorKing Saturated Salt Feeders shown on **Page 7**. Skid mounted XGENS ship standard with 55 Gallon Salt Feeders. Other sizes available as an option. All dimensions shown in inches.

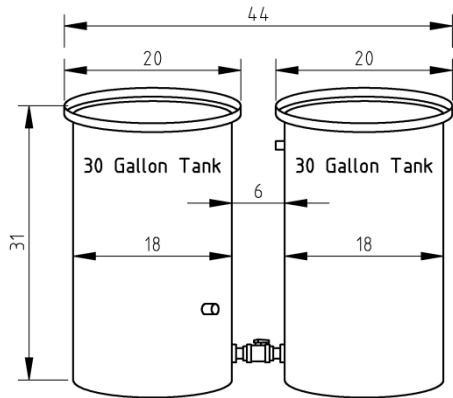


20 Pound XGEN
Skid Mounted

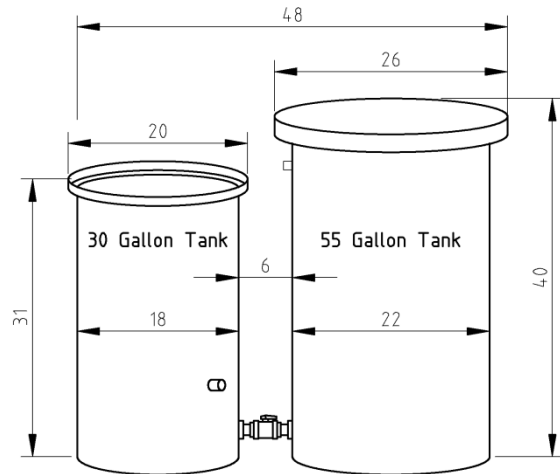


40 Pound XGEN
Skid Mounted

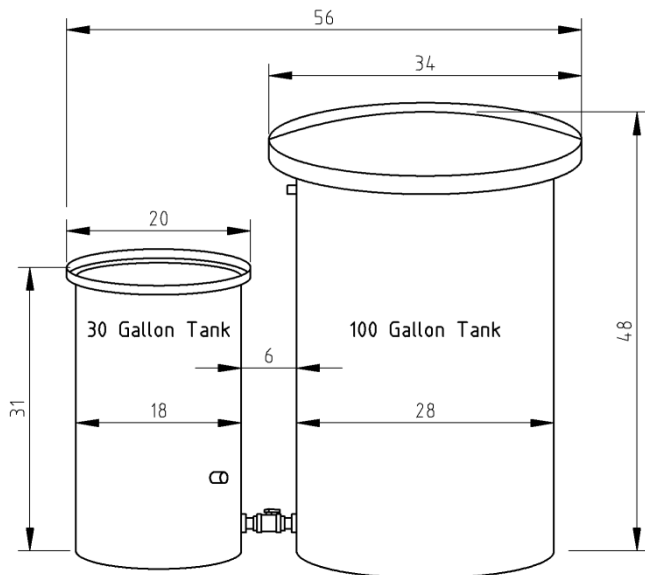
Chlorking 5000 Dimensional Daigram
2 - 30 Gallon Tanks



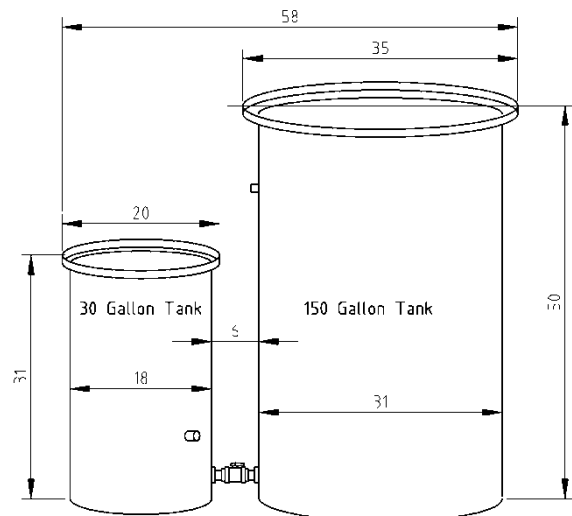
Chlorking 5000 Dimensional Daigram
1 - 30 Gal Tank, 1 - 55 Gal Tank



Chlorking 5000 Dimensional Daigram
1 - 30 Gal Tank, 1 - 100 Gal Tank



Chlorking 5000 Dimensional Daigram
1 - 30 Gal Tank, 1 - 150 Gal Tank



SECTION 2 INSTALLATION

2.1 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.

2.2 STORAGE

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

2.3 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

- CONNECT THE EQUIPMENT ASSEMBLY TO A CIRCUIT PROTECTED BY A GROUND-FAULT CIRCUIT-INTERRUPTER.
- ONLY A CERTIFIED TECHNICIAN MAY INSTALL AND SERVICE THE **CHLORKING®** X-GEN SYSTEM.
- MODIFYING THE **CHLORKING®** X-GEN SYSTEM IN ANY WAY MAY CAUSE BODILY INJURY AND WILL VOID THE WARRANTY.
- DO NOT ALLOW CHILDREN TO OPERATE THE **CHLORKING®** X-GEN 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®** X-GEN SYSTEM NEVER OPERATES WHEN THE PUMPS ARE OFF.
- ALL BOXES ON THE **CHLORKING®** X-GEN 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.

2.4 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. **See Tools Checklist and Additional Parts Required for Installation.**

2.5 TOOLS CHECKLIST

Power Tools: Drill, Hammer Drill

Drill Bits: 1-3/4 Hole Saw, Steel Drill Bit Assortment, Concrete Drills

Taps: 1-1/2 Inch NPT

Hand Tools: Set of Sockets to 1-1/16, Hammer, Screw Drivers, Wire Strippers, PVC Cutters, Level, Slip Joint Pliers, Crescent Wrench, 3/4 Inch Wrench, 9/16 Wrench, Tape Measure, Allen Wrenches, Wire Cutters, Teflon Tape, Electrical Tape, True RMS Clamp Meter, Air Tank

2.6 ADDITIONAL PARTS REQUIRED FOR INSTALLATION

Polypropylene tubing, both ½ and 3/8 inch
PVC tubing in 1-1/2 inch or PVC pipe in 1-1/2 inch
PVC 90's, 45's and couplings as needed
Anchors and mounting hardware

2.7 POWER SUPPLY ELECTRICAL CONNECTIONS (See Figure 2 and 2.1)

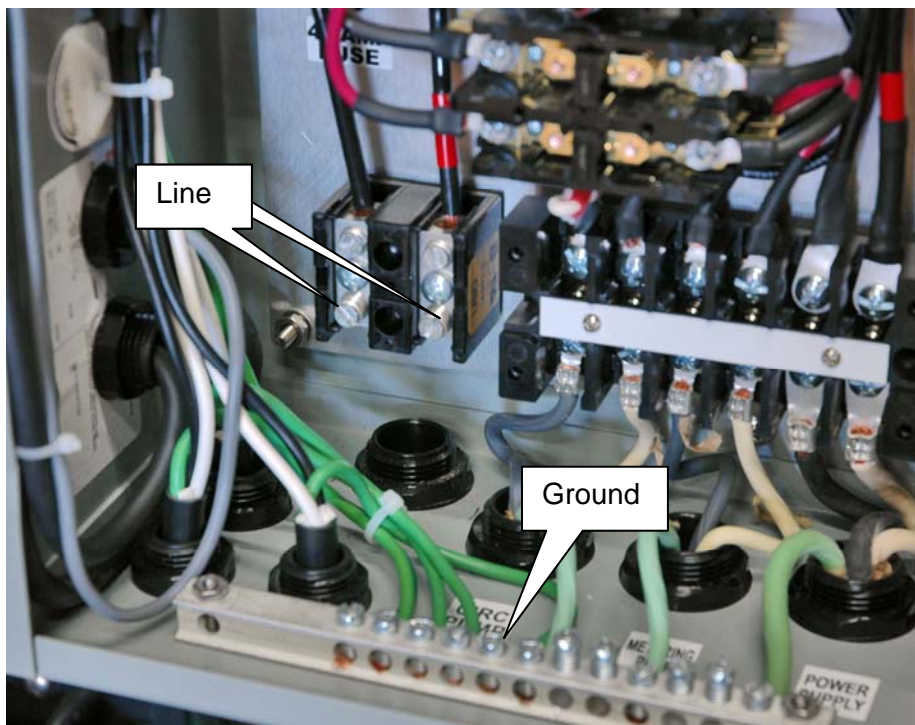
WARNING

DO NOT FORGET TO CONNECT THE EARTH TERMINALS AND THE EQUIPMENT BONDING WIRE. THE ELECTRICAL SUPPLY MUST MATCH THE SYSTEM RATED CURRENT. ENSURE THAT POWER IS LINKED TO THE MAIN PUMP POWER SOURCE FOR THE POOL TO ENSURE THAT YOUR CHLORKING® X-GEN SYSTEM NEVER OPERATES WHEN THE POOL PUMPS ARE OFF.

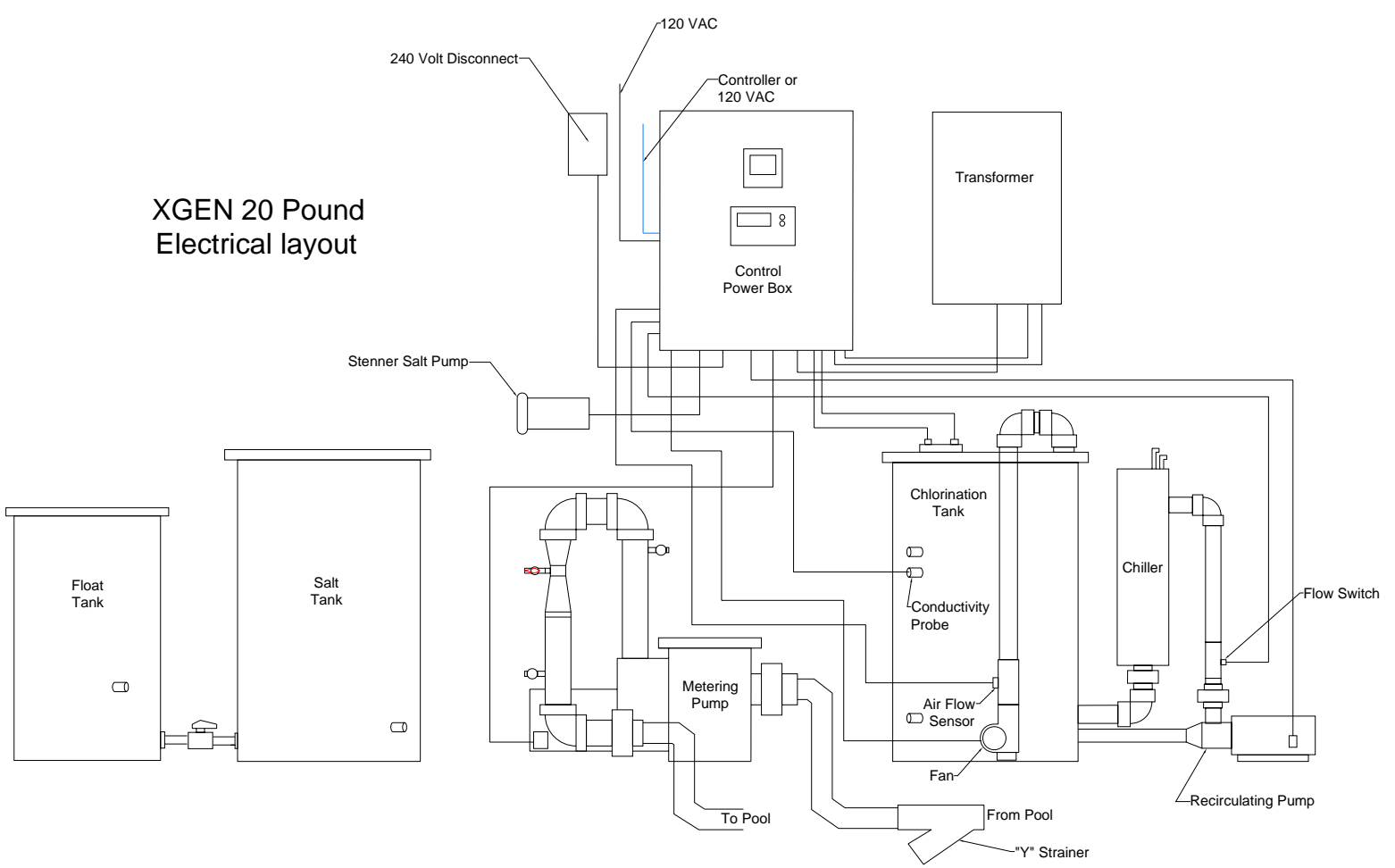
For ease of service it is recommended that a manual disconnect be installed between the electrical service and the XGEN system.

Connect the electrical supply from the pool equipment room to the connections marked line and ground. Ensure that the electrical service is protected by a ground fault circuit interrupter and is rated for the model XGEN that is installed.

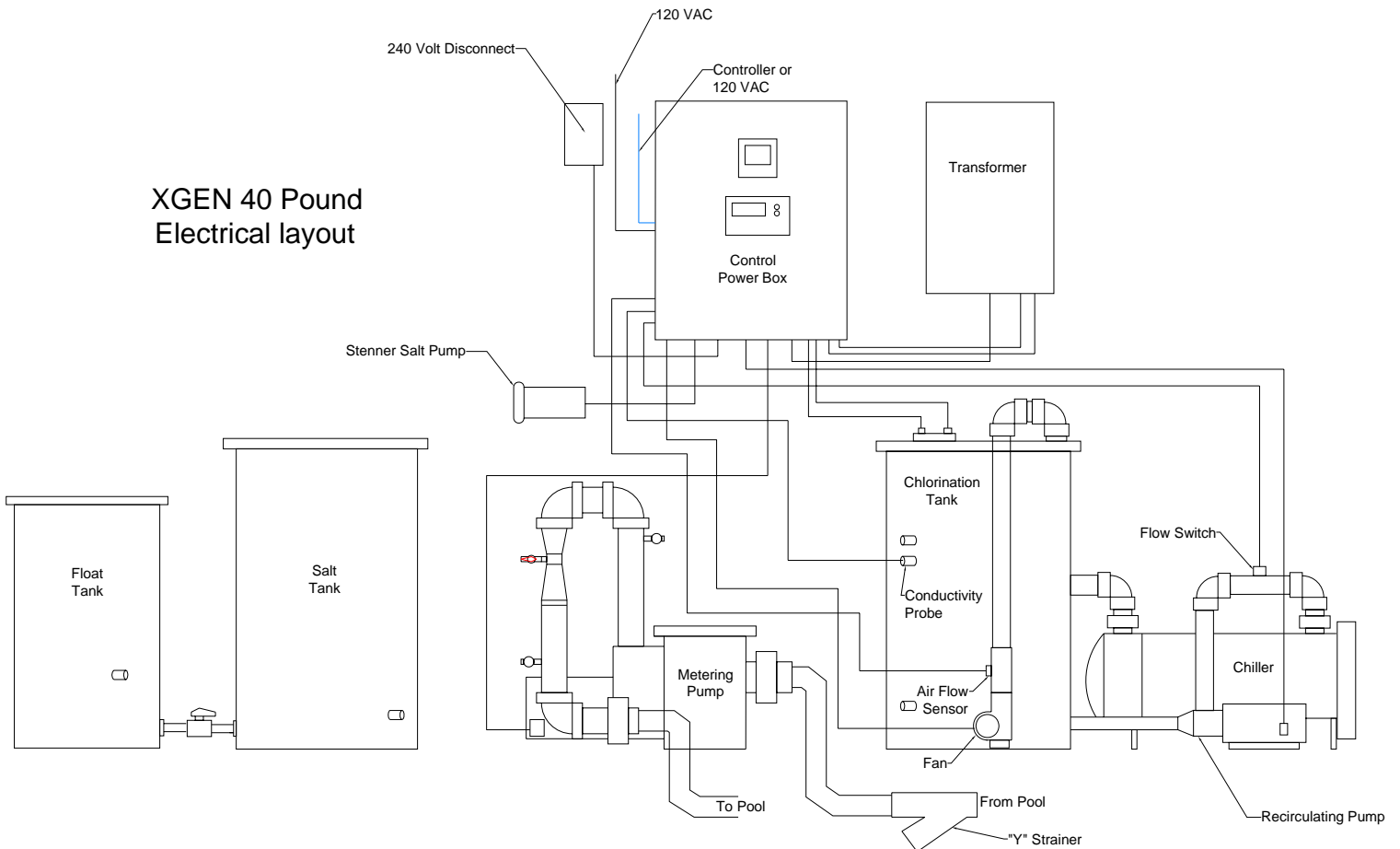
Figure 2



XGEN 20 Pound Electrical layout



XGEN 40 Pound Electrical layout



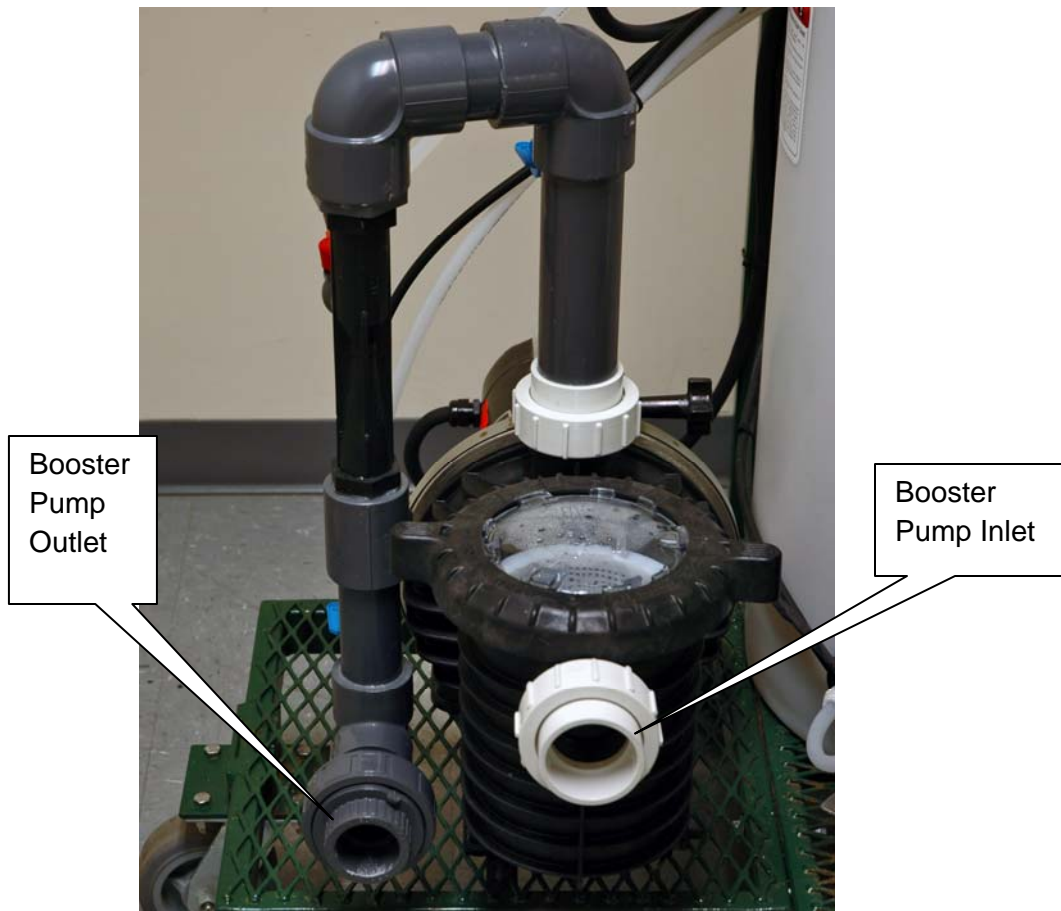
2.9 PLUMBING CONNECTIONS (VENTURI INJECTOR MODELS) (See Figure 2, 2.1, 2.2 and 2.3)

Plumb inlet of the booster pump to the return line of the pool after all other pool components such as heaters etc. Use at least 1-1/2 inch PVC pipe for this connection. It is recommended that a valve be installed at this connection so that the system can be isolated from the pool.

Plumb the outlet of the booster pump to the return line of the pool after the inlet plumbing connection. Use at least 1-1/2 inch PVC pipe for this connection. It is recommended that a valve be installed at this connection so that the system can be isolated from the pool.

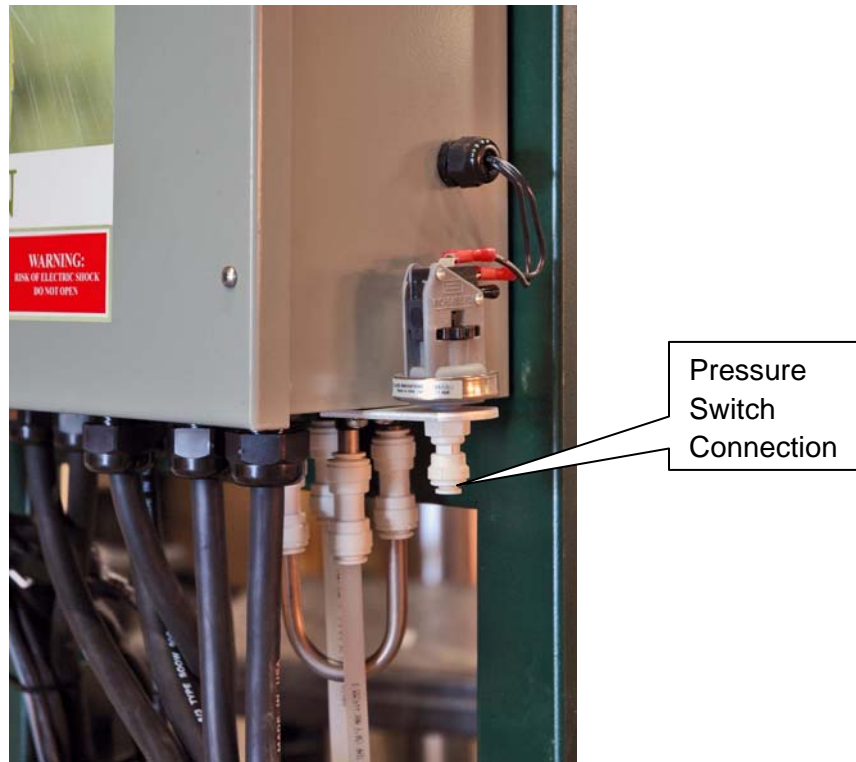
Note: Be sure there are no components, T's, or 90's in the pool return line between the inlet and outlet plumbing of the booster pump.

Figure 2



Plumb the pressure switch to the return line of the pool with 1/8 tubing.

Figure 2.1



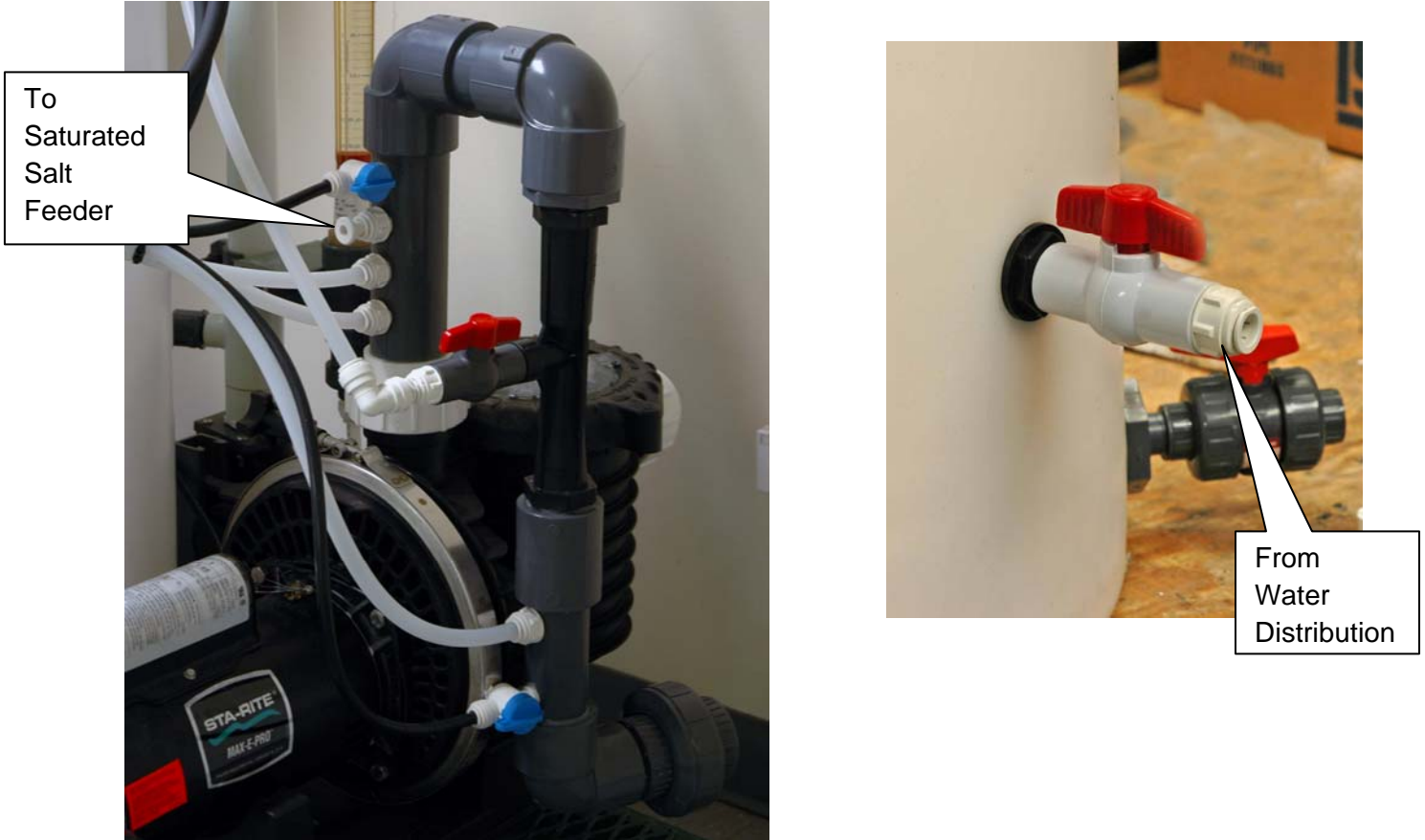
Plumb the peristaltic pump suction line to the salt outlet on the Saturated Salt Feeder with 1/8 tubing. The salt outlet on the Saturated Salt Feeder is a small blue and white valve located at the bottom of the salt feeder.

Figure 2.2

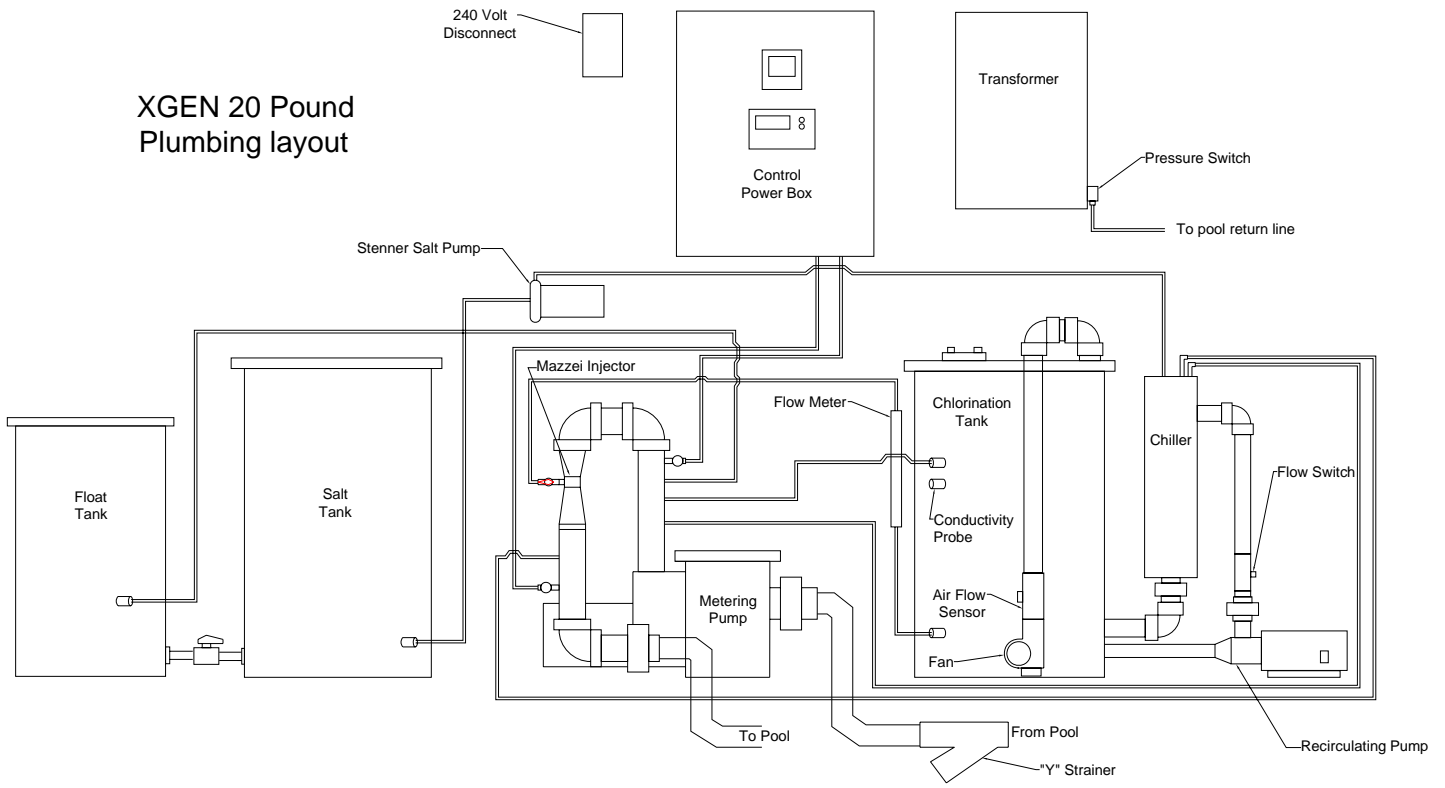


Plumb the Saturated Salt Feeder water supply from the open port on the Water Distribution Manifold with ½ inch tubing.

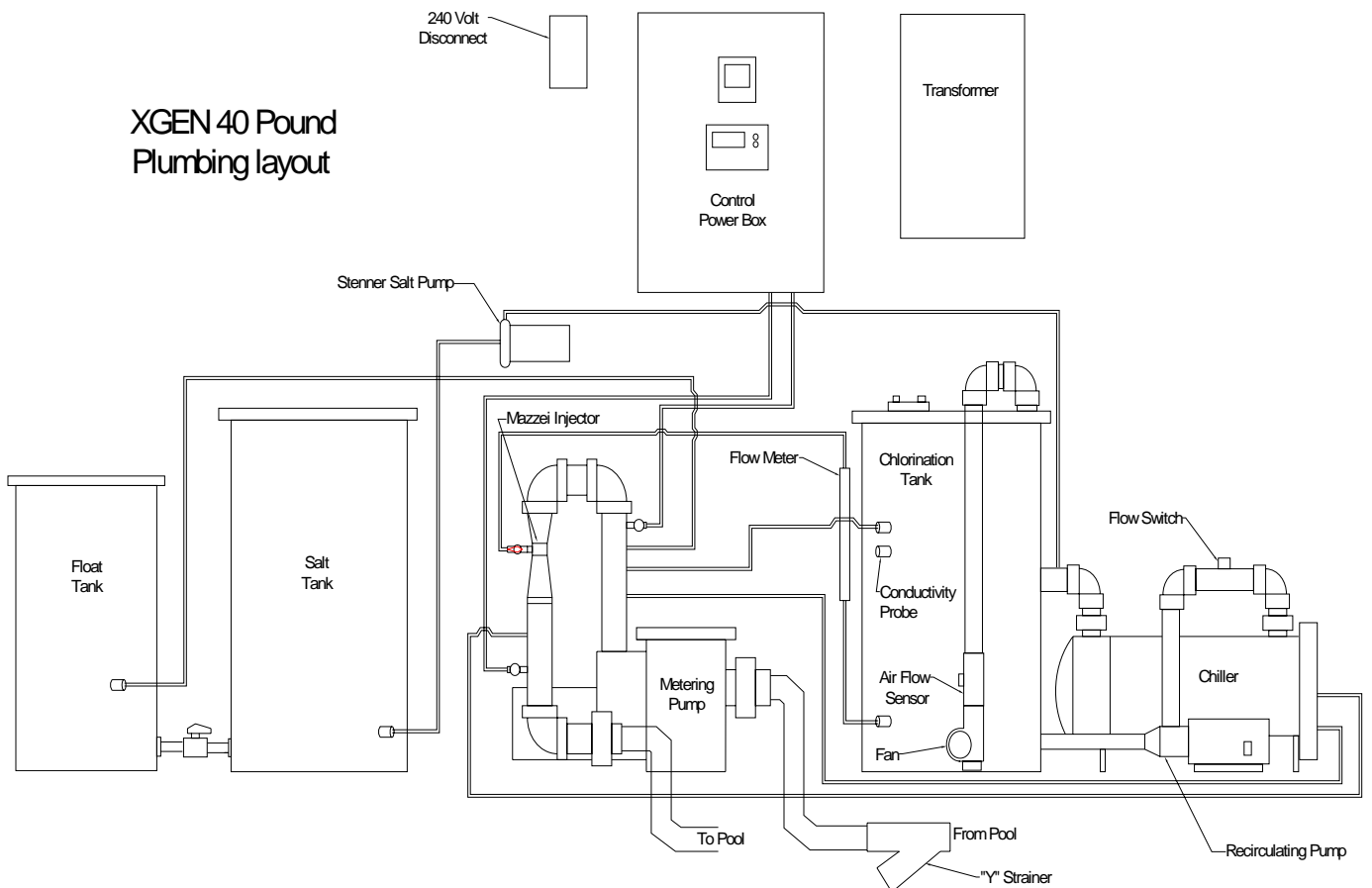
Figure 2.3



XGEN 20 Pound Plumbing layout



XGEN 40 Pound Plumbing layout



2.10 PLUMBING THE HYDROGEN VENT

WARNING

FAILURE TO PLUMB THE HYDROGEN VENT TO OUTSIDE ATMOSPHERE MAY RESULT IN DAMAGE TO EQUIPMENT OR PERSONS. ALWAYS VENT THE SYSTEM AWAY FROM SPARK OR FLAME

Hydrogen vent pipes must be rigid plastic (PVC) and installed in a continuous upward gradient. The pipe must be vented to atmosphere. Use a minimum of 1-1/2 inch pipe for the vent. The vent pipe should not be longer than 40 feet. (Consult ChlorKing if longer runs are required). Keep the opening clear and protected from water or debris with the use of a hood or bend.

Figure 2.4



SECTION 3 OPERATION

3.1 START-UP PROCEDURES AND CHECKS

Check that all components are mounted securely. Check that all plumbing is secure and tight. Check that all plumbing and electrical connections are connected in the proper place.

Ensure that all system isolation valves installed during installation are open including the valve for the pressure switch.

Open both the inlet and outlet valve on the production tank.

Open all valves on the water distribution manifold.



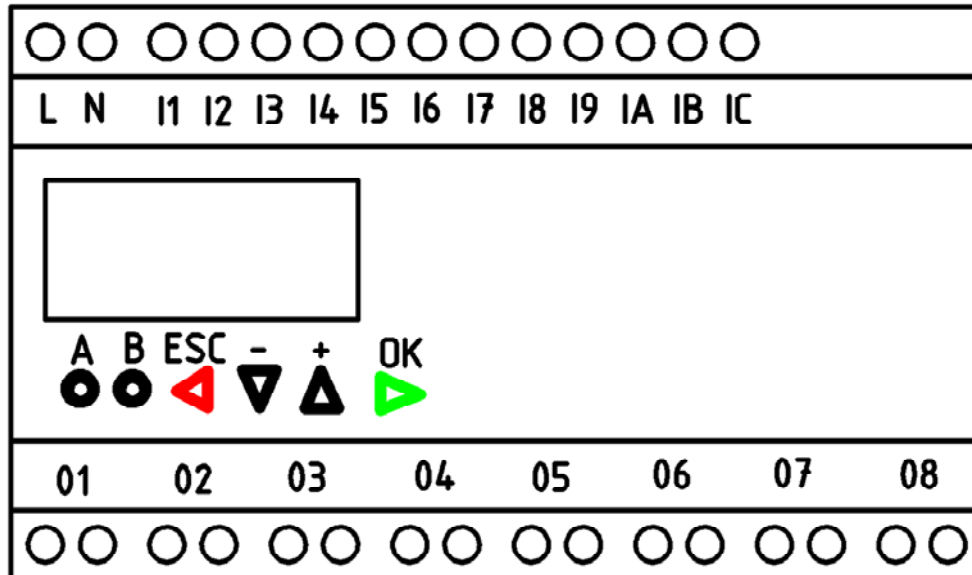
Fill the Saturated Salt Feeder with pure rock or pellet salt. **Do Not Use Granular Salt.** Open both Saturated Salt Feeder valves. (Consult the Saturated Salt Feeder manual for more information).

Turn on any breakers or disconnect boxes used for circuit protection.

Turn the peristaltic pump switch on.

Turn the power supply switch on.

Open the power supply cabinet to gain access to the Micro Controller located in the upper left hand corner of the power supply.



Press and hold the “A” button. Pressing and holding the “A” button will start the booster pump and draw water from the pool return line, filling the production tank, the Saturated Salt Feeder, and all cooling lines on the XGEN system. Release the “A” button when the production tank is full.

Press and release the “B” button. Pressing the “B” button will start the production tank circulation pump and the peristaltic pump. This will feed saturated salt to the production tank. When the salt concentration reaches 3000 ppm, the system will automatically begin generating chlorine.

3.2 ADJUSTING CHLORINE OUTPUT

Turn the control knob on the side of the power supply all the way clockwise to the maximum position. It is never necessary to turn this adjustment down.

XGEN 40

Adjust the flow through the flow meter for the following production rates:

- 2.0 GPM = 40 pounds of chlorine production per day
- 1.4 GPM = 32 pounds of chlorine production per day
- 1.0 GPM = 29 pounds of chlorine production per day
- .7 GPM = 25 pounds of chlorine production per day
- .35 GPM = 10 Pounds of chlorine production per day

XGEN20

Adjust the flow through the flow meter for the following production rates:

1.0 GPM = 20 pounds of chlorine production per day

.7 GPM = 16 pounds of chlorine production per day

.5 GPM = 14 pounds of chlorine production per day

.35 GPM = 12 pounds of chlorine production per day

.2 GPM = 5 Pounds of chlorine production per day

NOTE

Adjustments in excess of the maximum gallons per minute in the charts above will not produce more chlorine. Adjustments in excess of the maximum gallons per minute will only consume excess salt.

SECTION 4 MAINTENANCE

4.1 ROUTINE MAINTENANCE

Daily

Confirm system operation with a visual inspection. Check the salt concentration on the display. Check the amps as displayed on the gauge. Check the flow through the flow meter.

Weekly

Clean the electrode stacks each week or as needed based on the presence of calcium buildup. Remove the electrode stacks and soak them in a dilute solution of 5:1 water and muriatic acid. Soak the electrode stacks only long enough to clean the calcium off the plates.

Check the salt in Saturated Salt Feeder and fill as needed.

Monthly

Check the system filter, production tank filter and dilution fan screen and clean as necessary.

Every Six Months

Empty the Saturated Salt Feeder and clean any debris from the bottom of the tank. Empty the production tank and flush thoroughly with fresh water to remove all traces of chlorine. Fill the production and add 1 gallon of muriatic acid. Turn off the peristaltic

pump and press the “B” button. The system will circulate the dilute solution through the production tank components for 5 minutes. Empty the contents of the production tank through the flow meter by holding the “A” button.

For additional assistance with the XGEN, call ChlorKing® at 800-536-8180

SECTION 5 WARRANTY INFORMATION

The ChlorKing® X-GEN system carries a limited 3-year warranty

1. 3-year warranty on assembly of electrical components and production tank.
 2. 1 year on all electrical items.
 3. 2 years or 15,000 hours, whichever 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. Applicable on electrode stacks where full price has been paid.)
- 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 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.

