

# The Solution

US PATENT #6,752,930 B2

**SureWater Technologies**

**348 N Park Ave  
Winter Garden, FL 34787  
407-656-8711  
Model # 22152-01**

Sodium Hypochlorite Feeder  
Max Output Rate 1728gpd

**Caution:** Use Of Chemicals Other Than Recommended May Be Hazardous  
(V-120) AMPS 107 (HZ 60) SINGLE PHASE  
76

**NOT FOR USE WITH SPAS OR HOT TUBS**

## *Professional Series*

**HIGH CAPACITY  
SODIUM HYPOCHLORITE  
FEEDER  
MODEL # 22152-01**

## **PRODUCT MANUAL**

*US Patent No. 6,752,930 B2*

# **Contents**

- I      **Installation Instruction Manual**
  - (1)    Prior to Installation
  - (2)    Installation Requirements
  - (3)    Installation Instructions
    - a.    Mounting Unit
    - b.    Plumbing
  - (4)    Electrical
  
- II     **Operation Manual**
  - (5)    Operating Instructions
    - a.    Output Graph
  
- III    **Service / Maintenance Manual**
  - (6)    Servicing Unit
  
- IV     **Spare Parts List**
  - (7)    Spare Parts Information
  
- V      **Warranty Statement**
  - (8)    Warranty Statement
  
- VI     **Schematics**
  - (9)    Unit Design Diagram
  
- VII    **Trace Art Work**
  - (10)   Wiring Diagram
  
- VIII   **Equipment Set-up Instructions**
  - (11)   Prior to Installation
  - (12)   Installation Requirements
  
- IX     **References**
  - (13)   Installation Suggestions Section

# **Installation Instruction Manual**

## **Prior to Installation**

1. Read Entire Product Manual. It is recommended unit be installed by **qualified technician**.
2. Bypass stream must be capable of delivering approximately 12.5 gpm.
3. Minimum venturi inlet pressure requirement is 20 psi.
4. Pressure and flow requirements are to be met by creating back pressure on the upstream side of the main return line valve by throttling down the main return line valve (differential valve).
5. Inlet side of the venturi is to be fed by post filtered water.

**Note:** If required recirculation rate cannot be maintained after throttling main return line valve, it may be necessary to install a booster pump in the by-pass stream, upstream of inlet side of the venturi prior to pressure gauge. **Consult with a qualified technician or engineer.**

## **Installation Requirements**

### **IT IS RECOMMENDED UNIT BE INSTALLED BY QUALIFIED TECHNICIAN**

1. Top of unit should be mounted at approximately eye level.
2. Unit **MUST** be installed in an exact vertical plane to insure accuracy.
3. All piping should be supported and strapped securely to avoid vibration.
4. All piping and fittings should be SCHED 80 PVC (Recommended)
5. Use **only** purple PVC cleaner and grey PVC cement.
6. Teflon pipe dope is to be used on venturi threads.
7. It is highly recommended that pipe cutters are used on **ALL** PVC cuts.
8. Unit is to be electrically connected to chemical controller (electronic chemical controller is to be supplied by others).

**IMPORTANT:** When using hacksaw or drilling PVC pipe it is extremely important that **ALL** shavings or filings be removed and cleaned from PVC pipe prior to gluing. Any debris left in pipes may cause clogging of venturi, resulting in unit failure.

### **(OPTIONAL SUGGESTIONS)**

#### **Refer to References Sec.**

1. Use PVC wedge saddles to connect by-pass stream to main return line, both upstream and down stream of the main return line valve. (Can be accomplished with 1" nipples/drilled and tapped.)
2. Use Aickinstrut channel and mounting brackets to support and strap piping.

# **ATTENTION**

## **ADDITIONAL INSTALLATION NOTES:**

- 1. PRIOR TO MOUNTING UNIT ON THE WALL IT IS RECOMMENDED THE 1/2" UNION COUPLING WITH CLEAR PVC PIPE INSERTED BE GLUED TO THE 1/2" 90 DEGREE ELBOW OF THE CHLORINE SUPPLY LINE. THIS SHOULD BE DONE WITH THE UNIT LAYING FLAT ON A HORIZONTAL PLANE. SPECIAL CAUTION SHOULD BE TAKEN TO ENSURE EXCESSIVE PVC GLUE DOES NOT RUN DOWN PIPING INTO THE SOLENOID VALVE.**
  
- 2. IN THE EVENT UNIT IS TO BE INSTALLED ON A POOR QUALITY FILTER SYSTEM:**

**EXAMPLE: OLD D.E. FILTERS WITH HOLES IN THE GRID COVERING MATERIAL.**

**THEN IT IS RECOMMENDED THAT A Y-STRAINER BE INSTALLED PRIOR TO THE INLET SIDE OF THE VENTURI.**

## Installation Instructions

Unit **MUST** be installed in exact vertical plane to ensure accuracy. Wall mounting is preferred.

Feeder comes with mounting hardware (Tap Con screws and washers) to be used with 4 (four) existing mounting holes in channel bracket on back of unit. Place unit on desired location (wall), use level and mark.

Feeder is to be plumbed on a by-pass stream on main recirculation system. Inlet side of venturi is to be fed by post-filtered water prior to the main return line valve (differential valve). Discharge (outlet) side of venturi is to be plumbed into main return line down stream of the main return line valve. (See basic installation drawing)

### Mounting Unit

Unit comes with mounting hardware (Tap Con screws and washers) to be used with 4 (four) existing mounting holes in channel bracket on back of unit.

Place unit on desired location (wall), use level and mark holes. Pre-drill holes with 3/16" drill bit. Use Tap Cons and washers to mount unit.

### Plumbing



**Warning:** Specialized plumbing knowledge may be required to ensure damage is not caused to unit.

Unit is to be plumbed on 1 1/4" by-pass stream. Inlet side of venturi is to be fed by post-filtered water prior to (up stream of) main return line valve (differential valve). Discharge (outlet) side of venturi is to be plumbed into main return line down stream of main return line valve (differential valve), after all other feed or injection lines.

One 1 1/4" union ball valve with Viton seals (isolation valves – 2 provided with reducers) is to be plumbed, threaded connections (installed) directly onto inlet and outlet side of venturi (use Teflon pipe dope).

Install vertically, pre-mounted, 0 – 60 PSI, liquid filled pressure gauge (provided on 1 1/4" Tee) in by-pass stream approximately 10" upstream of (isolation) union ball valve on inlet side of venturi.

Chlorine supply line should be hard piped entirely from sodium hypochlorite 10% (**BLEACH**) tank using 1/2" schedule 40 PVC. Note: It is recommended any existing chlorine supply line piping be completely replaced if using batch sodium hypochlorite 10% (**BLEACH**).

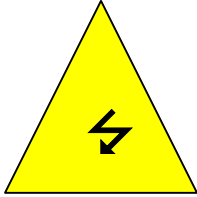
18" poly tubing (provided) is to be installed on barbed end fitting of labcock valve.





## Electrical

After mounting, unit is ready for electrical connection. Unit is to be electrically connected to and operated by an **electronic chemical controller ONLY**.



**Caution:** Electrical connections (installation) should only be done by electrician or qualified technician.

For the wiring process: Three wires (one is ground) are recommended. To connect the wires, loosen screw and pull connector assembly away from the coil. Use a small screwdriver and carefully pry the inside connector from the housing using the visible slot at the corner of the connector. Screw your conduit or cable fitting into the housing. Pass the wires through your fitting and the housing and then connect them to the terminals on the connector. One terminal is marked with a ground symbol ( ) and the other two are hot leads.

Reassemble, paying close attention to the desired orientation of the conduit connection. Tighten the conduit fitting to secure the conduit. Make sure two gaskets are properly sealed before tightening the connector assembly to the coil. **DO NOT** over tighten. For three-phase power systems the terminals can be connected to any two of the three phases. All local wiring codes should be followed when wiring the coil.

Refer to Trace Art Work for wiring diagram.

Reference section contains specific instructions for Type W20 solenoid.

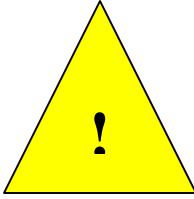
# **Operation Manual**

## **CAUTION**

Loss of chemical supply may result in **damage** to float in flow meter!

If chlorine tank is empty, close **chlorine shut-off valve** until re-supplied.

## Operating Instructions



**Caution:** Feeder is to be used only with Sodium Hypochlorite 10% (Bleach).

Unit is to be used with electronic chemical controller. Controller must be capable of intermittent feed (proportional), programmable as to cycle time, proportional span and fail safe lockout. Controller operates unit (turns on and off as needed).

Controller must be set to intermittent feed.



**Warning:** Fail safe (or lockout timer) should not be set to allow feed rate to exceed acceptable chlorine levels in pool water.

### Example

100,000 Gallon Pool

1 Gallon CL<sub>2</sub> (Sodium Hypochlorite) = 1 PPM/100,000 Gallons

5 PPM CL<sub>2</sub> Highest acceptable level

.5 GPM feed rate

5 PPM =  $\frac{5 \text{ Gals Sodium Hypochlorite}}{.5 \text{ GPM}}$  = 10 Minute Fail Safe

### Unit Feed Rate Range

.2 (2 Tenths) GPM to 1.2 (1 Gallon 2 Tenths) GPM

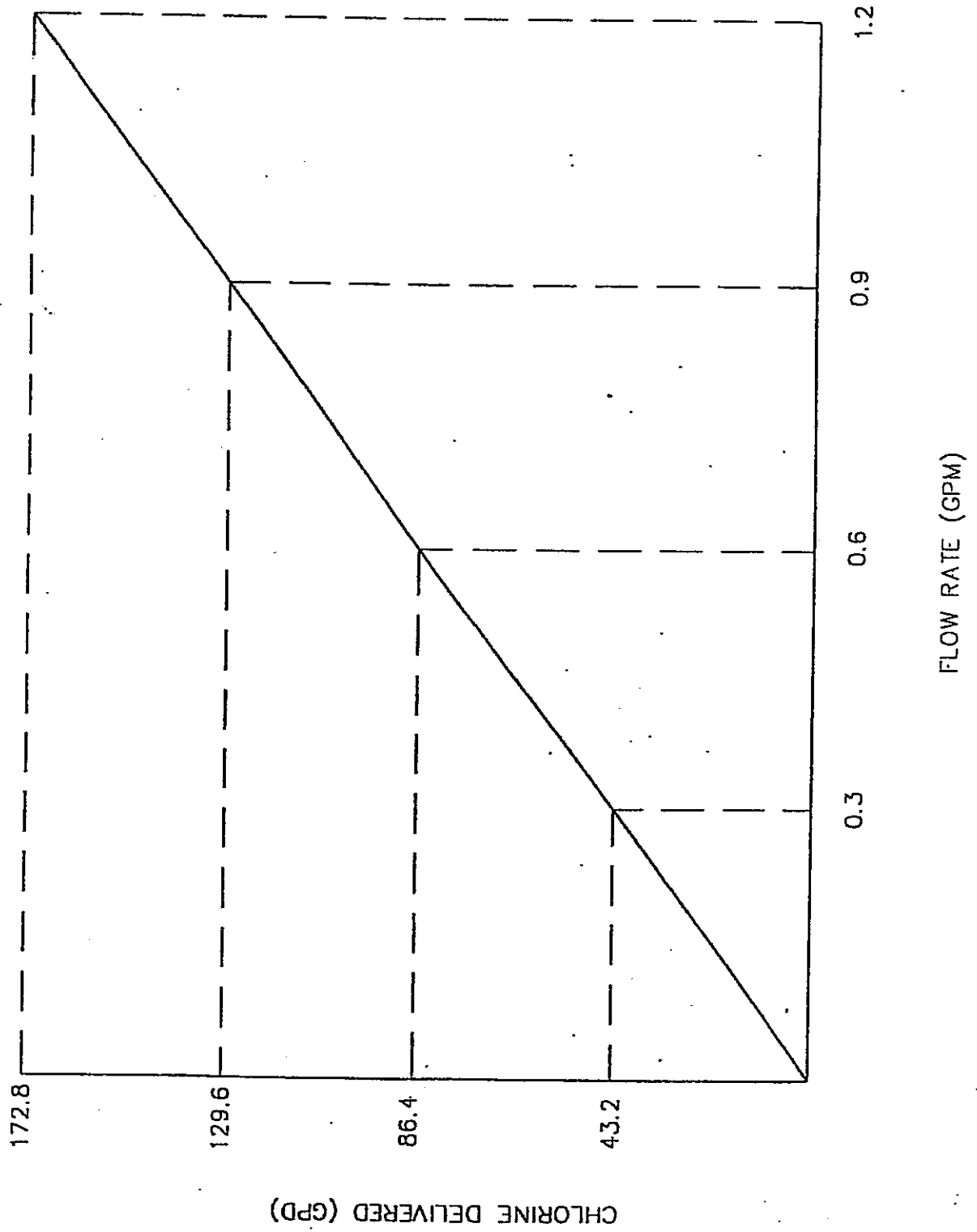
Maximum output rate 1728 GPD

### Setting Feed Rate

Determine required feed rate.

Dial metering valve to desired feed rate, located on flow meter.

THE SOLUTION  
OUT PUT CURVE  
(10% CHLORINE SOLUTION)



## **DANGER CAUTION STATEMENT**

DUE TO THE EFFECTS OF PRESSURE, CREATED BY THE OFF GASSING OF OXYGEN WITHIN THE SODIUM HYPOCHLORITE SOLUTION IT IS REQUIRED THE UNIT BE CLEANED AND THE LABCOCK VALVE REMAIN OPEN WHEN NOT IN USE FOR EXTENDED PERIODS OF TIME.

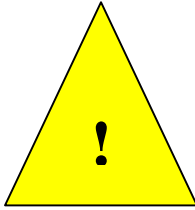
FAILURE TO FOLLOW THIS PROCEDURE MAY RESULT IN DAMAGE TO THE UNIT AND POSSIBLE INJURY.

**NEVER LEAVE SODIUM HYPOCHLORITE SOLUTION (BLEACH) IN UNIT WHEN NOT IN USE!**

# **Service / Maintenance Manual**

## Servicing Unit

To service **Chlorine Feeder** it is required unit be cleaned every two weeks if using batch sodium hypochlorite (bleach). If using continuous process sodium hypochlorite (bleach) unit should be cleaned once a month.



**Warning**  
**Chemical Hazard:** Always Wear Appropriate Personal Protective Equipment

1. When Cleaning Unit, or Handling Chemicals
2. When Preparing 50% Acid, 50% Water Solution.  
Always Add Acid To Water - Never Add Water To Acid.
3. Never Allow Acid To Mix With Chlorine In Unit.

### To Clean Unit

1. Set controller to FEED MODE.
2. Close chemical shut off valve.
3. Insert clean-out labcock flex tube in one gallon of water and open clean-out labcock valve. Allow entire gallon to flow through unit, rinsing unit free of bleach.
4. Insert clean-out labcock flex tube in gallon solution of 50% water, 50% muriatic acid and allow mixture to flow through unit approximately 10 seconds.
5. With clean-out labcock valve still open reinsert labcock flex tube in fresh gallon of water. Allow entire gallon to flow through unit, rinsing unit free of muriatic acid residue.
6. Clean Y-strainer if necessary.
7. Close clean-out labcock valve.
8. Re-open chlorine shut off valve.
9. **Reset controller.**

**Note: These instructions are also located on face of Unit.**



# **Spare Parts Manual**



**FLANGED CONNECTION:**

Flange bolts should be tight enough to slightly compress the gasket and make a good seal, without distorting or putting excessive stress on the flanges. Suitable washers should be used between the bolt head and flange and the nut and flange. Bolts should be tightened in alternating sequence.

**RECOMMENDED FLANGE BOLT TORQUE. USE WELL LUBRICATED METAL BOLTS AND NUTS. USE SOFT RUBBER GASKETS.**

FLANGE SIZE	BOLT DIA.	TORQUE FT. LBS.	FLANGE SIZE	BOLT DIA.	TORQUE FT. LBS.
1/2	1/2	10-15	2	5/8	15-25
3/4	1/2	10-15	2-1/2	5/8	20-25
1	1/2	10-15	3	5/8	20-25
1-1/4	1/2	10-15	4	5/8	20-25
1-1/2	1/2	10-15	6	3/4	30-40

**INSTALLATION:**

It is recommended that these strainers be installed no closer than 10 pipe diameters from a pump. At least 5 pipe diameters should be between these strainers and an elbow.

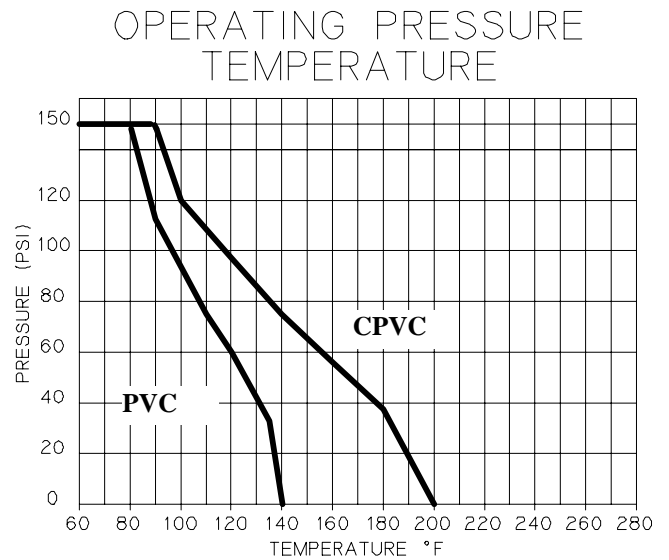
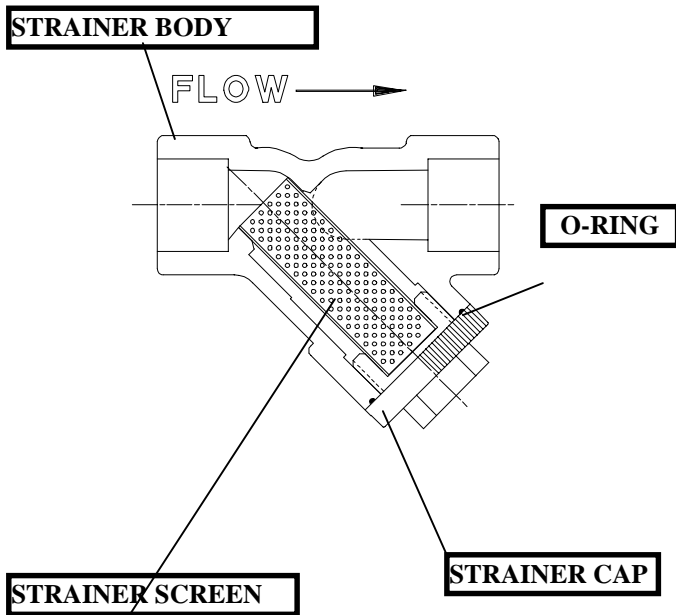
As in all plastic piping the maximum fluid velocity is 8 feet per second. This velocity minimizes the effects of valve closure and pump start up or shut down.

**SCREEN CLEANING:**

**EXTREME CAUTION MUST BE TAKEN WHEN WORKING ON THIS STRAINER.**

**THE PIPING SYSTEM MUST BE DEPRESSURIZED AND DRAINED. PROPER CARE MUST BE TAKEN. CONSULT M.S.D.S. (MATERIAL SAFETY DATA SHEETS) INFORMATION REGARDING YOUR SPECIFIC APPLICATION.**

When the pressure drop across the strainer is in excess of 5 PSI the screen requires cleaning. To clean the screen remove the screen cap nut from the strainer by turning counter clockwise. The collected debris should be removed with the screen. Clean the screen. **DO NOT POUND OR DEFORM THE SCREEN.** Insert the screen back into the strainer with the flange, if one is on the screen into the body first. Install the o-ring in the body groove. Use a non-petroleum base lubricant to lubricate the o-ring and thread, and re-assemble the cap to the strainer.



# **Warranty Statement**

## **Warranty Statement**

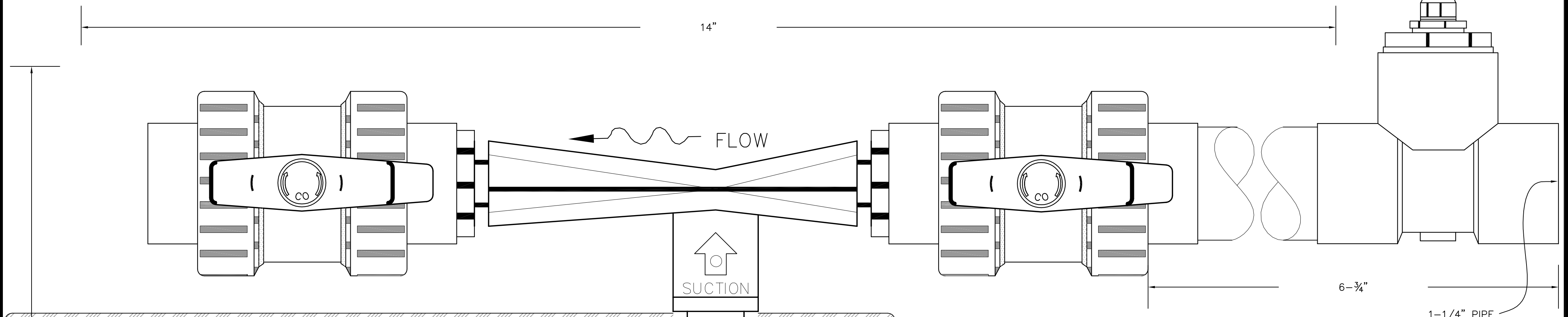
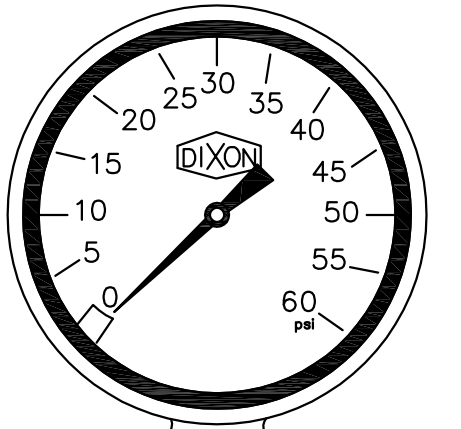
SUREWATER TECHNOLOGIES, INC. (HEREAFTER SWT) WARRANTS EQUIPMENT OF ITS MANUFACTURE AND BEARING ITS IDENTIFICATION TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIAL. SWT'S LIABILITY UNDER THIS WARRANTY EXTENDS FOR A PERIOD OF TWO YEARS FROM DATE OF DELIVERY FROM OUR FACTORY OR AUTHORIZED DISTRIBUTOR. IT IS LIMITED TO REPAIRING OR REPLACING ANY DEVICE OR PART WHICH IS RETURNED, TRANSPORTATION PREPAID TO THE FACTORY WITHIN TWO YEARS OF DELIVERY TO THE ORIGINAL PURCHASER, AND WHICH IS PROVEN DEFECTIVE UPON EXAMINATION.

SWT DISCLAIMS ALL LIABILITY FOR DAMAGE DURING TRANSPORTATION, FOR CONSEQUENTIAL DAMAGE OF WHATEVER NATURE FOR DAMAGE DUE TO HANDLING, INSTALLATION OR IMPROPER OPERATION, AND FOR DETERMINING SUITABILITY FOR THE USE INTENDED BY THE PURCHASER.

SWT MAKES NO WARRANTIES EITHER EXPRESSED OR IMPLIED OTHER THAN THOSE STATED ABOVE. NO REPRESENTATIVE HAS AUTHORITY TO CHANGE OR MODIFY THIS WARRANTY IN ANY RESPECT.

# **Schematics**

# THE SOLUTION



## The Solution

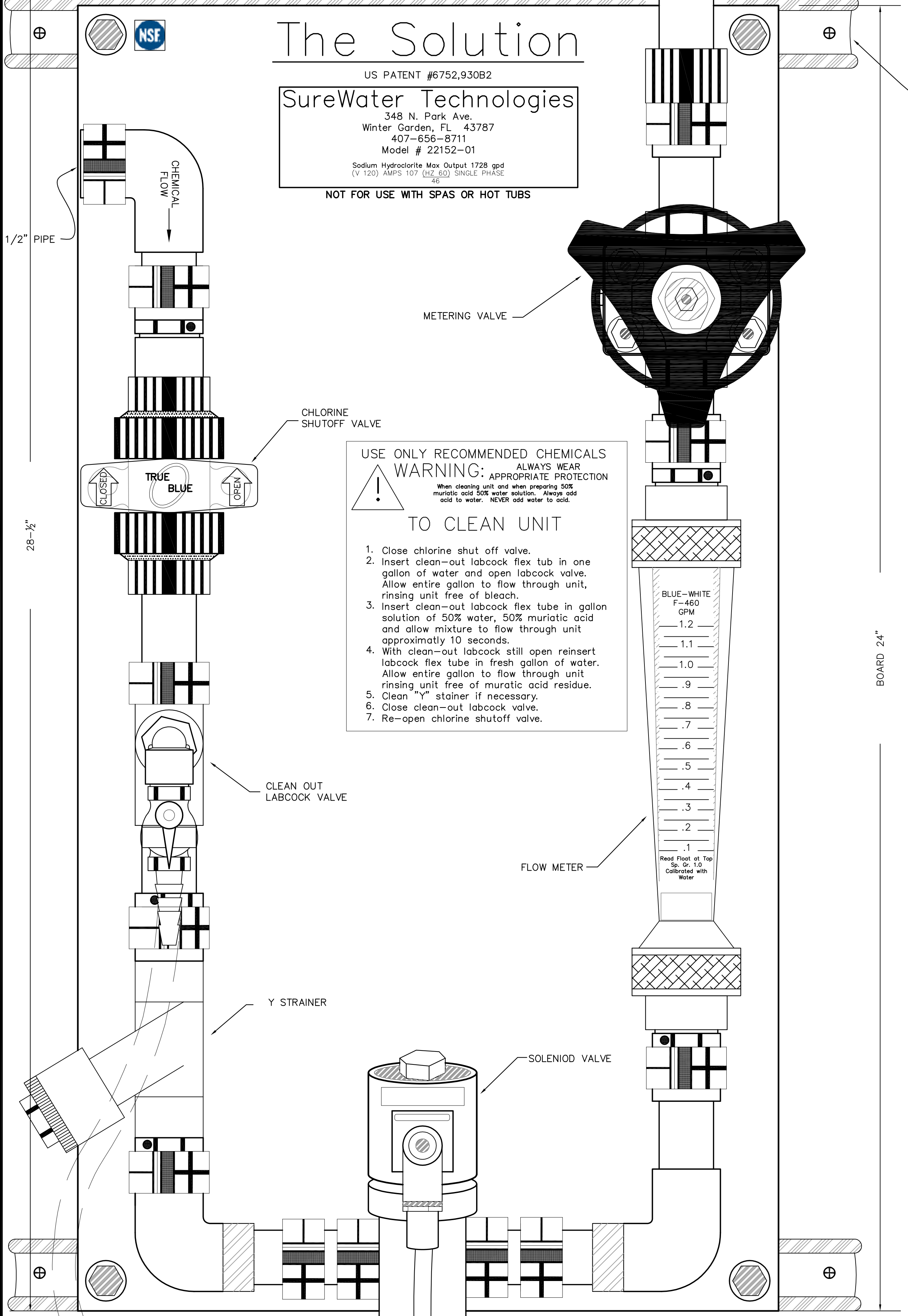
US PATENT #6752,930B2

### SureWater Technologies

348 N. Park Ave.  
Winter Garden, FL 43787  
407-656-8711  
Model # 22152-01

Sodium Hypochlorite Max Output 1728 gpd  
(V 120) AMPS 107 (HZ 60) SINGLE PHASE

NOT FOR USE WITH SPAS OR HOT TUBS



**USE ONLY RECOMMENDED CHEMICALS**

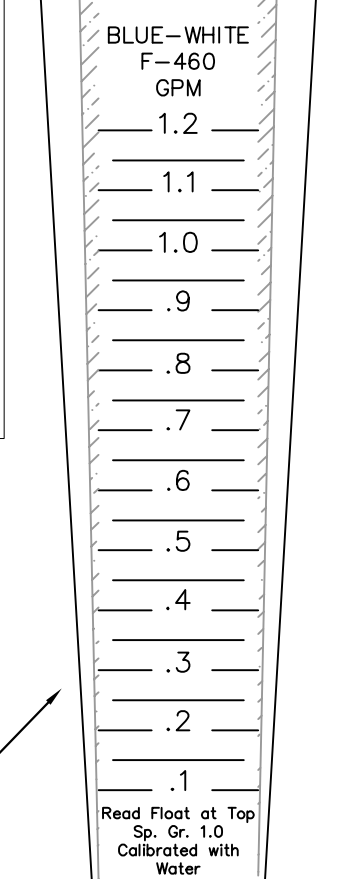
**WARNING: ALWAYS WEAR APPROPRIATE PROTECTION**

When cleaning unit and when preparing 50% muriatic acid 50% water solution. Always add acid to water. NEVER add water to acid.

**TO CLEAN UNIT**

1. Close chlorine shut off valve.
2. Insert clean-out labcock flex tub in one gallon of water and open labcock valve. Allow entire gallon to flow through unit, rinsing unit free of bleach.
3. Insert clean-out labcock flex tube in gallon solution of 50% water, 50% muriatic acid and allow mixture to flow through unit approximately 10 seconds.
4. With clean-out labcock still open reinsert labcock flex tube in fresh gallon of water. Allow entire gallon to flow through unit rinsing unit free of muriatic acid residue.
5. Clean "Y" strainer if necessary.
6. Close clean-out labcock valve.
7. Re-open chlorine shut off valve.

"THE SOLUTION" MD22152-01  
SODIUM HYPOCHLORITE FEEDER  
1728 GPD MAX. OUTPUT  
(V 120) AMPS 107 (HZ 60)  
SINGLE PHASE 46



6' POWER CORD  
TO BE ELECTRICALLY  
CONNECTED TO CHEMICAL  
CONTROLLER

DESIGNED BY: PETER ALEXANDER  
DATE DRAWN: MAY 10TH, 2004

# **Trace Art Work**

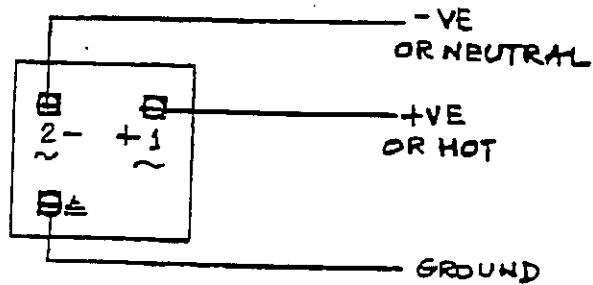


# TYPE W20 SOLENOID COIL

## WIRING DIAGRAM

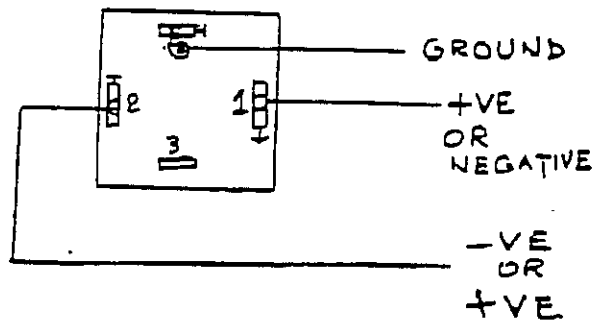
W20 COIL

110V/50Hz - 120V/60Hz



## RECTIFIED COIL

24 VOLT DC



# **Equipment Set-up Instructions**

## **Prior to Installation**

1. Read Entire Product Manual. It is recommended unit be installed by **qualified technician**.
2. Bypass stream must be capable of delivering approximately 12.5 gpm.
3. Minimum venturi inlet pressure requirement is 20 psi.
4. Pressure and flow requirements are to be met by creating back pressure on the upstream side of the main return line valve by throttling down the main return line valve (differential valve).
5. Inlet side of the venturi is to be fed by post filtered water.

**Note:** If required recirculation rate cannot be maintained after throttling main return line valve, it may be necessary to install a booster pump in the by-pass stream, upstream of inlet side of the venturi prior to pressure gauge. **Consult with a qualified technician or engineer.**

## **Installation Requirements**

### **IT IS RECOMMENDED UNIT BE INSTALLED BY QUALIFIED TECHNICIAN**

1. Top of unit should be mounted at approximately eye level.
2. Unit **MUST** be installed in an exact vertical plane to insure accuracy.
3. All piping should be supported and strapped securely to avoid vibration.
4. All piping and fittings should be SCHED 80 PVC (Recommended)
5. Use **only** purple PVC cleaner and grey PVC cement.
6. Teflon pipe dope is to be used on venturi threads.
7. It is highly recommended that pipe cutters are used on **ALL** PVC cuts.
8. Unit is to be electrically connected to chemical controller (electronic chemical controller is to be supplied by others).

**IMPORTANT:** When using hacksaw or drilling PVC pipe it is extremely important that **ALL** shavings or filings be removed and cleaned from PVC pipe prior to gluing. Any debris left in pipes may cause clogging of venturi, resulting in unit failure.

### **(OPTIONAL SUGGESTIONS)**

#### **Refer to References Sec.**

3. Use PVC wedge saddles to connect by-pass stream to main return line, both upstream and down stream of the main return line valve. (Can be accomplished with 1" nipples/drilled and tapped.)
4. Use Aickinstrut channel and mounting brackets to support and strap piping.

## **References**

# **Installation Suggestion Section**

Aickinstrut  
PVC Wedge Saddles