

# **Flexible Solutions HS115 Automatic Metering System Owner's Manual**



## **Installation, Operation & Parts**

Furnish this manual to the end user of this metering system; its use will reduce service calls and chance of injury and will lengthen system life

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## HS115 Automatic Metering System

To avoid unneeded service calls, prevent possible injuries, and get the most out of your pump, READ THIS MANUAL CAREFULLY!

This manual describes how to install, setup, operate and maintain the HS115 Automatic Metering System (AMS). Material in this manual is subject to change without notice. Manual revisions will be made on an as needed basis. Special circumstances involving important design, operation or application information will be released via Equipment Technical Bulletins.

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## Safety

**These are the safety alert symbols. When you see these symbols on your system or in this manual, look for one of the following signal words and be alert to the potential for personal injury.**



*Always wear personal protective equipment such as gloves and safety glasses when working with potentially hazardous chemicals.*



*Electrical installation of this equipment should only be performed by trained personnel in accordance with local electrical wiring regulations (in North America, refer to NEC and CSA, C22.2 CEC Part 1). Before working with this equipment, isolate it from any electrical source and lock out/tag out.*



*A circuit breaker must be included in the installation's building. It must be installed in close proximity to the equipment and within easy reach of the operator, and it must be marked as the disconnecting device for the equipment.*



*Additional documentation for Pool 2000 units can be found at:  
<http://www.beta-technology.com>.*

*If equipment is used in a manner not specified by the manufacturer, the protection provided may be impaired.*

**These symbols on the unit mean:**



Direct Current



Alternating Current

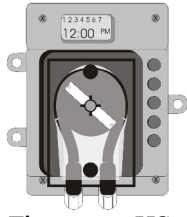


Figure 1a. HS115

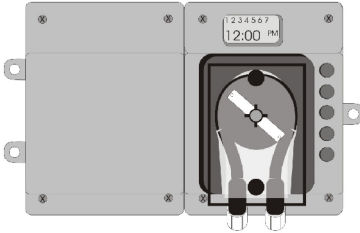
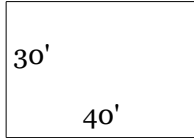


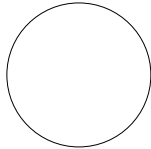
Figure 1b. HS115 D-Cell Battery Unit

**Swimming pool  
Calculation Example**



$1,200 / 400 = 3 \text{ oz. / day}$

**Hot Tub  
Calculation Example**



**10' Diameter:**  
 $3.14 \times (5 \times 5) = 78 \text{ oz.}$   
 $78 / 50 = 1.5 \text{ oz. / day}$

**General Information**

The HS115 is an Automatic Metering System for the application of Heatsavr™, the original liquid solar pool cover. It is a reliable, accurate, inexpensive way to ensure that your pool receives all the energy savings possible from using Heatsavr™.

The HS115 is a time-activated, water-resistant peristaltic pump. Up to 24 events may be programmed with variable run times for each event from 1 second to 20 minutes. The HS115 operates a 7-day clock in which events can be programmed to occur every day or only on particular days throughout the week. A back up battery keeps the clock running in the event of an interruption in the electrical power. The Automatic Metering System is sold complete with two peristaltic pump tubes and additional accessories included (See Accessories). The HS115 is available for use with 115VAC, 230VAC or with a D-cell battery pack.

The manufacturer recommended dosage rate for Heatsavr™ is 1 oz/400 square feet of pool surface area per day. And 1 oz/50 square feet of Hot Tub and Spa surface area per day. The higher temperature in Hot Tubs require a higher dosage rate. The dosage is daily as the product is biodegradable. Each system can be programmable to exactly fit the surface area of your pool. Calculate the surface area of your pool (Width x Length) and divide by 400 square feet (50 square feet in Hot Tubs). This will calculate the daily amount of Heatsavr™ (in ounces) necessary for your specific swimming pool. For example, a 1,200 sq ft swimming pool will require 3 ounces per day.

The best application time is in the evening, once the swimming pool is closed to the public or when the swimming pool is experiencing less use.

Installation is very simple and the metering system is durable and easy to maintain.

**Specifications**

**Operating Conditions**

Ambient Operating Temperature: 41 to 104°F (5 to 40°C)  
 Altitude: Max operating altitude 2000 meters (6500 feet)  
 Humidity: Max relative humidity 80% for temperatures up to 30°C (87.8°F), decreasing linearly to 50% relative humidity at 40°C (104°F)

**Electrical Power Options**

115VAC ~ 50/60 Hz 0.1A  
 230VAC ~ 50/60  
 Voltage fluctuations up to +/- 10% of nominal voltage.  
 4 D-cell battery powered

**Rating**

Pollution Degree: 2  
 Installation Category II  
 Intended for indoor use (CSA approved for indoor use only)  
 Outdoor use requires an All Weather Cover to be installed

**Timing Capability**

Up to 24 different times. Daily, weekly, or mixed schedule; variable run time 1 second to 19 minutes and 59 seconds.

## Dimensions & Weight

### 115 VAC / 230 VAC Version

Height	Width <sup>1</sup>	Depth <sup>2</sup>	Weight
5.6"	4.6"	4.8"	1.85 lbs
14.2 cm	11.6 cm	12.2 cm	0.84 kg

### D-Cell Battery Powered Version

Height	Width	Depth	Weight <sup>3</sup>
5.6"	8.4"	4.8"	1.57 lbs
14.2 cm	21.3 cm	12.2 cm	0.72 kg

## Components

Enclosure: Molded ABS plastic, water-resistant, flame-resistant

Pump: Peristaltic, self-priming and self-checking, 6 Volts DC

## Speed & Displacement

When pumping Heatsavr™: 100 rpm, 3 oz per min (90 ml per min)

Max duty cycle 19 min. 59 sec ON, 20 min. OFF

## Hydraulic Performance

Maximum Vacuum: 8" of mercury

Maximum Pressure: 20 psi

## Tubing Material

Flex, 1/4" OD, 1/8" ID

## Coin Battery

3 Volt Lithium BR2032 or CR2032 (installed)

## Accessories

- 1 Thread-on cap with 90° barb fitting
- 1 Bottle insert with pick up tube
- 1 Check valve injection fitting
- 2 Flex squeeze tube
- 25 Feet of polyethylene feed line
- Mounting screws
- Zip Tie wraps

## Regulatory

For confirmation of regulatory compliance, see rating label on unit.

## Installation

Before beginning, turn off the pools' circulation system and drain the isolated area where you will be drilling and tapping a hole into the main return line.

### Mounting:

The HS115 should be mounted so the LCD screen can be viewed easily. It should be located close enough to both the injection point and liquid supply to ensure unobstructed delivery. If possible, mount out of direct sunlight to prevent UV damage.

1. Choose a place to mount the system near a power outlet and the pool main return line.



**Refer  
installation  
and service to  
qualified  
personnel only.**

*Installation must comply with  
all applicable plumbing and  
electrical codes.*

*The HS115 can also be mounted  
using the three plastic feet. If  
mounting on an uneven  
surface, be careful not to over-  
tighten or snap the feet off.*

<sup>1</sup> Width includes feet

<sup>2</sup> Depth with Snap Heat pump cartridge in place

<sup>3</sup> Weight does not include batteries



The cap with barbed fitting and insert act as a check valve for the Heatsavr™ bottle, but also as a safety device so that the liquid will not spill aggressively if the bottle is knocked over. Do not leave the Heatsavr™ jug uncovered.

Make sure that all the compression nuts are tight to prevent leakage.

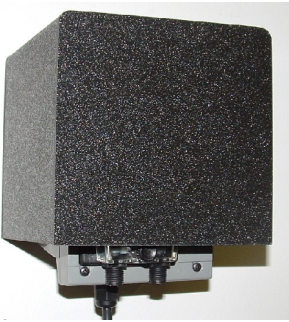


Figure 2. All Weather Cover

Figure 3a

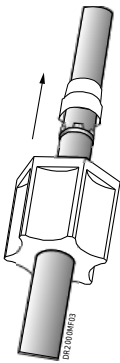


Figure 3b

2. Align the metal mounting bracket and mount on a smooth surface using screws.
3. Place the HS115 over the mounting bracket and slide it down tight.
4. If desired, a screw can be placed in one of the feet to hold the unit in place.

**For Outdoor Installation:**

1. Before mounting, add the supplied Spacer to the back of the Mounting Bracket. The spacer can be found inside the black all weather cover.
2. Slide the HS115 pump onto the Mounting Bracket.
3. Continue with **Installing Supply Lines** Steps 1-3.
4. Slide the weather cover over top of the HS115 to add protection (Fig 2).
5. At the end of the season, remove the Heatsavr™ system and store in heated area.

**Installing Peristaltic Flex tube:**

1. Turn off power to the unit to ensure that the pump does not run during maintenance.
2. Remove the cartridge from the motor housing by twisting the snap pins at top and bottom 90° to the left or right.
3. Loosen but do not remove the small screw at the bottom of the rear cover and lift the cover from the cartridge.
4. Pull the roller assembly out of the pump cartridge.
5. When inserting a new flex tube, coat the inside of the cartridge with a liberal amount of the provided lubricant.
6. Press the two tube inserts into the cartridge so that the zip tie wrap "buckles" face toward the center of the pump. Remember, the tube must not be twisted during the assembly.
7. Replace the roller assembly and then the rear cover; re-tighten the screw.

**Installing Supply Lines:**

1. Drill a 21/64" or 8.5mm hole and tap 1/8-27 NPT into the top of the return line downstream of filter/heater and 6" or more from other chemical feeds (chlorine, bromine, etc).
2. Screw in the grey check valve injection fitting using Teflon tape to ensure a tight fit with no leaks.
3. The polyethylene tubing needs to be cut into two pieces: one for the suction line and one for the discharge line.
4. Attach the first piece of tubing to the discharge side of the pump (RH side) and run towards injection point in the main feed line to the pool. Avoid uphill runs greater than 10 feet (3 meters). Cut the line to the necessary length then connect the polyethylene line to the grey check valve injection fitting.
5. Cut the suction tubing piece to length so that suction line extends from the Heatsavr™ jug to the pump. Attach it to the nut of the suction side (LH side) of the pump fittings. (Fig 3a)
6. Open a Heatsavr™ jug and insert the blue bottle insert with attached 1 foot suction tubing. It will press into the inner diameter of the neck of the Heatsavr™ bottle. It will snap in firmly.
  - a. Screw on the Heatsavr™ thread-on cap with barbed fitting.
  - b. The cap with barbed fitting and insert act as a check valve for the Heatsavr™ bottle, but also as a safety device so that if the bottle is knocked over it will not spill aggressively.

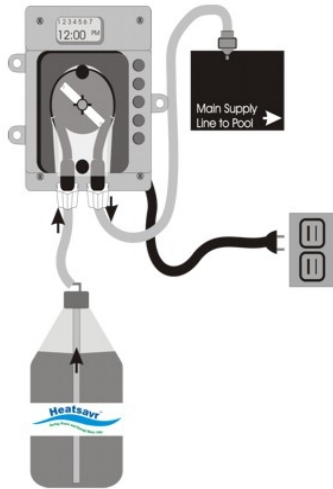


Figure 4. HS115 Installation Schematic View

- c. Slide the suction line tubing onto the barbed fitting of the Heatsavr™ bottle cap, making sure the tubing is fully seated on the barb. Secure the tubing on the barbed fitting with a zip tie (Fig 3b).
- d. **\*If you notice small air bubbles form in the line during pump priming take the line off, cut off ½ inch and repeat step c.**

### Power Supply:

#### 115VAC Power Cord Version

This unit comes with a standard power cord. No ground connection is required.

#### 230VAC Power Cord Version

This unit comes pre-wired for 230 VAC. A 15-amp branch circuit protection (circuit breaker) must be included in the building's electrical installation. It must be installed in close proximity and within easy reach of the HS115 operator. The circuit breaker must be marked as the disconnecting device for the HS115. If the equipment is used in a manner not specified by the manufacturer the protection provided may be impaired.

#### D-Cell Battery Powered Version

This unit comes with a battery pack for 4 D-Cell batteries (batteries not included). The D-Cell battery holder is housed in the battery compartment.

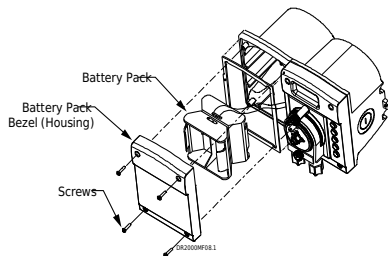


Figure 5. Inserting D-Cell Batteries

### Installation

1. Remove the 4 screws holding the battery housing top in place (the battery pack bezel).
2. Lift off the top and remove the battery holder, being careful not to damage the gasket.
3. Insert 4 D-cell batteries as indicated. (Fig 5)
4. Replace the battery holder and battery housing top.
5. Refit and tighten the 4 screws, being careful not to damage the gasket.

Ensure that the front plate is firmly in place and the screws properly tightened to prevent moisture from entering into the unit and to maintain the HS115 water resistance.

**It is not necessary to remove the front of the pump control box. The batteries are in the battery compartment. They can be changed without opening the pump side of the HS115.**

### Battery Life

It is important to know that there is significant difference in quality between commercially available D-cell batteries. “Heavy-duty” and “Copper Top” brand batteries tend to last the shortest length of time, while the Duracell Ultra M3 and Energizer Max batteries can last up to ten times longer. We recommend that you **ONLY** use these high-quality alkaline batteries.

There is a 3-volt lithium battery (BR2032 or CR2032) on the main PCB that serves as an emergency backup power supply. This battery provides backup power to retain the clock settings during power loss. It provides enough power to retain time and event date but will not run the pump. The life of this battery will depend on the amount of time that power is lost during the lifetime of the pump and the average ambient temperature.

Because of the extremely low power demands of the HS115, it may never be necessary to change this battery. If this battery does go dead, the clock will revert to the default time of 12:00 AM of Day 1 and all programmed events will be erased after a power loss. A replacement battery can be purchased commercially. See the Maintenance section for more information.

## Setup & Programming

During normal operation, the HS115 is in Run Mode. In Run Mode, the screen will display the current time and day of the week and the colon will blink once per second. The days of the week are represented by the numbers 1 through 7 at the top of the display screen.

The HS115 is programmed using the 5 buttons and screen in the front of the unit.

### Entering Program Mode:

To begin programming, you must first enter into Program Mode. To do this, hold down the Program button for 8 seconds. The colon will blink fast and irregularly while the Program button is pressed. The whole screen will flash and the colon will stop blinking to indicate that you have successfully entered Program Mode. The screen display will not change; it will continue to show the current time and day of the week.

### Setting the Clock:

Once you enter Program Mode, your first task is to set the clock. Use the Hours and Minutes buttons to change the time of day. The clock will display “P” for PM. Use the day button to change the day of the week. We recommend that you program Monday as Day 1.

### Programming When an Event Will Occur:

#### Programming Timer

The HS115 metering system and peristaltic Flex tube is designed to move a volume of **3 ounces/minute** of Heatsavr™. Determine the pools surface area. The pump needs to run 20 seconds for every 400 sq. ft. of surface area. To ensure optimal Heatsavr™ effectiveness, the best time to run the pump is at the end of the day, when the pool closes to the public or is experiencing less use.

#### Example:

A 30 x 40 ft pool has 1,200 sq. ft. of surface area. The pump will need to run 20 seconds for every 400 sq. ft. of surface area.

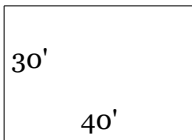
Set the timer to start at 10:00 pm (22:00 hrs) and then run for a period of 1 minute.

For a guide to common pool sizes, dosage rates and set times see Chart 1

#### Set Event

1. Press the Event button once. You will see the screen in Fig. 6a. This screen indicates which event you are entering, in this case Event 1.
2. Press the Event button again. This screen shows the day and time this Event will begin.
3. Change the time that the Event will occur using the Hours and Minutes buttons.
4. Change the day of the week that this event will occur using the Day button. When scrolling through the Day menus, you will see that you are able to select from the following options:

### Calculation Example



$$1,200 / 400 = 3 \text{ oz. / day}$$

Surface Area (sq. ft.)	Oz / Day	Min: Sec
800	2	:40
1000	2.5	:50
1200	3	1:00
2000	5	1:40
3,600 (Jr. Olympic)	9	3:00
13,600 (Olympic)	34	10:20

Chart 1

- Select each day individually, as days 1 through 7, 1 representing Monday.
- Select all the days of the week, 1 through 7 appear together (recommended).** Fig. 6b. indicates that the event will occur everyday at 8:30 AM
- Select week days only, 1 through 5 appear together
- Select weekend days only, 6 and 7 appear together

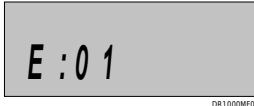


Figure 6a.

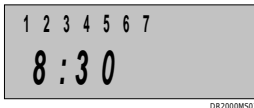


Figure 6b.



Figure 6c. indicates that the event will have duration of 1 minute

### Programming How Long an Event Will Last:

Once you have programmed when the event will occur, press the Event button again. Min:Sec will appear in the bottom of the screen to indicate the duration of the Event. The maximum run time is 19 minutes and 59 seconds. Set the duration of the event using the Minutes button and the Seconds button. We recommend you allow an interval of 20 minutes between events.

Once you have finished programming the first event, press the Event button again to move to next event. You can program up to 24 events this way. However, a normal Heatsavr™ injection schedule should only use 1 event, which will occur each day of the week.

In situations where two events have been programmed for the same time and day, the highest numbered event will be the one the HS115 accepts. For example, if Event 1 is set for 30 seconds at 2:00 PM on Day 1 and Event 4 is set for 10 seconds at 2:00 PM on day 1, Event 4 will take precedence and the pump will activate for 10 seconds at 2:00 PM on Day 1.

### Clearing Unwanted Events

As a rule, it is a good idea to clear events that you do not plan to use. This eliminates the occurrence of any unwanted events. To clear unwanted events:

- Go to the event screen of the first event you want to clear.
- Press and hold the Hours and Minutes buttons at the same time.
- While still pressing the Hours and Minutes buttons, press and hold the Event button. The unit will scroll through all higher-numbered events and clear them (by setting the duration to “000”). The unit will stop clearing after event 24.

### Example of clearing unwanted events

Let’s say you’ve programmed events 1 through 5 and are not planning to use events 6 through 24. It is advisable to be sure that there are no events programmed for 6 through 24. To do this:

- Go to the Event 6 screen.
- Press the Hours, Minutes and Event buttons and hold them down simultaneously. The unit will scroll from Event 6 through 24, setting all values to “000”. This process will stop when it returns to Event 1. You now have Events 1 through 5 as you programmed them and Events 6 through 24 cleared.

### Returning to Run Mode

When you have finished programming, you can return to Run Mode by pressing the Program button once. The colon will flash normally again (once per second). If you leave the HS115 in Program Mode and unattended for 2 1/2 minutes, it will switch back into Run Mode automatically.

You can be sure you are in Run Mode by pressing the Prime button and priming the pump. The Prime button will not prime the pump if you are not in Run Mode.



## Priming the Pump

1. Ensure that you are in Run Mode.
2. Press the Prime Button to operate the pump.
3. Hold prime button until the Heatsavr™ liquid has filled the lines all the way to the injection point.
4. If any air bubbles are entering the lines at a fitting, tighten the fitting.

## Maintenance

### Periodic Maintenance:



*Safety glasses and protective clothing should be worn while servicing the HS115. Refer installation and service to qualified personnel only.*



*Splash danger! Because the flex tube contains chemical product and is flexible, extra caution should be taken while changing the flex tube to ensure that the chemical does not splash in the eyes or in the hands or clothing of the service personnel. Always wear protective eye wear, gloves and clothing when changing the flex tube.*

### Pump & Flex Tube Replacement Schedule

Since every installation is different (operating frequency varies) an exact tube replacement schedule cannot be specified. With use, the tube slowly evolves from round to oval, and the amount of Heatsavr™ pumped decreases. By regularly checking the amount of Heatsavr™ pumped, you can determine general tube life. We recommend that you closely monitor the time it takes the original tube to reach the end of its flex life, and then establish a replacement schedule. Replacing tubes at regularly scheduled intervals ensures more accurate product use and reduces service calls. In general, short feed lines of a large diameter will improve pump tube life.

### Replacing Pump Cartridges

#### To Remove

1. Turn off power to the unit to ensure that the pump does not run during maintenance.
2. Remove the cartridge from the motor housing by twisting the snap pins at top and bottom 90° to the left or right.
3. Remove the supply and feed lines from the old pump flex tubing and connect them to the new pump flex tubing.

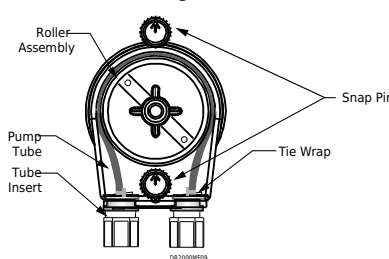
#### To Install

1. Align and engage the pump drive spline with the motor gear by rotating the roller assembly.
2. Turn the snap pins so that the arrow is pointed up; then push in until you hear a distinct click.

### Replacing Pump Flex Tubing

1. Remove the cartridge as described above.
2. Loosen but do not remove the small screw at the bottom of the rear cover and lift the cover from the cartridge.
3. Pull the roller assembly out of the pump cartridge to release the pump flex tubing.
4. Pull the tube inserts out of the pump cartridge.
5. Remove the flex tube and replace it with a new flex tube.
6. When inserting a new flex tube, coat the inside of the cartridge with a liberal amount of the provided lubricant.
7. Press the two tube inserts into the cartridge so that the zip tie wrap "buckles" face toward the center of the pump. Remember, the tube must not be twisted during the assembly.
8. Replace the roller assembly and then the rear cover; re-tighten the screw.

Figure 7



## **How to Replace the Pump Motor**

### **To Remove**

1. Ensure that power is off.
2. Remove the 4 screws holding the front plate (bezel) in place and remove the front plate.
3. Remove the pump cartridge from the motor assembly, leaving the chemical lines attached.
4. Remove the electrical connections at the back of the motor.
5. Compress the two flex ears on the back of the motor until the motor slides out through the hole in the front plate.

### **To Replace**

1. Locate the alignment tip of the motor housing so it is in the down position.
2. Slide the pump motor housing into the front plate hole. The holding ears will expand to hold the pump motor in place. Verify that both ears popped out and are locked in place.
3. Reinstall the electrical connections at the back of the motor and install the pump cartridge.
4. Prime the pump to verify proper pump rotation (clockwise). If the direction is wrong, switch the motor wires.

## **How to Replace the Main PCB**

1. Disconnect power to the unit.
2. Remove the 4 screws holding the front plate of the HS115 control box in place. Remove the front plate (bezel), being careful not to damage the gasket.
3. Detach the power wire connection coming from the power PCB to the main PCB.
4. Detach the motor supply wires from the PCB.
5. Place the bezel face down on the work surface and remove the 4 screws holding the main PCB to the bezel.
6. Gently lift the main PCB out of the bezel. If the zebra strips and display screen stick to the old PCB, remove them and place them in the bezel, being careful to keep their orientation.
7. Align the new PCB over the zebra strips and replace the 4 screws. Be sure to tighten the screws into position. The pressure these screws exert on the PCB is important for maintaining water resistance and holding the display in place.
8. Reattach the motor supply wires to the main PCB at the terminal marked "motor".
9. Reattach the power supply to the terminal marked "+6VDC".
10. Remount the front plate (bezel) and re-tighten the screws, being careful not to damage the gasket.

Between the main PCB and the front plate (bezel) are the buttons, screen and zebra strips. It is important that these items are properly aligned and that the screws holding the PCB in place be properly tightened. If these items are not properly aligned and held in place by pressure from the 4 screws, water resistance may be lost around the buttons or the screen may not display properly.

## **How to Replace the Power PCB**

1. Disconnect power to the unit.
2. Remove the 4 screws holding the front plate of the HS115 control box in place. Remove the front plate (bezel), being careful not to damage the gasket.

3. Detach the power wire connection from the main PCB and the power cord.
4. Remove the screws holding the power PCB in place and gently lift it out
5. Align the new power PCB and replace the screws. Be sure to tighten the screws into position.
6. Reattach the power cord to the terminal block and the power wire connection from the main PCB.
7. Remount the front plate (bezel) and re-tighten the screws, being careful not to damage the gasket.

#### **How to Replace the Coin Battery**

1. Ensure that power is off.
2. Remove the 4 screws holding the front plate of the HS115 control box in place. Remove the front plate (bezel), being careful not to damage the gasket.
3. Locate the coin battery on the PCB and slip it out. Replace it with a new one (3 Volt lithium BR2032 or CR2032).
4. Remount the front plate (bezel) and re-tighten the screws, being careful not to damage the gasket. When the lithium backup battery is removed, all programmed events will be erased and the clock will revert to its default setting of 12:00 AM, Day 1.

### **Troubleshooting**

#### **LCD Screen Not Displaying:**

If the LCD screen does not display when unit is properly powered, replace internal coin battery.

#### **Pump Runs Continuously:**

If the pump runs without being activated, replace the main PCB.

#### **Pump is Running Backwards:**

Check that the polarity of the wires from the main PCB to the motor is correct.

#### **Pump Runs Too Slowly:**

1. Check that the squeeze tube or pump cartridge is not jammed.
2. Check the chemical uptake line for kinks.
3. Verify that the chemical uptake line is not forming a seal against the side or bottom of the chemical drum (See **Installing Supply Lines in Installation**).
4. If the liquid being pumped is very viscous the pump may labor in order to move it. Using a less viscous chemical, pumping shorter distances, setting longer run times, and assuring that the squeeze tube is in good condition will help address this issue.

#### **For 115VAC & 230VAC Versions**

1. Verify that the correct line power is installed and adequate power is arriving to the unit.
2. Check for 6.0 volts DC or greater at the motor connection wires with the motor disconnected and the pump Prime button activated. If this voltage is present, replace the motor gearbox. If the problem persists after the motor gearbox has been replaced, replace the power PCB. If the voltage is absent, replace the main PCB.

### For D-Cell Battery Power Versions

1. Check for 6.0 volts DC or greater coming from the battery holder. If voltage is absent, replace the batteries. If voltage is present, proceed with step 2.
2. Check for 4.5 volts DC or greater at the motor connection wires with the motor disconnected and the pump Prime button activated. If this voltage is present, replace the motor gearbox. If the voltage is absent, replace the main PCB.

### Pump Will Not Run

1. Check that the squeeze tube or pump cartridge is not jammed.
2. Check the chemical uptake line for kinks.
3. Verify that the chemical uptake line is not forming a seal against the side or bottom of the chemical drum (See **Installing Supply Lines in Installation**).
4. Check to see that the motor connection wires are properly connected from the main PCB to the motor gearbox.
5. Press the Program button once to assure that you are in Run Mode. You must be in Run Mode for programmed events to occur. If you are in Run Mode the colon should blink once per second.
6. Push the Prime button and try to prime the pump. If the pump does prime, check that events are properly programmed.

### For 115 VAC & 230 VAC Versions

1. Verify the power is connected.
2. Check for 6 to 11 volts in the wire harness from the power PCB to the main PCB. If the voltage is absent, replace the power PCB.
3. Check for 6 volts DC or greater at the motor connection wires with the motor disconnected and the pump Prime button activated. If this voltage is present, replace the motor gearbox. If the voltage is absent, replace the main PCB.

### For D-Cell Battery Power Version

1. Make sure that the batteries are properly aligned and that the polarity of the wires running from battery pack to the main PCB is correct.
2. Check for 4.5 volts DC or greater coming from the battery holder. If voltage is absent, replace the batteries. If voltage is present, proceed with step 3.
3. Check for 4.5 volts DC or greater at the motor connection wires with the motor disconnected and the pump Prime button activated. If this voltage is present, replace the motor gearbox. If the voltage is absent, replace the main PCB.

### Clock Resets to 12:00 AM & Events are Erased When Unplugged or Power Lost:

Replace backup battery.

### Pump Will Not Operate When Programmed Interval Occurs:

Check Event programming. If setup is correct, and the prime switch activates the pump, replace the main PCB.



*For a programmed event to occur, the event must be programmed at least 1 minute in the future. If you return to Run Mode after the start of a programmed event, that event will not occur until the next programmed interval.*

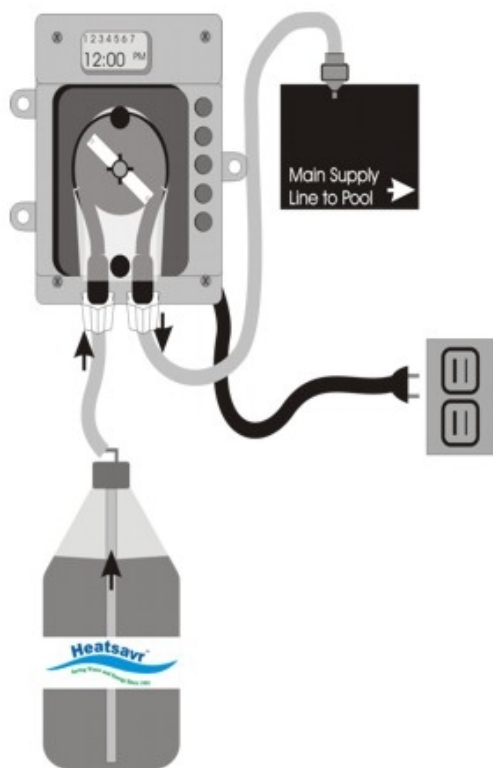
### **Pump Will Not Pull Liquid From the Supply Container:**

1. If there is too much vacuum created, the pump will not be able to move the chemical. This is easily recognized when the squeeze tubing collapses. If this happens:
  - a. Check that the squeeze tube or pump cartridge is not jammed.
  - b. Check the chemical uptake lines for kinks.
  - c. Ensure that the chemical uptake line is not forming a seal against the side or bottom of the chemical drum (See **Installing Supply Lines in Installation**).
  - d. Using a less viscous chemical, pumping shorter distances, setting longer run times and ensuring that the squeeze tube is in good condition will help address the issue.
2. **Check to see that there is not an air leak somewhere along the chemical supply line.**

### **Warranty**

If an item is in need of repair, please call or write to obtain Pump Return Instructions.

All HS115 dispensers are generally warranted against defects in material and workmanship for a period of one year from shipment date, except where otherwise noted. Printed circuit boards have a warranty period of two years, except where otherwise noted. All plastic parts and parts that come in direct contact with chemical products under normal operation are warranted for 90 days, except for flex tubing which is warranted to be operational at time of delivery only. Units will be repaired which are proven to be defective during the warranty period provided they are returned to Flexible Solutions. No other warranty is expressed or implied. Warranty does not cover equipment abuse or misuse, nor does it cover any consequential liability resulting from performance of the equipment.



### **Ordering Information**

1. Flex Tube – **1203652**
2. 1G Jug Thread-on Cap with 90° barb fitting – **CA38mm**
3. 1G Jug Bottle Insert with Pick-up Tube – **BI38mm**
4. 1L Bottle Thread-on Cap – **CA28mm**
5. 1L Bottle Insert with Pick-up Tube – **BI28mm**
6. Injection Fitting with Check Valve – **51466**
7. 25' P/E Tubing – **25PET**
8. Pump Roller Assembly – **39550**
9. Mounting Bracket – **87235**
10. All Weather Cover – **RSC115**