Sierra I

Installation and Operating Manual

SAFETY NOTES

These symbols mean:

Caution, refer to accompanying documents

Caution, risk of electric shock

Protective conductor terminal

INSTALLATION AND SERVICING REQUIREMENTS

Disconnect all power to this unit before servicing. Servicing should only be performed by qualified service personnel.

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.

Only use trigger and main power wiring hole connections which provide strain relief, such as cable glands, strain reliefs or conduit connections.

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

Earth grounding is required for safety. It also increases the dispenser's resistance to electrical noise. Failure to properly ground the system may cause the system to exceed emission standards.

The earth ground wire must be no longer than the mains wires.

Use 15 Amp branch circuit protection.

A circuit breaker must be included in the building installation. 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.

Always wear the required Personal Protective Equipment (including gloves and goggles that must be worn when potentially exposed to any hazardous materials and when carrying out hazardous work tasks). Turn the dispenser off during cleaning and note that parts may be contaminated with product. If possible, flush tubing out with water prior to carrying out any maintenance. For information on products used in this dispenser, please carefully read the product label and Material Safety Data Sheet (MSDS).

INTRODUCTION

This manual describes how to use the Sierra I Industrial Washer Dosing System.

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.

If the equipment is used in a manner not specified by Beta Technology, Inc. or Beta Europe, the protection provided by the equipment may be impaired.

OVERVIEW

The Sierra I is a two or three-product dispensing system for use with a probe, or without a probe using timing as the basis for dosing. It is for use in industrial applications such as egg washing, keg washing, parts washing, dip tanks, plating baths, food processing, dairy solution preparation tanks and large pot and pan washing. The standard configuration includes 100 Series peristaltic pump with 8oz/min squeeze tubes (high-volume Flex with 3/8-inch B fittings). For pumping higher volumes, a peristaltic pump can be replaced with an air solenoid valve that can drive an air-operated diaphragm (AOD) pump.

The Sierra I system can only operate with one solenoid. If one of the outputs is a solenoid, all subsequent outputs must be 100 Series pumps.

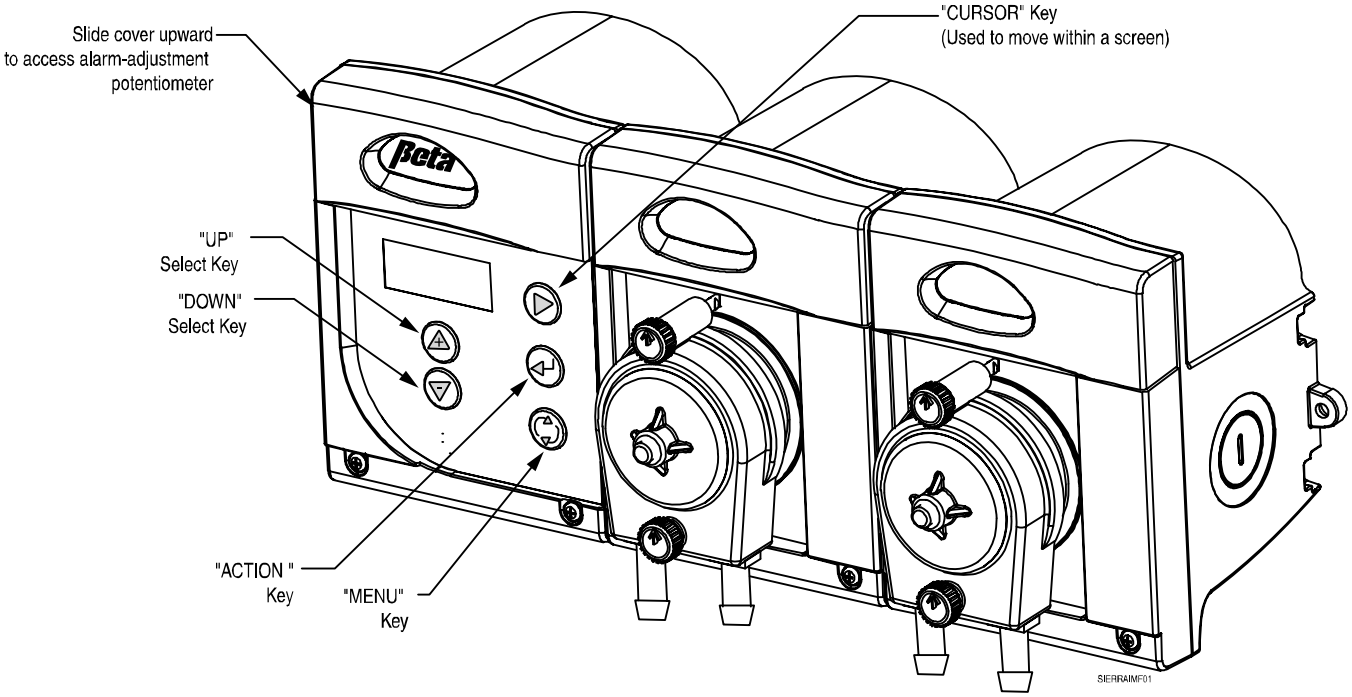


Figure 1. Sierra I, Two-Product System

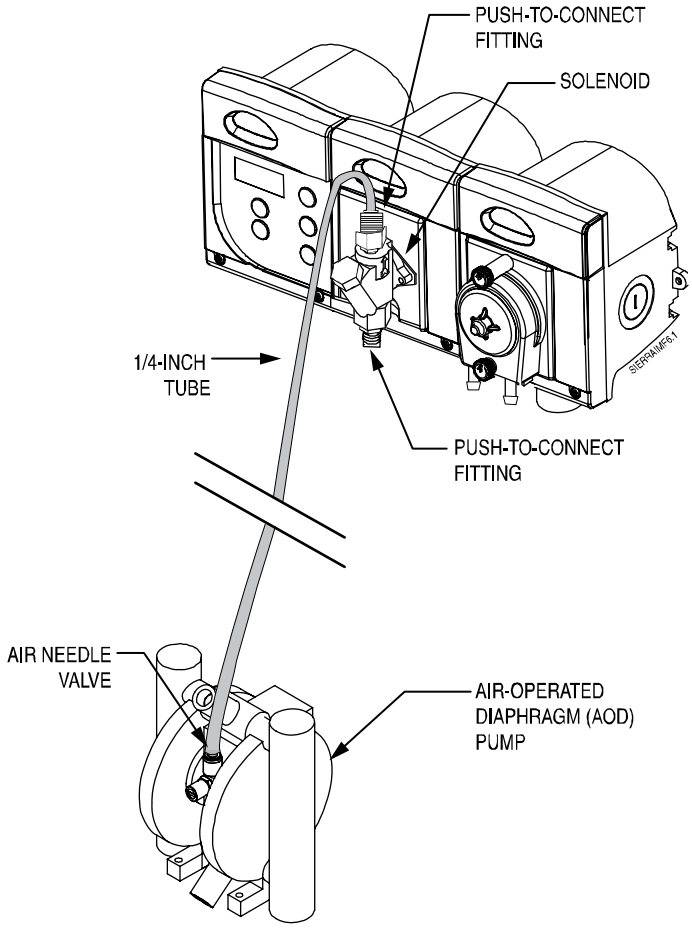


*Figure 1a. Sierra I with Solenoid and AOD Pump**

*Beta Technology supplies AOD pumps, but air filtration and other air line necessities are not supplied by Beta. Please refer to manufacturers instructions for AOD pump installation.

EQUIPMENT INFORMATION

Model	Pump Types/Solenoid Included		Code No.
Sierra I 2-Pump	Liquid Product (pump 1)	Liquid Product (pump 2	1211706

Table 1. Sierra I Configurations and Item Numbers

General
All programming is done through a 5-button keypad and 2-line, 16-character display.

"Smart" Screens
The "Smart" Screen concept simplifies the configuration process by only displaying the screens that are applicable to your application mode and machine type.

Internal Datalogging
The Sierra I can store and display vital information such as total items washed, items washed since last drain, total drains, pump 1 (wash) ON hours, and pump 1(detergent) feed ON hours. Sierra I can store up to 999 hours of data.

Priming
The pump 1(detergent), pump 2 (rinse) and pump 3 (sanitizer) pumps are each selected using the UP/DOWN keys, primed by pressing the ENTER button when the desired pump name is displayed on the screen. Pumps run at 100% speed when primed.

VCP™ (Virtual Clean Probe)*
Sierra I comes with the patented VCP™ technology. VCP guarantees superior probe performance by eliminating the effects of fouling caused by calcium and protein buildup. If you are concerned about probe performance and accuracy, VCP is an excellent way to reduce the need for service calls, reduce chemical waste, and ensure optimal results.

Washer Hold
You can use the "Drain Tank" alarm to put the washer on hold, ensuring that personnel replace the water regularly for optimal results. See **APPENDIX A** for instructions on setting up this feature.

ENABLE/DISABLE Feature for Industrial Washer Maintenance
Sierra I allows the operator to disable chemical dosing with the push of a button, allowing him to perform washer maintenance procedures without dispensing chemicals. When maintenance procedures are complete, dosing may be re-enabled with the push of a button.

Languages
The Sierra I can be operated in English, French and Spanish, or in a Numeric system depending on configuration.

PROBE MODE OPERATIONS

Wash Tank Concentration
Setpoint is programmed in Beta Units for accurate and repeatable control. The range is 0 to 70 Beta Units, with a typical operating values ranging from 25 to 55 Beta Units.

Wash Tank Concentration/Temperature
Both can be displayed in real time on the alphanumeric display.

Low Product (Detergent) Alarm
A sonic alarm beeps when wash tank concentration fails to reach a level of at least 5 Beta Units below setpoint within the alarm delay time.

Once a low-product alarm has occurred, the alarm will not reset until conductivity reaches programmed setpoint or the ENTER key is pressed. The wash ON trigger will not reset the counter.

Best Practice for Reducing Service Calls and Improving Results

To set up the low product (detergent) alarm, empty the tank, do an initial charge (largest charge) and measure the charge time. Add five seconds to this initial charge time, and use this number as your alarm delay time.

Over Feed Stop
When the low product (detergent) alarm is present, the Over Feed Stop timer begins running for the programmed number of seconds (0 to 240). If the conductivity is not at least 5 Beta Units below setpoint at the end of the this interval, pump 1 (detergent) will stop, and the alarm will stop beeping and will sound continuously. The operator must press ENTER to cancel alarm and resume product feed.

Ratio Feed
The Ratio Feed feature consists of a 10-second period within which you may program a percentage of "on time." For example, if you program the Ratio Feed to 6, the feed will run for 6 seconds and shut off for 4 seconds This cycle will repeat until the setpoint is reached.

This feature activates when the wash tank concentration comes within 5 Beta Units of the programmed conductivity setpoint, and is used to prevent the feed from overshooting this setpoint. Sierra I uses this system instead of reduced pump 1 (detergent) speed because it controls both pumps and solenoids.

TIME MODE OPERATIONS

Recharge Dose for Conveyor Machines
This is the amount of time that pump 1 (detergent pump) will run each time one item's worth of time (as programmed from Screen 18) has lapsed.

Recharge Dose for Door Machines
Sump type – Pump 1 (detergent) recharge dose time (range 0-20 seconds) is delivered each time the pump 2 (rinse) cycle power starts.

Fill and dump type – Pump 1 (detergent) dose time (range 0-24 seconds) is delivered each time the wash cycle power starts.

Initial Fill Charge for Conveyor Machines

Pump 1 (detergent) initial fill charge time (range 0-240 seconds, default is 20 seconds) is delivered when the Sierra I senses an initial fill, or an operator closes a remote switch.

Initial Fill Charge for Door Machines

Sump type – Pump 1 (detergent) initial fill charge time (5-99 seconds, default is 20 seconds) is delivered when pump 2 (rinse) power on-time exceeds 20 seconds.

Fill and dump type - Initial charge time should be set to zero.

Pump 2 (Rinse) Delay Time (Door Machines Only)

Pump 2 delay time after a pump 2 cycle start can be programmed (range 0-20 seconds, default is 00 seconds). Pump 2 (rinse pump) speed (range 0-100%, default is 20%) and pump 2 (rinse pump) run time (range 0-99 seconds, default is 15 seconds) are programmed to deliver the desired amount of product.

Solenoid Operation

Sierra I can power and control a DC solenoid valve. When controlling a solenoid, the speed must be set to 100%.

Pump 3 (Sanitizer Pump) Operation

Pump 3 (sanitizer pump) can run with either pump 1 (detergent pump) (destainer application) or the pump 2 (rinse pump) (sanitizer application). Application and pump speed (range 0-100%, default is 30%) are programmed during setup to deliver the correct amount of product.

Pressure Switch

The Sierra I can operate with any contact-closure pressure switch. Beta does not currently supply any pressure switches that can be mounted internally. Contact Technical Support to discuss further implementation.

TERMS

Beta Units

A means of indicating the product concentration in the wash tank. The probe measures the conductance of the solution. This electrical measurement is converted into and displayed as Beta Units. Each Beta Unit change represents a 5% conductance change. For example, 23 Beta Units is 95% as great as 24 Beta Units, and 105% of 22 Beta Units.

For a chart that further describes Beta Units, see **Beta Unit Conductivity Chart** in **Appendix C.**

SPECIFICATIONS

PHYSICAL DIMENSIONS, CONSTRUCTION AND MOUNTING

Three-Product Enclosure

Height	Width	Depth	
5.75	15.25	5.5	Inches
14.61	40.96	13.97	Centimeters

Two-Product Enclosure

Height	Width	Depth	
5.75	11.50	5.5	Inches
14.61	31.12	13.97	Centimeters

Weight

4.38 lbs (2 kg) maximum for 3-pump system.

Cabinet Material

Flame Retardant Polypropylene (UL 94V-0)

IP54 Water Resistant

Mounting

Wall mounted with stainless steel bracket, allowing easy installation in all locations. Use #8 x 1 inch (#8 x 25mm) screws. Do not use plastic feet for mounting Sierra I.

OPERATING CONDITIONS

For indoor use only.

Altitude up to 2000 meters (6500 feet)

Temperature 5 to 40 degrees Celsius (41 to 104 degrees Fahrenheit).

Maximum relative humidity: 80% for temperatures up to 30 degrees Celsius (86 degrees Fahrenheit), decreasing linearly to 50% relative humidity at 40 degrees Celsius (104 Degrees Fahrenheit).

Pollution Degree 2, Installation Category II

Maximum operating duty cycle for the pump 1 (detergent pump) motor is 50% (4 minutes ON, 4 minutes OFF) at 100% speed. Maximum operating duty cycle for the pump 2 (rinse) and sani-pump motors is 100% at 20% speed.

Electrical Power Configurations

100-240 V ~, 50/60 Hz, 0.42 Amp maximum

Mains supply voltage fluctuations up to ± 10% of the nominal voltage.

Transient voltages typically are present on the mains supply.

Fuse

Sierra I has no user-serviceable fuse.

COMPONENTS

Pumps

Peristaltic, dual roller, self-priming and self-checking.

Tube Materials

100 Series Pumps

Flex, 8 oz/min (standard),

Pump Flow Rates

100 Series: 8 oz per minute/230 ml per minute

AOD Diaphragm Pump: 20 oz to 4.6 gallons per minute/0.6 to 25.7 liters per minute

Triggers

Pump 1 (Detergent) and Pump 2 (Rinse)

Voltage Range

24 – 240 V ~, 50/60 Hz

24 – 100 V ⎓

Current

5 mA max.

Signal Connections

- The wash signal is typically connected across either motor contactor coil or fill solenoid valve, or as specified by wash tank manufacturer.
- The rinse signal is typically connected across the rinse solenoid valve, or as specified by wash tank manufacturer.

Hydraulic Performance

Pump 1: Detergent

Maximum Vacuum	8 in (200 mm) of mercury
Maximum Pressure	1.4 bar (20 psi)

Pumps 2 and 3, (Rinse and Sanitizer)

Maximum Vacuum	8 in (200 mm) of mercury
Maximum Pressure	2.1 bar (30 psi)

Best Practice for Optimum Performance
Optimum pump 2 performance requires 16-22 psi pressure.

SOLENOID

10 watts, 24VDC

PROBE

Conductivity Range

669-21,134 µS (0-70 BU), K = 0.4. Other conductivity ranges are available by substituting with a different k-factor probe. Contact Technical Customer Service for help with probe selection.

ALARMS

Sierra I has an adjustable, audible alarm. To adjust alarm volume, slide top cover upward on controller unit, and adjust potentiometer using a flat-head screwdriver. To increase volume, turn potentiometer clockwise. Emits 80db at 4 feet (1.22 meters). Alarm acknowledgement will defer display of any new alarms up to five minutes.

Low Level Alarm

Display reads "CHECK PRODUCTS"

Overfeed Stop Alarm (Probe Operation Only)

Display reads “DET FEED FAILURE” (Screen 10b)

Product (Detergent) Alarm Timeout

Display reads “ADD DETERGNT” (Screen 10a)

Wash Tank Dump Alarm

Display reads "DUMP TANK" (Screen 19a)

APPROVALS

CSA, NSF

To comply with NSF regulations, sight glass must be used with pump 3 (sanitizer pump).

INSTALLATION & SETUP

PHYSICAL INSTALLATION

Refer installation and service to qualified personnel only. Installation must comply with all applicable plumbing and electrical codes.

Mounting the Unit

Carefully select a place to mount the unit. Remember that there must be room around it for access to switches, buttons, wires and tubing, and to open enclosure for installation and maintenance. Mount the unit against a stable wall with the pumps side-by-side and their tube openings at the bottom. Avoid steam and other sources of moisture, such as from spray or splash. Do not subject the unit to temperatures outside the range 36 °F to 120 °F (2 °C to 49 °C)

Only mount the unit with the mounting bracket. Do not use the end tabs.

Best Practice for Optimum Results
Ensure that all chemicals and equipment are on the dirty side of the cleaning process for regulatory compliance with agencies such as OSHA.

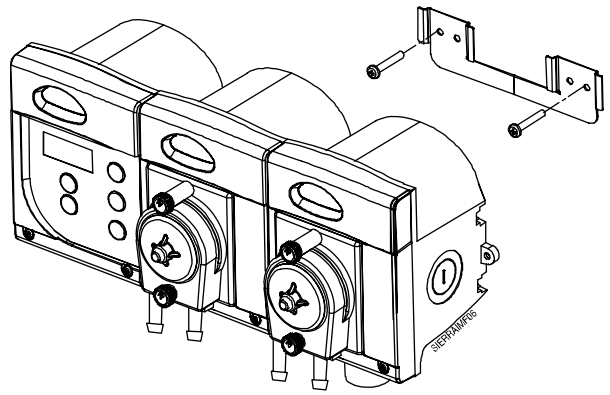


Figure 2. Sierra I with Mounting Bracket

Installing AOD Pump

1. Mount the solenoid in place of pump 1 or pump 2
2. Attach existing wires to the solenoid coil terminals
3. Connect the air supply to the IN on the solenoid tube connections.
4. Route the air from the OUT to the AOD pump.

Opening the Unit for Servicing

1. To open a Sierra I module, slide cover up and gently pry off. It may be necessary to use a flathead screwdriver. Take care not to damage the unit.
2. Use a Phillips screwdriver to remove the four screws.
3. Remove face plate.
4. Reverse this process to close the module. Ensure gasket is in place to maintain water resistance.

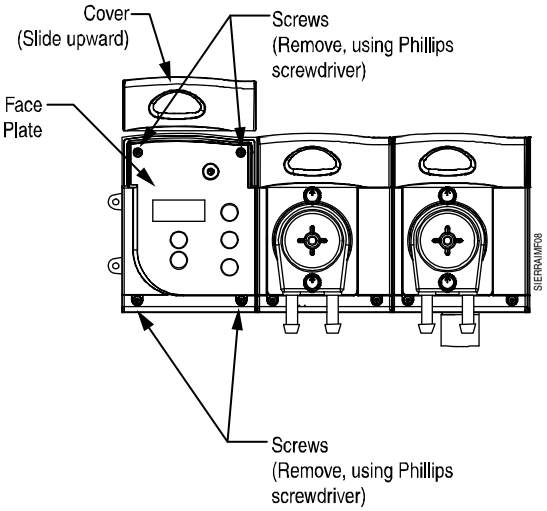


Figure 3. Opening Unit for Servicing

Installing the Conductivity Probe

There are two possible locations for probe installation: inside the wall of the wash tank (with a bulkhead fitting) or using a "flow through" setup from the pressure side of a circulation pump. Both methods are described below.

Installing the Conductivity Probe Inside the Wash Tank

If the washer does not already have a pre-drilled hole, find a location that will be 4 inches (10 centimeters) below the water line and make a 7/8" hole. Ensure that this location is not near any heating elements and offers adequate water circulation. Inadequate water circulation will cause the system to overfeed before there is an adjusted reading at the probe location.

Installing the Conductivity Probe Using a "Flow-Through" Setup from Circulation Pump

Refer to Figure 3.1.

The advantage to this method is that it allows product to be injected upstream of the probe and provides a return line for injection of diluted product at the detergent or solution tank. You will need to install a restrictor or valve as shown in Figure 3.1. This will prevent reduction in pressure output to the manifolds of spray arms. Some systems also use an inline tee fitting as shown in Figure 3.1. This allows you to take water samples for testing purposes.

1. Tap in or plumb a water outlet fitting on the pressure side of the circulation pump.
2. Route piping or tubing from the outlet fitting to water inlet.

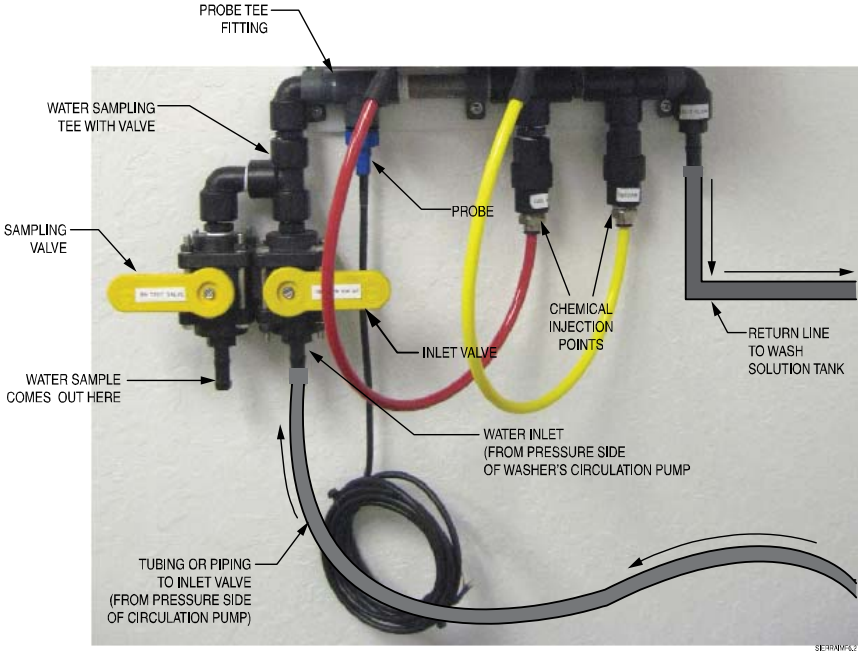


Figure 3.1. 2-Product Chemical Injection Metering Manifold with Sampling Valve.

Installing the Product Bulkhead Fitting

Punch a 7/8-inch (23 mm) hole in the wash tank in a suitable location above the water level line. For best results, mount the fitting directly above the point where the probe is located. A bulkhead fitting for a typical installation is included in the installation kit supplied with the Sierra I, or with the powder/solid product hopper.

Connecting the Pressure Switch

A pressure switch can be used to sense demand for product 2 (rinse) and product 3 (sanitizer). In these installations, the pressure switch should be connected to the machine pump 2 (rinse) line downstream of the pump 2 (rinse) solenoid, either directly or through the rinse injector fitting. Use a 1/4 inch line for this purpose.

Connecting Chemical Supply Lines

Tube Option Specifications

3/8 barb/0.25 inch ID, 8 oz (2.3 ml) per min or 1/4" compression fittings, 5 oz (148 ml) per min*

1/4" compression fittings, 0.188 ID, 5 oz (147 ml) per min

1/4" compression fittings, 0.125 ID, 2.5 oz (74 ml) per min

Table 2. Tube Option Specifications

*Standard tube offering

Use hose for the chemical supply lines. If you choose to use hard tubing, you will need to fasten it to the barbs with small hose sections.

Push the hose lengths securely onto the barb fittings. Secure tubing to barbs with the stainless steel hose clamps provided, or with tie wraps.

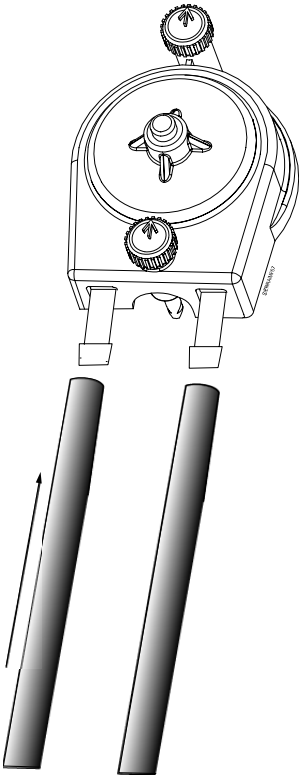


Figure 4. Installing Chemical Tubing

NOTE *It is very important that the nut components be installed correctly, as shown in Figure 4.*

6. Run the lines to the chemical drums, and secure the end of each supply line into its respective container. Use a snap-in standpipe for liquid chemical lines. To ensure that chemical is properly supplied to Sierra I, we recommend using a standpipe or other securing device to support and hold the chemical uptake tube in place within the chemical drum. A plastic standpipe is the **Accessories and Spare Parts** section of this manual.
7. Cut the line at a 45° angle.
8. Press the feed end of the line into the open part of the U.
9. Leave the bottom of the standpipe slightly lower than the inlet of the line.

Chemical Output Lines

1. Connect the 1/4, 3/8 or 1/8-inch line, as appropriate, to the nut on the right (outlet side) of the squeeze tubes. Tighten the nut on the fitting. See Figure 4.
2. Run the feed line to a bulkhead or injector fitting (see **Accessories and Spare Parts** for a complete listing). Use as short a line as possible and keep the lines away from steam pipes, open flues or other areas where machine operators could accidentally damage them.
3. In this and other output line runs, always try to avoid uphill runs.
4. Secure the line into the fitting.

Plumbing Connections to Air-Water Solenoid

- Solenoids are used to control air supply to air-operated diaphragm (AOD) pumps.
- The compression fittings on the solenoid inlet and outlet accept either 1/4 inch plastic line or 1/4 inch copper tube. The install kit contains two push-to-connect tube fittings that you can use instead of the compression fittings supplied with the solenoid.
- Follow the flow arrows on the solenoid when making connections.
- To help control pump delivery, the install kit also includes an air regulation needle valve that you can install on the air inlet of the AOD pump. Actual AOD pump inlet pressure settings, airline devices like filters and regulators should be used per AOD pump manufacturer specifications found in their operating manuals.

ELECTRICAL CONNECTIONS

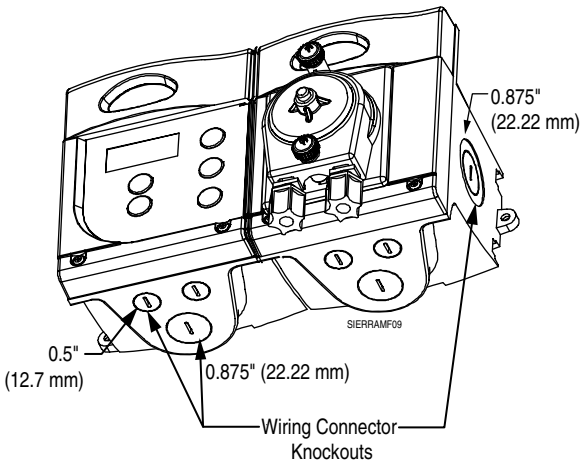
See Appendix D for specific washer trigger connections for each application.

WARNING! *To maintain the safety rating of this equipment, the following requirements must be observed:*

- *Wire size for Main Power and all high voltage connections must be a minimum of 20 AWG, rated for 600 volts.*
- *Suitable earth ground must be provided.*
- *A service disconnect must be provided for either this equipment, or the equipment to which it is attached.*
- *All knockouts are intended for flexible conduit only.*

Sierra I Wiring Connectors

Sierra I has three wiring connector knockouts on the bottom and one on the side of each controller and pump module.



1. Insert a flat-head screwdriver into the center slot of knockout and gently punch through.
2. Twist and rotate the screwdriver 90 degrees, prying out plastic center of hole.

Figure 5. Bottom/Side Knockouts

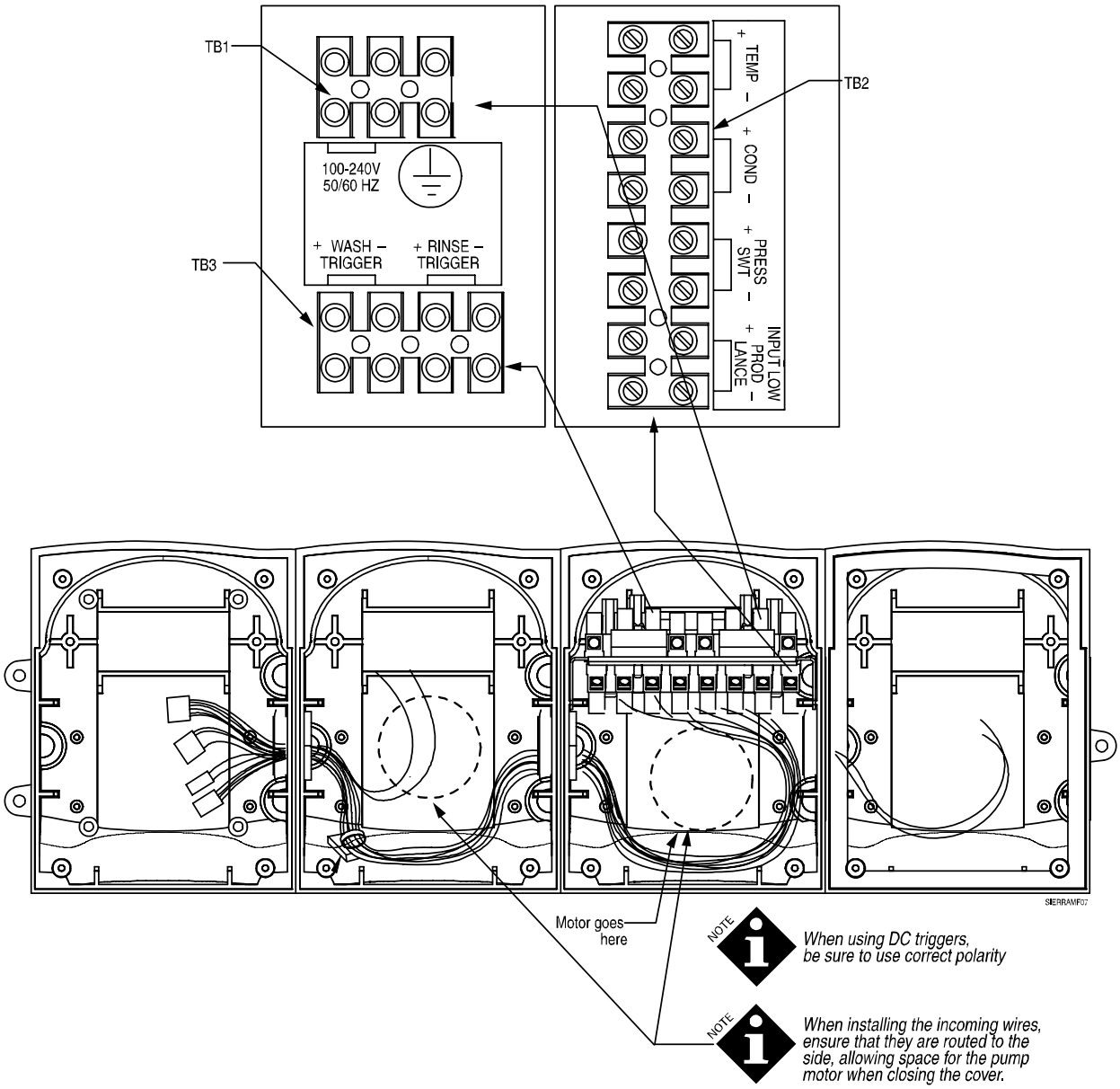


Figure 5a. Unit Wiring and Terminal Block Connections

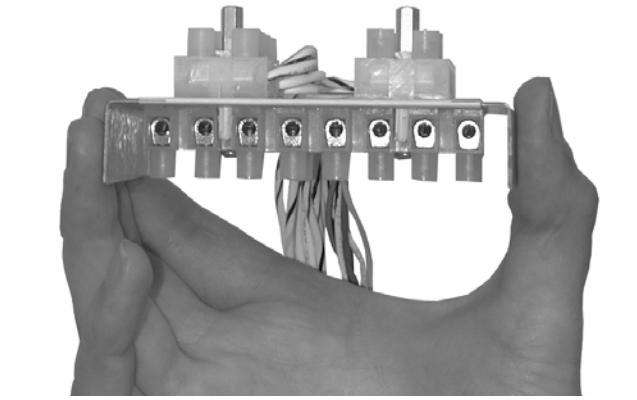


Figure 6. Sierra I Wiring/Removable Terminal Blocks

Primary Power

See **Appendix D** for washer wiring connections.

NOTE *Dangerous voltages may be present in the enclosure. Refer installation and service to qualified personnel only. Installation must comply with all applicable electrical codes.*

Figure 6 shows inside of the Sierra I, with enlarged images of each terminal block. The terminal block slides out for easy access to connections.

Locate electrical circuits on the wash tank that provide power as described in Specifications. **Constant power must be supplied to the Sierra I.** Connect the 2 legs of each power source to their appropriate terminals as detailed on the power wiring label.

The wash signal is connected across either the wash motor or the fill solenoid valve. The pump 2 (rinse) signal is typically connected across the pump 2 (rinse) solenoid valve. The wire enters through a conduit connector for safe installation.

TECH NOTE *When using DC triggers, be sure to use correct polarity.*

Terminal Strip Connections

TB1 (shown in Figure 6) has connections for the input power and ground. TB2 (shown in Figure 6) has connections for temperature, conductivity, pressure switch and input for low-product alarm lance. TB3 (shown in Figure 6) has connections for the pump 1 (detergent) and pump 2 (rinse) triggers.

Probe Connections

You may use a temperature compensated probe or a conductivity only probe with the Sierra I. There are 4 connections for a temperature-compensated probe installation, and only 2 connections when it is not compensated. If using a 2 wire conductivity probe the connections must be made to the COND + and - connections on terminal strip TB2.

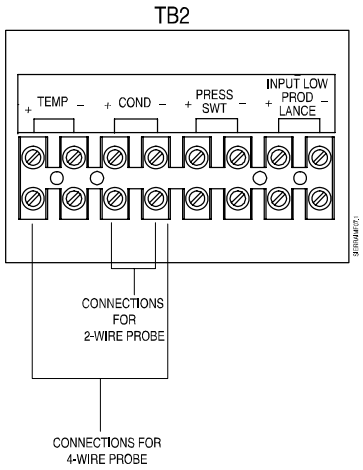


Figure 6.1 2-Wire and 4-Wire Probe Connections on TB2.

Probe	Wire Color	Where to Connect on TB2
CP3412 (4-wire)	Yellow	TEMP
	Green	TEMP
	Red	COND
	Blue	COND
CTP3150 or CTP3250 (4-wire)	White	COND
	Black	COND
	Red	TEMP
	Green	TEMP
CP3411 (2-wire)	Both colors	COND
D42 (2-wire)	Both colors	COND
T35 (2-wire)	Both colors	COND

Table 2.1. Probe Wire Color Connection Locations on TB2

The probe wiring should be 22-gauge cable. During installation, the probe wires should be routed through a separate strain relief in the bottom of the unit. Running them together with power or trigger wires can distort the probe signal and is not recommended.

PROGRAMMING PROCEDURES

General

This section describes Sierra I's command buttons and the different programming/status screens used to configure your

industrial washer system. For guidelines on configuring your Sierra I to best suit your machine type and desired operating mode, please see **Applications** section.

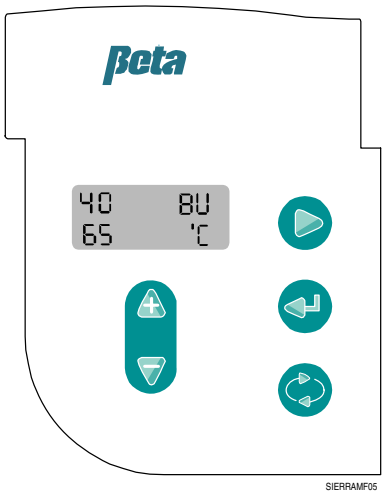


Figure 7. Sierra I Touch Pad and Screen

COMMAND KEYS

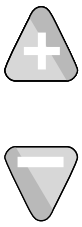
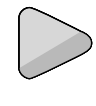
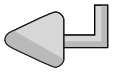
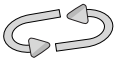
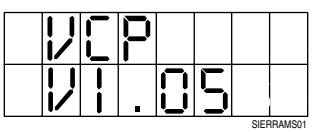
Key	Description and Function
	This is the UP/DOWN key pair. They are used to select screen options (such as “DOOR” for door machine or “CONVEYER” for conveyer machine) within a menu, to select different screens (such as the Run Screen), or to scroll through digits and select such numbers as setpoints and passcode numbers.
	This is the CURSOR key. It is used to move about the columns on a screen, such as the numbers on the PASSCODE screen (Screen 4), or the conductivity setpoint on Screen 9.
	This is the ENTER key. It is used to enter another screen level (submenu), start an action such as priming, or cancel an alarm.
	This is the SCROLL key. It is used to move from screen to screen within each Level. Pressing the SCROLL and ENTER keys simultaneously will take the user back to the Run Screen.

Table 3. Sierra I Command Keys

SMART SCREENS

Sierra I’s Smart screens are organized into four different levels (Levels 0 to 3) or “Loops.” Each Loop has its own set of programming options, described as follows.

Level 0: The Power Up Screen

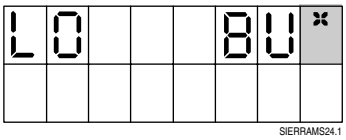


Screen 0: Power Up Screen

This is the first screen you will see when you power up the unit. This screen will stay on for approximately one second, and will then proceed to **Level 1** automatically. The firmware version number appears on the second line of the screen as shown.

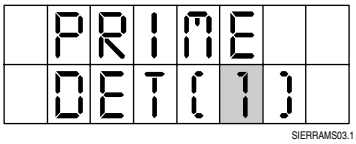
Level 1: The “RUN” Loop

Once Sierra I has automatically proceeded to **Level 1**, the **Run Screen** (Screen 1) appears. The Run Screen is a default screen that the user programs to appear while the Sierra I is running. The Sierra I automatically defaults to **Screen 25** as the Run Screen, but the Run Screen can be programmed to be any of the **View Status** screens (**Screens 25-32**).



Run Screen:. *This screen (Screen 25) is the default Run Screen (Screen 1). Screens 25-32 may be set as the Run Screen.*

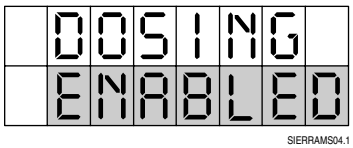
From the Run Screen, press the SCROLL key to get to the Prime Pump Screen (Screen 2).



Screen 2. Prime Pump Screen

From Screen 2, press the UP/DOWN arrow key to cycle through and select desired pump (DET [1], RIN [2], or SAN [3]) for priming. Once you have cycled to desired pump, Press and hold the ENTER key to initiate the prime for that pump. Default setting is RIN [2].

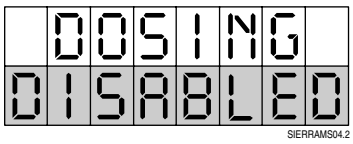
When priming is complete, press the SCROLL key to move to Screen 3 for dosing status.



Screen 3. Dosing Screen, Enabled

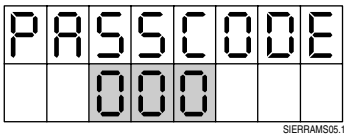
In Screen 3, pressing the UP/DOWN keys will toggle the screen between DOSING ENABLED or DISABLED. By default, dosing is ENABLED.

When dosing is disabled, the screen will read as shown below, and “DOSING DISABLED” will flash continuously, once per second.



Screen 3. Dosing Screen, Disabled

From Screen 3, pressing SCROLL will take you to Screen 4, the Passcode Screen.



Screen 4. Passcode Screen

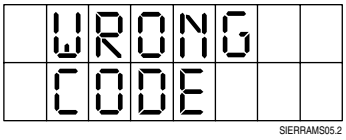
Entering the Default Passcode

When you first enter Screen 4, you will notice that the first of the three zeros is flashing. Since the default passcode is "000," you may simply use the CURSOR key to navigate over the three digits, and when you are finished, press ENTER or SCROLL to advance to **Level 2**.

Entering Programmed Passcode

You may program your own 3-digit passcode (see Screen 24 under **Level 2: The Configuration Loop**). Once you have done this, you will need to enter it on Screen 4 anytime you want to advance to Levels 2 or 3. Use the UP/DOWN keys to select the correct numbers, and the CURSOR to advance between the three digits. Press ENTER or SCROLL to advance to Level 2.

If you enter an incorrect passcode, the following screen will appear:



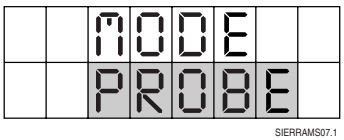
Screen 5. Wrong Code Screen. Activates if user enters incorrect passcode.

This screen will display for three seconds, and then revert back to the Passcode Screen (Screen 4). If you don't want to advance to the next level, and just want to work within Level 1, you can press the SCROLL key, or wait 120 seconds. The unit will revert back to the Run Screen.

Level 2: The "Configuration" Loop

Best Practice for Easier Operation
Keep a record of your complete system setup (chemicals used, water heater BTU's etc.). This will help reduce service time and maximize installation efficiency.

After entering the correct passcode from Screen 4, you will advance to Level 2, the Configuration Loop. The following screen appears:



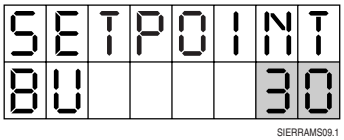
Screen 6. Mode Select Screen

Use the UP/DOWN keys to select PROBE or TIME mode (default is PROBE mode), and press the SCROLL key to advance to the next screen. Due to the Smart Screen feature, all subsequent configuration screens will apply only to the setting related to your selected control mode.

The next screen allows you to program your washer type. Use the UP/DOWN keys to select DOOR or CONVEYER machine. Default is CONVEYER. Due to the Smart Screen feature, all subsequent screens will apply only to the machine type you've selected.

Screen 7. Washer Type Select Screen

Programming Conductivity Setpoint (Probe Mode Only)

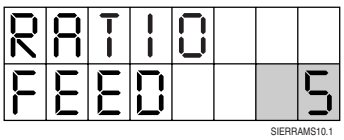


Screen 8. Conductivity Setpoint Screen

Selected digit will flash once per second. Using the UP/DOWN and CURSOR keys, enter desired conductivity setpoint within the range of 0 to 70 Beta Units. Default setpoint value is 30.

Programming Ratio Feed (Probe Mode Only)

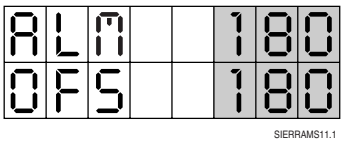
The Sierra I uses a Ratio Feed system (See **"Probe Mode Operation"** section in the **Introduction**) to prevent the pump from overshooting the programmed conductivity setpoint.



Screen 9. Ratio Feed Programming Screen

The Ratio Feed value in the lower right corner of the screen will flash once per second. Use the UP/DOWN keys to select a value from 0 to 9. Default value is 5.

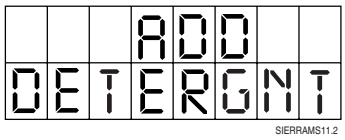
Setting Product (Detergent) Alarm Timeout and Over Feed Stop (Probe Mode Only)



Screen 10. Product (Detergent) Alarm Timeout/Over Feed Stop Timeout Programming

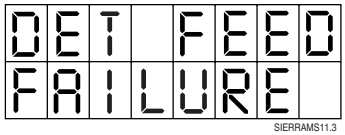
Use the UP/DOWN and CURSOR keys to enter desired Product (Detergent) Alarm Timeout and Over Feed Stop Timeout. ALM stands for Product (Detergent) Alarm Timeout in seconds, and OFS stands for Over Feed Stop Timeout in seconds. Maximum programmable time for both elements is 240 seconds. Default time for both elements is 180 seconds.

When Product (Detergent) Alarm Timeout expires, screen will display the following:



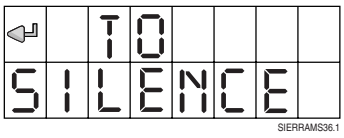
Screen 10a.

When Over Feed Stop Timeout expires, screen will display the following:



Screen 10b.

These screens will blink alternately with the following screen at 1-second intervals.

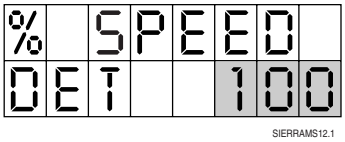


Screen 10c.

Press ENTER to cancel the alarm, and menu will return to the Run Screen.

If more than one error condition exists at a time, the error menu flashes alternately between the error conditions.

Setting Pump Speeds



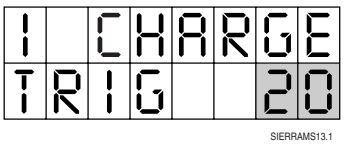
Screen 11. Pump Speeds

Use the UP/DOWN and keys to select each pump, and the CURSOR key to set their corresponding speeds from 5 to 100. The selected pump or digit will flash once per second. Holding down the ENTER key will run the corresponding pump at the programmed speed.

Default pump speeds are as follows:

Pump 1 (DET) = 100%
Pump 2 (RIN) = 20%
Pump 3 (SAN) = 30%

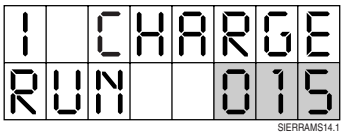
Pump 1 (Detergent) Initial Charge Trigger Time (Time Mode Only)



Screen 12. Initial Charge Trigger Time

Using the UP/DOWN and CURSOR keys, enter desired pump 1 initial charge trigger time between 5 and 99 seconds. Default time is 20 seconds.

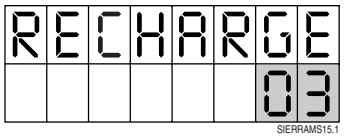
Pump 1 (Detergent) Initial Charge Run Time (Time Mode Only)



Screen 13. Initial Charge Run Time

Use the UP/DOWN and CURSOR keys to set desired pump 1 initial charge run time between 0 and 240 seconds. Default time is 15 seconds.

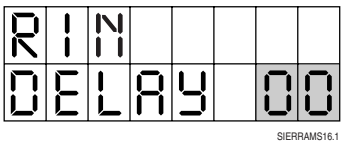
Pump 1 (Detergent) Recharge Run Time (Time Mode Only)



Screen 14. Pump 1 (Detergent) Recharge Run Time

Using the UP/DOWN and CURSOR keys, set desired pump 1 recharge time between 0 to 24 seconds. Default time is 3 seconds.

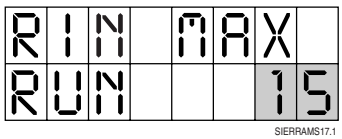
Pump 2 (Rinse) Delay Time (Door Machine Only)



Screen 15. Pump 2 (Rinse) Delay Time

Using UP/DOWN and CURSOR keys, set pump 2 (rinse) delay time between 0 and 20 seconds. Default time is 00 seconds.

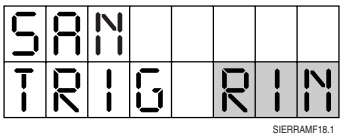
Maximum Run Time for Pump 2 (Rinse Pump) (Door Machine Only)



Screen 16. Maximum Run Time for Pump 2 (Rinse Pump)

Using UP/DOWN and CURSOR keys, set desired maximum pump 2 (rinse pump) run time between 0 and 99 seconds. Default time is 15 seconds.

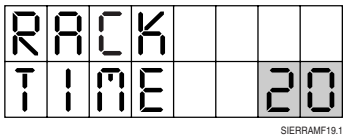
Setting Pump 3 (Sanitizer Pump) Trigger



Screen 17. Pump 3 (Sanitizer Pump) Trigger Configuration

Screen 17 allows you to determine when pump 3 (sanitizer pump) will run. Use the UP/DOWN keys to toggle between “RIN” and “DET.” Selecting “DET” means pump 3 (sanitizer pump) will run when pump 1 (detergent) runs, and selecting “RIN” means pump 3 (sanitizer pump) will run when pump 2 (rinse pump) runs, or during the pump 2 (rinse pump) delay time. Default is “RIN.”

Setting Item (“RACK”) Transit Time (Conveyer Machines Only)



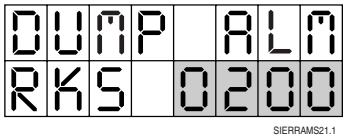
Screen 18. Item Transit Time

Screen 18 lets you enter the time it will take an item to move through a given point on a conveyer machine. Use the UP/DOWN and CURSOR keys to enter this time. Typically, this value is between 0 and 99 seconds. This value is for data logging counting items on conveyer machines Default time is 20 seconds.

Item Transit for Door Machines

For door-type machines, an item will automatically be counted if pump 2 (rinse) trigger stays on for more than 3 seconds.

Setting Maximum Number of Items (“RKS”) to be Washed Between Drain Cycles

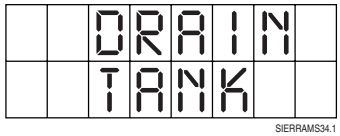


Screen 19. Wash Tank Dump Alarm

The Wash Tank Dump alarm is the maximum number of items allowed between drains. Use the UP/DOWN keys to set desired value. Values are ---- (alarm is not active), 0010 to 9999. Default setting is 200. If the alarm is not required, set as “-----” or the alarm will automatically activate at the default setting of 200 items.

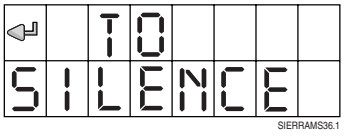
NOTE

When the number of items washed exceeds the number programmed in Screen 19, the display will show:



Screen 19a.

This screen will blink alternately with the following screen at 1-second intervals.

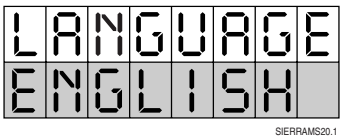


Screen 10c.

Press ENTER to cancel the alarm, and menu will return to the Run Screen.

If more than one error condition exists at a time, the error menu flashes alternately between the error conditions.

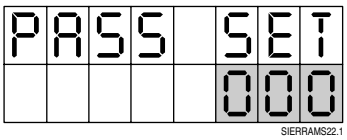
Language Selection



Screen 20. Language Selection

Use the UP/DOWN keys to select desired language, “ENGLISH”, “FRENCH”, “SPANISH”, or “NUMERIC”. Default is ENGLISH. Because the “Numeric” language is more difficult to understand than the text languages, we don’t recommend that you use it unless absolutely necessary.

Set/Change Passcode



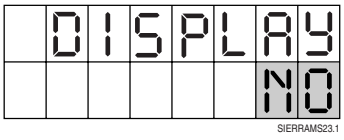
Screen 21. Setting/Changing Passcode

Using the UP/DOWN and CURSOR keys, enter a passcode between 000 and 998. Default passcode is “000.”

CAUTION!

Do not set the passcode to 999. 999 will not work and you will be unable to access programming screens.

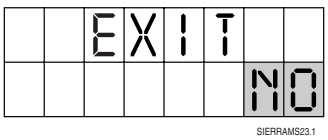
Advance to “Display Screens” Screen



Screen 22. Advance to “Display Screens” Screen

Screen 22 gives you the option to either advance to the Level 3 screens, or to exit the Configuration Loop and go back to Level 1. If you want to advance to Level 3, use the UP/DOWN arrow keys to select “YES” and press the SCROLL key (default setting is “NO”).

If you want to leave Level 2 and go back to Level 1, select “NO”, and press the SCROLL key. The following screen appears:



Screen 23. Exit Screen

Use the UP/DOWN keys to select “YES” if you’re certain you want to exit the Configuration Loop. Selecting “NO” will bring you back to the beginning of the Configuration Loop (Screen 6). Default setting is “NO.”

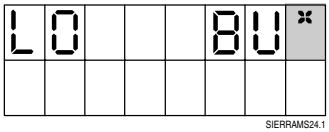
Level 3: The “View Status” Loop

Once you have selected “YES” from the Screen 22, you will then advance to Screen 24, the first Level 3 screen.

You may program any of the Level 3 screens to be the Run Screen. From any of the Level 3 screens, pressing the UP/DOWN keys will cause the asterisk (*) in the upper right corner to toggle on and off. When the asterisk is visible, that screen is available for selection as a Run Screen. Default Run Screen is Screen 25.

You can view any of the Level 3 screens.

Conductivity Status

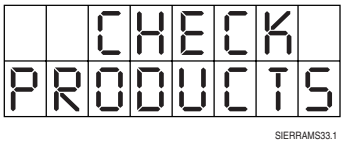


Screen 24. Wash Tank Conductivity

Screen 24 shows wash tank conductivity in Beta Units. Range is "LO" (open) 0 to 70, or "HI" (short).

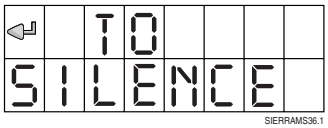
NOTE

When low product input is short, the display will show:



Screen 24a.

This screen will blink alternately with the following screen at 1-second intervals.

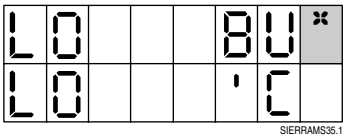


Screen 10c.

Press ENTER to cancel the alarm, and menu will return to the Run Screen.

If more than one error condition exists at a time, the error menu flashes alternately between the error conditions.

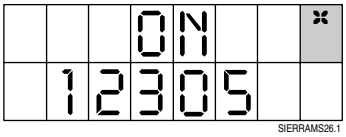
Conductivity/Temperature Status



Screen 25. Conductivity/Temperature Status

Screen 25 shows wash tank conductivity in Beta Units and wash tank temperature in degrees Celsius. Range is "LO" (open), 0 to 99, and "HI" (short).

Diagnostic Screen

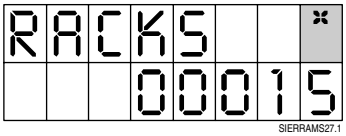


Screen 26. Diagnositc Screen

Screen 26 shows which triggers are on:

"1" will display if the wash trigger is on
"2" will display if the rinse trigger is on
"3" will display if the rinse pressure switch input is on
"5" will display if low product input is on

Item (Rack) Count



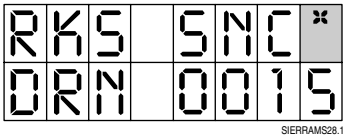
Screen 27. Item (Rack) Count

Screen 27 shows the total item count. In the example shown, a total of 15 items have run. This counter cannot be reset. It counts up to 99,999,999 and then rolls over to 0.

NOTE

In time-door mode, the item count also counts initial charge. When operating in time-door mode, subtract the total drain events from the item total to eliminate the number of initial charges that have been added in.

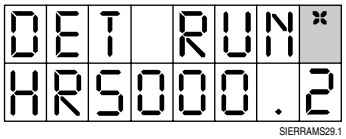
Items Since Drain Count



Screen 28. Item (Rack)/Drain Count

Screen 28 displays the number of items washed since the last drain.

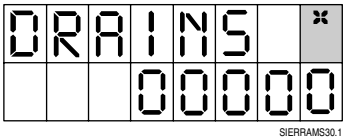
Total Pump 1 (Detergent) Pump Hours



Screen 29. Total Pump "ON" Hours.

Screen 29 displays (in hours and tenths of hours) the total number of hours the pump 1 (detergent) pump has run in its lifetime up to 999.9 hours. This time cannot be reset.

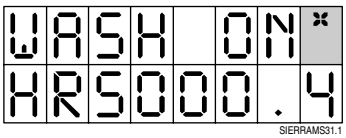
Total Drain Events



Screen 30. Total Drain Events

Screen 30 displays the total number of drain events that have occurred in the Sierra I's lifetime. In the example shown, there have not been any drain events yet. It counts up to 99,999,999 and then rolls over to 0. This counter cannot be reset.

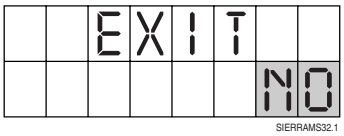
Total Wash Trigger ON Hours



Screen 31. Total Wash Trigger ON Hours

Screen 31 displays the total number of hours the wash trigger has been on in its lifetime. This time is expressed in hours and tenths of hours up to 999.9 hours. Counter cannot be reset.

Exit Screen



Screen 32. Exit Screen

Screen 32 gives you the option to either exit back to Screen 6 (first screen of Level 2), or back to Level 1. A “NO” response will bring you back to Level 2, and a “YES” response will bring you back to Level 1. Use the UP/DOWN keys to select, and SCROLL key to execute “YES” or “NO”. Default is “NO”.

Alarm

Probe Mode Display

While operating in probe run mode, the display shows actual tank concentration in Beta Units or temperature in degrees C. Note that the first tank concentration display character may be a hyphen (-) or blank. It is not a minus sign. To toggle between displaying tank concentration and temperature, briefly press the program/run button.

If necessary, use the following chart to convert Celsius to Fahrenheit.

°C	°F
0	32
10	50
20	68
25	77
30	86
35	95
40	104
45	113
50	122
55	131
60	140
65	149
70	158
80	176
90	194
100	212

MAINTENANCE

PERIODIC MAINTENANCE

TURN OFF all power before servicing.

Servicing Interior Components

To access interior, slide top cover up and gently pry off. It may be necessary to pry the cover off with a flat-head screwdriver. If this is necessary, take care not to damage the unit. Then remove the four screws.

Pump & Squeeze Tube Replacement Schedule

Since every installation is different (chemicals, tube runs, operating frequency, etc), an exact tube replacement schedule cannot be specified. With use, the tube slowly evolves from round to oval and the amount of chemical pumped decreases. By regularly checking the amount of chemical 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, using short feed lines of a large diameter will improve pump tube life.

It is very important not to let the tubes become worn to the point where they tear and allow chemicals to saturate the pump housing.

How to Replace Pump Cartridges and Squeeze Tubes

Only the cartridge replacement should be done in the field. Tube replacement can be accomplished later. Note that each product has different delivery line configurations and squeeze tubes. Refer to the **Table 2** in the **Installation and Setup** section under **Connecting Chemical Supply Lines** for the available tubing sizes. Refer to the **Specifications** for tubing materials.

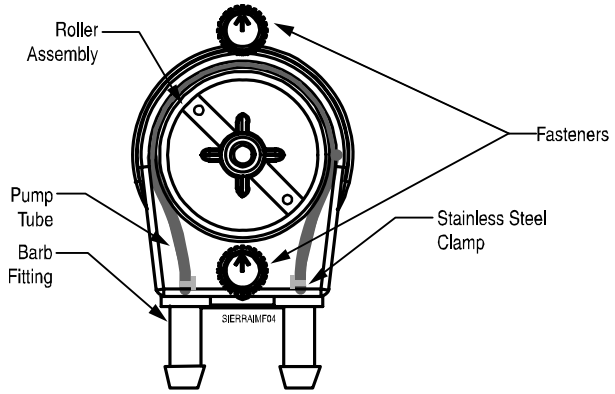


Figure 8. SnapHead Pump

To Remove

1. Disable unit, or turn off main power.
2. Remove the cartridge from the motor housing by twisting the two quarter turn fasteners at top and bottom counterclockwise while gently pressing.

Wear adequate protective clothing such as gloves and safety goggles.

3. Remove the supply and feed lines from the old pump squeeze tubing and connect them to the new pump squeeze tubing.

To Install

1. Disable unit, or turn off main power.
2. Align and engage the pump drive spline with the motor gear.
3. Turn the fasteners so that arrows are pointing upward.
4. Hold the cartridge vertically and press the fasteners into the motor housing until you hear a distinct click.

It is very important that the tabs are vertical and that you press them firmly enough to hear them click. Incorrect installation could damage the pump.

How to Change the Pump Squeeze Tubing

For replacement of standard tubing (3/8 x 3/8, 8 oz per minute Flex) we recommend ordering a replacement tube assembly. This assembly comes with stainless steel hose clamps. Other configurations may come with tie wraps instead of stainless steel hose clamps.

1. Remove the cartridge as described above.
2. Remove the small screw at the bottom of the rear cover and lift the cover from the cartridge.
3. Pull the barb fittings rearward until they clear the cartridge.
4. Pull the roller assembly rearward to release the pump squeeze tubing.
5. Cut the tie wraps holding the pump squeeze tubing to the barb fitting and pull the tubing from the fittings.
6. Replace the pump squeeze tubing making certain to use the proper size tube.
7. Secure the tubing to the barb with either the stainless steel hose clamps or tie wraps. Make certain that the "buckles" of the tie wraps are both facing the same direction. This will keep the tube from twisting in the cartridge.
8. Coat the inside of the cartridge with a liberal amount of Silicone 111 lubricant.
9. Push the roller assembly onto the cartridge shaft using a twisting motion to engage the rollers properly with the pump squeeze tubing.
10. Return the rear cover and secure with the small screw at the bottom. The flat side of the cover should face inward.

How To Replace Pump Motor and Solenoid Subassemblies

To Remove

1. Ensure power and all triggers are off/disabled.
2. Remove the pump cartridge from the motor assembly, leaving the chemical lines attached.
3. Remove the electrical connections at the back of the motor.
4. Compress the two flex ears on the back of the motor until the motor slides out through the hole in the cabinet.
5. For detailed information on Sierra I subassembly structure, please see **Appendix B**.

To Replace

1. Ensure power and all triggers are off/disabled.
2. Locate the alignment tip of the pump motor housing so it is in the down position.
3. Slide the pump motor housing into the enclosure hole. The holding ears will expand to hold the pump motor/solenoid in place. Verify that both ears popped out and are locked in place.
4. Reinstall the electrical connections at the back of the motor (Refer to **Appendix B** for wiring diagram).
5. Install the pump cartridge.
6. Prime the pump to verify proper pump rotation (clockwise). If the direction is wrong, switch the motor wires.

Cleaning The Probe

You must clean the conductivity probe tips (electrodes) on a regular basis to ensure control accuracy. The water conditions (*for example,* water hardness) and the type of soil load are the primary factors in determining a cleaning schedule.

To clean, use a plastic scrubbing pad or acid descaler. **Do not use wire wool.**

TROUBLESHOOTING

Refer to the assembly drawings and the complete unit wiring diagram in the **Appendix B**. To order replacement spares, see **Accessories and Spare Parts**. Please order using the item number.

No Power

The following procedure is to be performed only by qualified personnel.

Check the following:

1. Check power supply terminal strip connection (TB1-1,2) and verify that there is appropriate line voltage.
   a) If there isn't appropriate line voltage, check wiring and power supply.
   b) If there is appropriate line voltage, proceed to Step 2.
2. Confirm connection CN1 is firmly seated on the power supply board. If firmly connected and the Sierra I is still not functioning remove CN1 and confirm that appropriate line voltage (100-240VAC) is present on the input wire.

   If there isn't appropriate line voltage is present, check wiring between CN1 and TB1. If there is appropriate line voltage, proceed to Step 3.
3. Reconnect CN1. Disconnect J2. Confirm that appropriate input voltage (24VDC) is present.
   a) If there isn't appropriate line voltage, replace Sierra I power supply PCB.
   b) If there is appropriate line voltage, replace Sierra I controller PCB.

Chemical Feeds Too Often/Too Much Chemical Used

Check the chemical control setup and harness. (Refer to the original setup records.) If wrong, correct. If OK, replace the PCB.

Chemical Does Not Feed at All (Pump Doesn't Turn)

1. Ensure dosing is enabled.
2. Check the chemical control setup, including setup menus and input triggers. (Refer to the original setup records.) If wrong, correct.
3. Use voltmeter to verify 24 VDC is present on pump driver wires while priming. If 24 VDC is present, replace pump motor. If 24 VDC is not present, disconnect harness and test at PCB output. If 24 VDC is not present at PCB output, replace PCB; if present, replace harness.

Chemical Pump Feeds Continuously

Check the preset run time of the pump and the operation of the prime button. If the pump continues to run beyond that run time, check the wiring harness. If pump still feeds continuously, replace the Sierra I Main PCB.

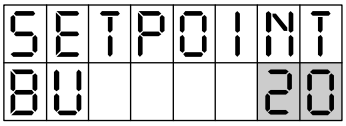
If using probe mode, check probe for excessive scaling. Excessive scaling would inhibit the VCP's corrective function. Also ensure that probe wires are connected to proper terminal block positions Refer to **Figure 5a** and **Probe Connections** section in the **ELECTRICAL CONNECTIONS** chapter.

Pump Will Not Pull the Chemical Out of the Drum

1. Too much vacuum created. The supply line in the chemical drum may be up against either the side or bottom, the supply lines may be too long for a viscous product, or there may be a crimp in the intake supply line, thus exceeding the pump's vacuum specifications.
2. There may be an air leak somewhere in the input supply line. Most often this is caused by inadequate sealing of the supply line into the line nuts. See **Installation and Setup** section for recommended procedure.
3. Squeeze tube is worn and the rollers can no longer squeeze the tube properly. Correct by changing the pump cartridge with the correct size squeeze tube and line nuts for the chemical being pumped.

Unit Displays "Drain Tank" Alarm Even Though the Tank has Just Drained and Refilled; "Items Since Last Drain" Screen Does Not Reset to "0."

- Make sure Sierra I unit has constant power during the drain operation. If Sierra I has a power interruption during the drain event, the "Items Since Last Drain" screen will not reset to "0."
- Ensure that at least 20 Beta units (or higher) is programmed for the setpoint in probe mode because a 20 Beta unit differential is needed to qualify the item reset function.



Unit Only Displays Numbers and Not Language

1. If you determine the Sierra I is in Numeric mode, reprogram to desired language.
   a) Press the SCROLL key until the top line shows "1.3" and the bottom line shows "000".
   b) Change the "000" to the passcode and press the ENTER key until "2.16 is displayed on the top line and "NUMERIC" is displayed on the bottom.
   c) Press "+" to change the language to English, French or Spanish, and the ENTER button to continue to other menus.
2. If the unit still does not display language, call Technical Services for further troubleshooting.

ACCESSORIES & SPARE PARTS

The items listed in this section provide you with quick reference numbers for some of the major parts and accessories. A complete exploded assembly drawing is located in the back of the manual.

Sierra I Units

Item N°	**Description**
1211706	Sierra I, 2-pump

1211708	Sierra I install kit*
1211709	Sierra I Auxiliary Box w/mounting bracket, no install kit

*1211708 Kit Contents

Item No	Description
041772	White 1/4” Tubing 10 ft
051606	Blank Plate for Enclosure (2 ea)
032121	1/4” Strain relief (5 ea)
1208655	Air Adjustment 1/8 MPT to 1/4”T– comp (2 ea)
1208641	Push-to-Connect 1/4”MPT to 1/4”T comp (2 ea)
087235	Mounting Brackets and Screws (2 ea)
014001	Tie Wraps 7.5” long (10 ea)
099686	Wire 2-Conductor for Probe Low-Level Lance
1206997	Wire 7 Conductor 20 AWG (25 ft)
041235	7/8” Hole Plugs (2 ea)

Accessories

Item N°	Description
1208654	Air Diaphragm Pump 4.8 gpm PVDF
1208653	Air Operated pump (Polypropylene) 4.8 GPM
1208656	AOD pump 3/8” (Polypropylene) 7GPM
1203503	Low level Alarm Lance 55 Gal
1201180	Low level Alarm Lance 5 gal
1202561	Remote Pressure Switch
1208574	Metal Air Solenoid w- Metal Fittings
042625	Relay Switch
4198456	Strobe Light, Amber, 12/24 VAC/DC
035395	Probe Non-Temp Comp D42 CP3300, 0.4 Cell Constant
051157	Tee Probe Non-Temp Comp CP3411, 0.4 Cell Constant
099905	Tee Probe with Temp Comp CP3412, 0.4 Cell Constant
018069	Conductivity CP3408 1.4 Cell Constant
087670	Cond/Temp CTP3250 Dip-in w/Hastelloy C Element, 5.0 Cell Constant
087671	Cond/Temp CTP3150 Dip-in w/Carbon Element, 5.0 Cell Constant
035742	Comp Fitting Kit for 087670 & 087671

Bulk Suction and Transport Tubing, Product Pick-up Probe

Item N°	Description
041772	Polyethylene 1/4” Tubing
092355	3/8 ID Nylobraid 300 ft roll
092350	3/8 ID Nylobraid 50 ft roll
1202522	Product Pick-up Probe 3/8” barb, 55 gal drum
031268	Reducer Fitting 3/8” barb to 1/2” barb to be used with 1202522

Injectors (Call for injector options)

Nylon and Stainless Steel rinse injectors available.

Spare Parts

Printed Circuit Boards

Item N°	Description
069489	Main PCB with VCP
087751	Power Supply board 100-240 VAC

Pump Tube Spares

Item N°	Description
051351	100 Series Motor/Gearbox, 24 VDC
1203331	100 Series Pump Cartridge Kit w/ 0.25” ID High-Flow Flex 3/8”B Tube
069858	Flex High Vol 3/8 x 3/8 barb/0.25 ID 8 oz/min

Alternative Tube Options

Squeeze Tube Kits-100 Series (1 - 8 oz per min)

Item N°	Description
069872	Flex 1/4 x 1/4, 0.188 ID comp 5 oz per min
1203652	Flex 1/4 x 1/4, 0.125 ID comp 2.5 oz per min
1205464	Flex 1/4 x 1/4, 0.063 ID comp 1 oz per min

Pump tubes are also available in Norprene, Nordel, Silicone, C-Flex, and Viton.

TECHNICAL ASSISTANCE

If you require additional technical information, contact our Technical Support Department at 1-800-468-4893. From Europe, please call 262-631-4460.

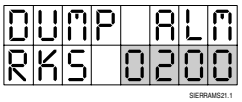
RETURNING EQUIPMENT FOR REPAIR

If you need to send an item back to be repaired, you must call or write to obtain a Returned Authorization (R.A.) Number before sending it back. Please write the R.A. number on the outside of the box before sending it back. It is also very helpful to our repair department if you include a note inside the box explaining the nature of the problem. Failure to obtain an Return Authorization Number before sending an item in for repair or replacement may delay the return of your equipment, and a $25 handling fee will be incurred.

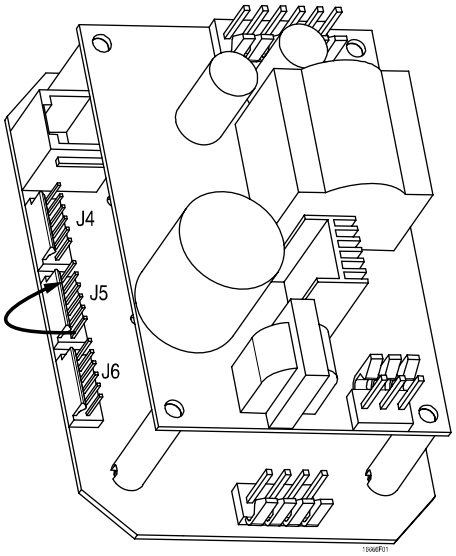
APPENDIX A: WASHER HOLD CONFIGURATION INSTRUCTIONS

These instructions will tell you how to configure your dispenser with your wash tank so that the machine “holds” when a specified number of items have been washed. This prevents further washes from occurring before the operator drains and refills the wash tank.

1. Program the number of items you want to trigger the "Drain Tank" alarm during setup.



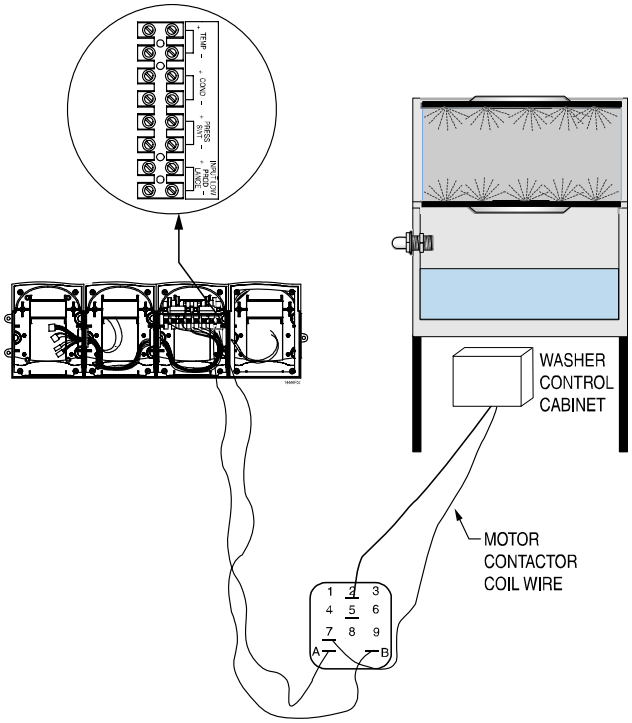
2. Disconnect power from the unit, turn off the washer, and open the controller module that has the buttons on it.
3. Move the J5 connector from the bottom two pins to the top two pins (this changes the wires from a low-level input to a 24 VDC alarm output).



Controller Module PCB and Power Supply

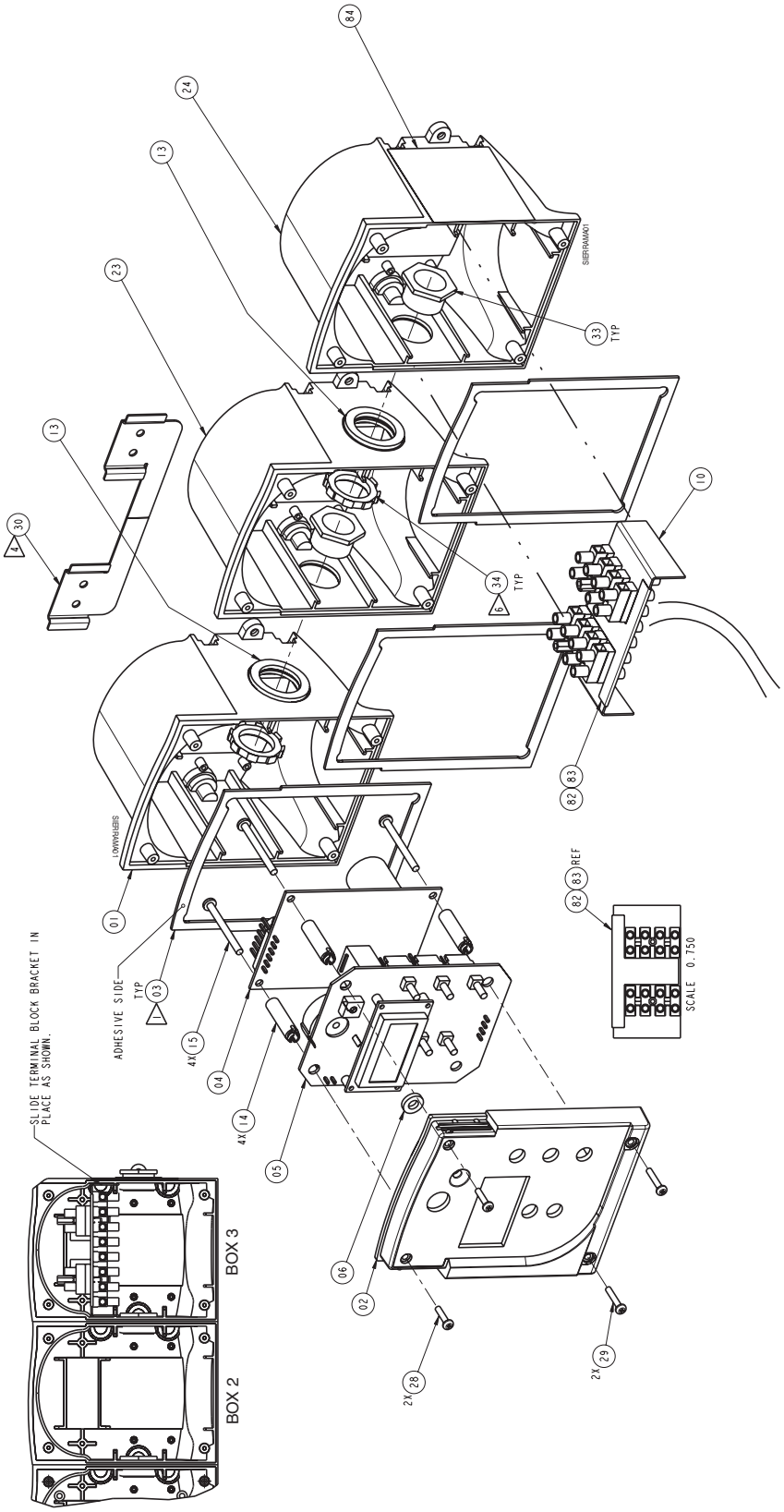
4. Break the motor contact coil wire in the washer control cabinet and attach it to relay #042625, attaching one wire to 7 and the other to 2. To attach wire to the coil of the relay, you can use harness #050537.
5. Attach wires from the Sierra I terminal block "Input Low Prod Lance" to the relay’s A and B connections.

   Any alarm will now put the washer on hold.
6. Train personnel to drain the tank and push the ACTION button to reset the alarm if the wash tank gets put on hold. While pressing the ACTION button cancels the alarm, the alarm will resume in 5 minutes if the tank hasn’t been drained.
7. If in probe mode, they also need to check that the chemical containers are not empty, (the overfeed stop conductivity alarm will also put the machine on hold).



Sierra I Terminal Block and Relay #042625

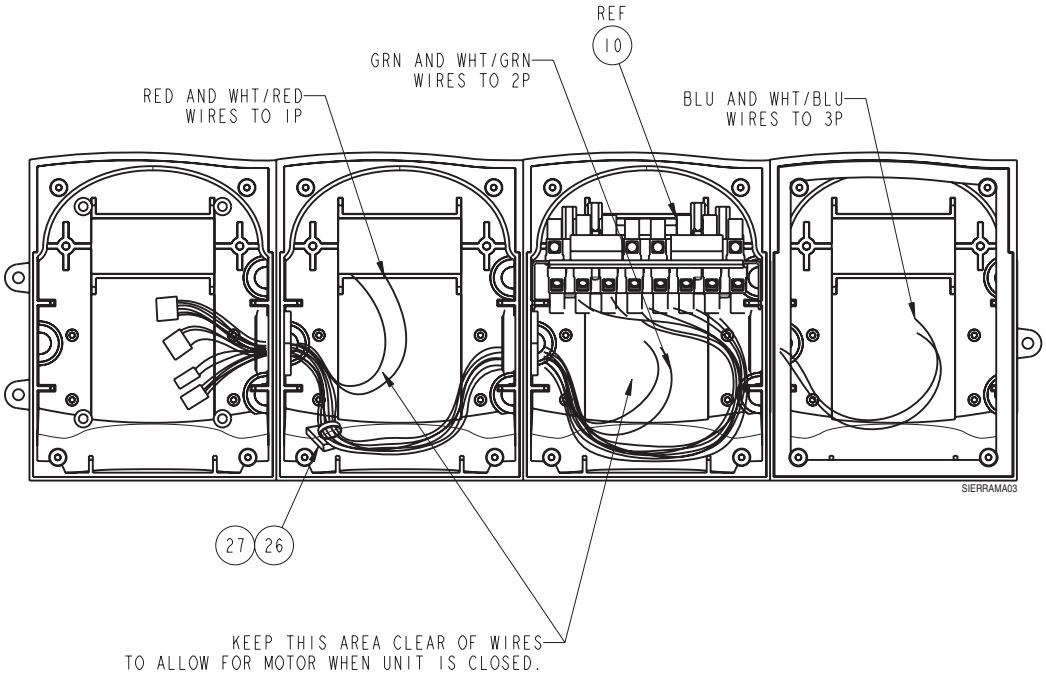
APPENDIX B: ASSEMBLY DRAWINGS



Seq.#	Item#	Description
01	1205116	ENCL,BUCKET,GRY
02	1205114	ENCL,BEZEL,CONT,SIERRA I,GRY
03	069630	GSKT,ENCL
04	087751	PCB ASSY,PWR SPLY,90-264VAC
05	069489	PCB ASSY,SIERRA I MAIN W/VCP
06	087415	GSKT,LED,NPRN,PSA
10	1209956	HARN,PWR/IO,TERM BLK,SIERRA I
13	1209686	WSHR,FL,1.25ODX.88IDX.13,NPR
14	069135	SPCR,SNP,9/32RND,#6X1,NYL
15	068516	SCR,T-B,PH PNH,#6X1, ZP STL

Seq.#	Item#	Description
23	1205116	ENCL BUCKET,GREY
28	099688	SCR,T-B,PH PNH,#4X1/2,SST
29	099689	SCR,T-B,PH PNH,#4X5/8,SST,BLK
30	069188	BRKT,MTG,SIERRA I
33	069665	CFTG,NIP,CHASE,1/2”,STL
34	041077	NUT,LK,1/2,CND
35	038153	LBL,HZR,WARN,CSA
50	068648	CAP,MOT
52	1205123	ENCL,DOOR,ABS
55	099705	GSKT,PMP
69	1205116	ENCL,BUCKET,D250,LFT KO
74	1205121	ENCL.BEZEL,PMP MDL,SIERRA I,GRY
77	1200409	WIRE S/A,BLU,10”,22GA,RQ/Q
78	1200410	WIRE,S/A,WHT/BLU,10”,22GA, RQ/Q
1P	Contact Customer Service	
2P	Contact Customer Service	
3P	Contact Customer Service	

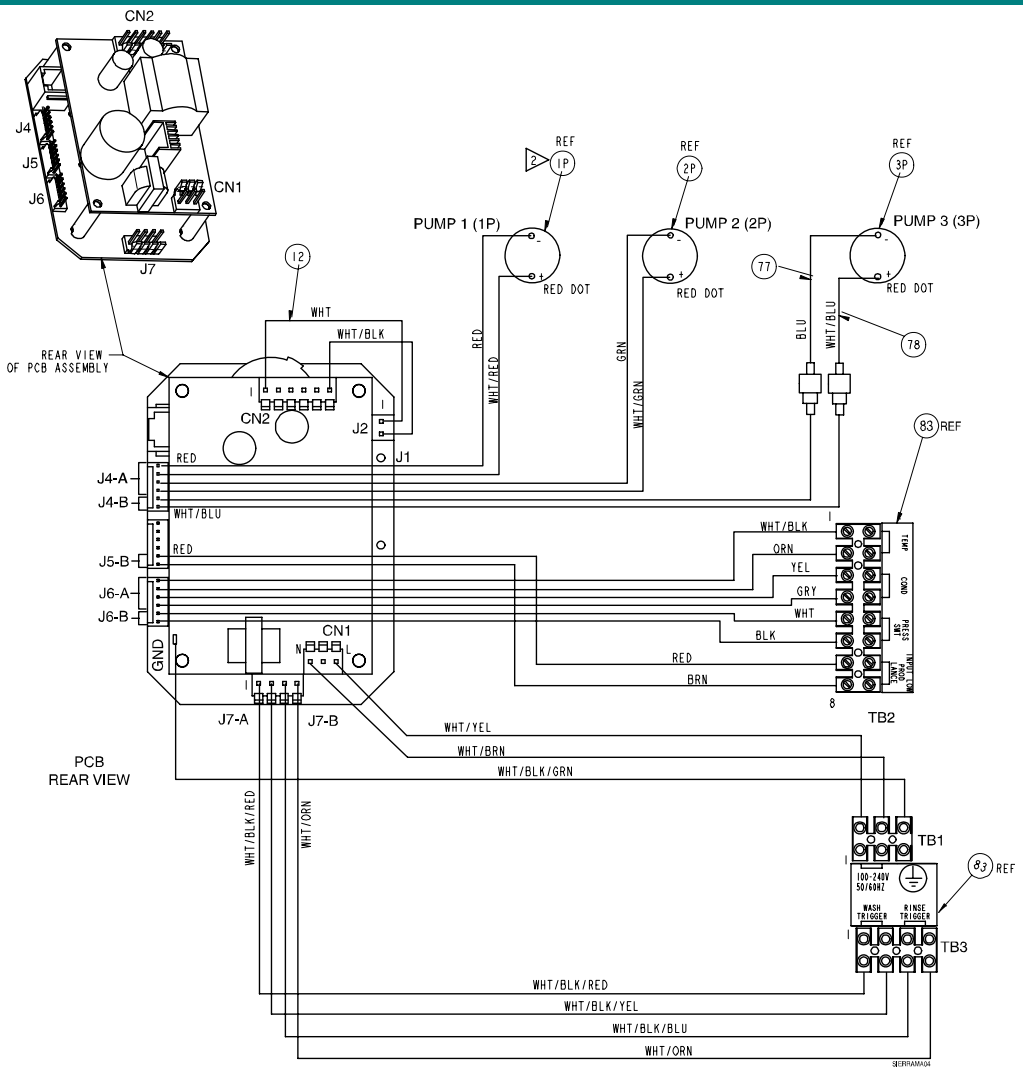
APPENDIX B: ASSEMBLY DRAWINGS



WIRE ROUTING

Sequence Number references on Page 21

APPENDIX B: ASSEMBLY DRAWINGS



Sequence Number references on Page 20

SIERRA QUICK PROGRAMMING GUIDE

The + and – keys change the value of a digit.

The CURSOR key changes which digit is selected.

The ACTION key performs an action.

The MENU key switches from screen to screen when programming or changing data screens in run mode.

The first screen you see when programming is the prime screen. Users can reprime if the pumps have been running without chemical.

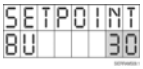
Hold down the ACTION key to prime.

This screen is only used to disable pumping during de-lime.

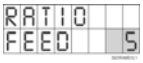
Default passcode is 000. Press the MENU key with the passcode entered to proceed to the programming screens.

Select probe mode or time mode.

Select door or conveyor machine.



In probe mode, titrate and set the dosing setpoint.



Set ratio feed if in probe mode (if 6 is selected the dispenser will run for 6 seconds on, 4 seconds off).

Set time limits for ALM “add detergent” alarm to come on, and OFS “det feed failure” for pump to timeout and go into overfeed stop.

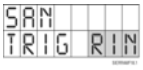
Set pump speeds using the CURSOR key to select “Det” and change to “Rin” and “San”. Never use a speed other than 100% with a solenoid.

Initial charge runtime.

Recharge time after each rack.

Rinse delay time. Default=0.

Rinse max runtime.



Sanitizer control: trigger with Det or with Rin.

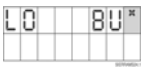
(Conveyor only) Sets rack transit time in seconds so dispenser can accurately count number of racks and trigger drain tank alarm to ensure results.

Number of racks before drain tank alarm. Select “---” if you don’t want to use this feature.

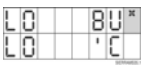
You can change the language display to Spanish or French.

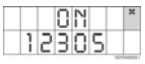
Passcode setting. You can change the passcode to protect setups.

Change to “yes” if you want to configure the run mode display. If “no”, programming will loop back to the mode select screen.



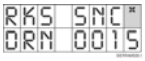
If you select “yes”, screens will appear and you can select which ones the kitchen user can see by turning “*” on to make them visible. Be sure to keep the “*” off on these conductivity/temperature screens if running in time mode or they will erroneously appear.





This run mode screen show which inputs are active. It can be used when troubleshooting triggers.

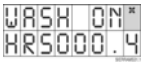
This screen counts total racks to up 99,999,999 then rolls over to 0.



This screen counts number of racks since last drain.

This screen tracks total runtime, allowing you to track motor and tube life and prevent service calls.

This screen counts total number of drains and cannot be reset. Rolls over after 99,999,999.



This screen counts detergent trigger on-time for cost tracking.

This screen appears if you select “Display NO” or at the end of the display screen loop if you select “Display YES”. “EXIT” returns you to run mode.

SIERRA SALES ADVANTAGES

Flex rinse tube: Lasts up to 7 times longer than competitors’, reducing down time and ensuring results.

Virtual Clean Probe (VCP™): Reduces detergent wastage which occurs when probe scaling causes the dispenser to overdose. Reduces underdosing that results in items not getting clean if the probe partially shorts.

Drain tank alarm: Ensures optimal results by alerting kitchen personnel to change out the wash water after a programmable number of racks. Appears as shown below. Can be silenced by pressing the ACTION key, or turned off during setup (requires password) if not desired.

APPENDIX C. BETA UNIT CONDUCTIVITY CHART

Reference is at 15 B.U., the corresponding resistance should be 277 ohm

ref -=	277.00							
Beta Units	resistance	conductivity	K=0.4 @ 65C	K=5.0 @ 65C	K= 1.333 @ 65C	K= 1.333 @ 25C	K=0.4 @ 25C	K=5.0 @ 25C
0	597.90	0.001673	669.01	8362.66	2,229.48	1727.85	518.48	6481.06
1	568.00	0.001761	704.22	8802.80	2,346.83	1818.79	545.77	6822.17
2	539.60	0.001853	741.29	9266.10	2,470.34	1914.52	574.50	7181.23
3	512.62	0.001951	780.30	9753.79	2,600.36	2015.28	604.74	7559.19
4	486.99	0.002053	821.37	10267.15	2,737.22	2121.35	636.56	7957.04
5	462.64	0.002162	864.60	10807.53	2,881.29	2233.00	670.07	8375.83
6	439.51	0.002275	910.11	11376.34	3,032.93	2350.52	705.33	8816.67
7	417.53	0.002395	958.01	11975.10	3,192.56	2474.23	742.46	9280.70
8	396.66	0.002521	1008.43	12605.37	3,360.59	2604.46	781.53	9769.16
9	376.82	0.002654	1061.50	13268.81	3,537.46	2741.53	822.67	10283.33
10	357.98	0.002793	1117.37	13967.16	3,723.65	2885.83	865.96	10824.55
11	340.08	0.002940	1176.18	14702.28	3,919.63	3037.71	911.54	11394.27
12	323.08	0.003095	1238.09	15476.08	4,125.92	3197.59	959.52	11993.96
13	306.93	0.003258	1303.25	16290.61	4,343.08	3365.89	1010.02	12625.23
14	291.58	0.003430	1371.84	17148.01	4,571.66	3543.04	1063.18	13289.71
15	277.00	0.003610	1444.04	18050.54	4,812.27	3729.51	1119.13	13989.17
16	263.81	0.003791	1516.25	18953.07	5,052.89	3915.99	1175.09	14688.63
17	251.25	0.003980	1592.06	19900.72	5,305.53	4111.79	1233.84	15423.06
18	239.28	0.004179	1671.66	20895.76	5,570.81	4317.38	1295.54	16194.21
19	227.89	0.004388	1755.24	21940.55	5,849.35	4533.25	1360.31	17003.92
20	217.04	0.004608	1843.01	23037.57	6,141.82	4759.91	1428.33	17854.12
21	206.70	0.004838	1935.16	24189.45	6,448.91	4997.90	1499.75	18746.83
22	196.86	0.005080	2031.91	25398.92	6,771.35	5247.80	1574.73	19684.17
23	187.48	0.005334	2133.51	26668.87	7,109.92	5510.19	1653.47	20668.37
24	178.56	0.005600	2240.19	28002.31	7,465.42	5785.70	1736.14	21701.79
25	170.05	0.005880	2352.19	29402.43	7,838.69	6074.98	1822.95	22786.88
26	161.96	0.006175	2469.80	30872.55	8,230.62	6378.73	1914.10	23926.23
27	154.24	0.006483	2593.29	32416.18	8,642.15	6697.67	2009.80	25122.54
28	146.90	0.006807	2722.96	34036.99	9,074.26	7032.55	2110.29	26378.67
29	139.90	0.007148	2859.11	35738.84	9,527.97	7384.18	2215.81	27697.60
30	133.24	0.007505	3002.06	37525.78	10,004.37	7753.39	2326.60	29082.48
31	126.90	0.007880	3152.17	39402.07	10,504.59	8141.06	2442.93	30536.60
32	120.85	0.008274	3309.77	41372.17	11,029.82	8548.11	2565.07	32063.43
33	115.10	0.008688	3475.26	43440.78	11,581.31	8975.52	2693.33	33666.60
34	109.62	0.009123	3649.03	45612.82	12,160.38	9424.29	2827.99	35349.94
35	104.40	0.009579	3831.48	47893.46	12,768.40	9895.51	2969.39	37117.43
36	99.43	0.010058	4023.05	50288.13	13,406.82	10390.28	3117.86	38973.30
37	94.69	0.010561	4224.20	52802.54	14,077.16	10909.80	3273.76	40921.97
38	90.18	0.011089	4435.41	55442.67	14,781.02	11455.29	3437.45	42968.07
39	85.89	0.011643	4657.18	58214.80	15,520.07	12028.05	3609.32	45116.47
40	81.80	0.012225	4890.04	61125.54	16,296.07	12629.45	3789.78	47372.29
41	77.90	0.012836	5134.55	64181.82	17,110.87	13260.93	3979.27	49740.91
42	74.19	0.013478	5391.27	67390.91	17,966.42	13923.97	4178.24	52227.95
43	70.66	0.014152	5660.84	70760.45	18,864.74	14620.17	4387.15	54839.35
44	67.30	0.014860	5943.88	74298.48	19,807.97	15351.18	4606.51	57581.32
45	64.09	0.015603	6241.07	78013.40	20,798.37	16118.74	4836.83	60460.39

Beta Units	resistance	conductivity	K=0.4 @ 65C	K=5.0 @ 65C	K= 1.333 @ 65C	K= 1.333 @ 25C	K=0.4 @ 25C	K=5.0 @ 25C
46	61.04	0.016383	6553.13	81914.07	21,838.29	16924.68	5078.67	63483.40
47	58.13	0.017202	6880.78	86009.77	22,930.21	17770.91	5332.61	66657.57
48	55.36	0.018062	7224.82	90310.26	24,076.72	18659.45	5599.24	69990.45
49	52.73	0.018965	7586.06	94825.78	25,280.55	19592.43	5879.20	73489.98
50	50.22	0.019913	7965.37	99567.06	26,544.58	20572.05	6173.16	77164.47
51	47.83	0.020909	8363.63	104545.42	27,871.81	21600.65	6481.82	81022.70
52	45.55	0.021955	8781.82	109772.69	29,265.40	22680.68	6805.91	85073.83
53	43.38	0.023052	9220.91	115261.32	30,728.67	23814.72	7146.20	89327.53
54	41.31	0.024205	9681.95	121024.39	32,265.10	25005.45	7503.51	93793.90
55	39.35	0.025415	10166.05	127075.61	33,878.36	26255.73	7878.69	98483.60
56	37.47	0.026686	10674.35	133429.39	35,572.28	27568.51	8272.62	103407.78
57	35.69	0.028020	11208.07	140100.86	37,350.89	28946.94	8686.25	108578.17
58	33.99	0.029421	11768.47	147105.90	39,218.43	30394.29	9120.57	114007.07
59	32.37	0.030892	12356.90	154461.20	41,179.35	31914.00	9576.59	119707.43
60	30.83	0.032437	12974.74	162184.26	43,238.32	33509.70	10055.42	125692.80
61	29.36	0.034059	13623.48	170293.47	45,400.24	35185.19	10558.20	131977.44
62	27.96	0.035762	14304.65	178808.14	47,670.25	36944.44	11086.10	138576.31
63	26.63	0.037550	15019.88	187748.55	50,053.76	38791.67	11640.41	145505.13
64	25.36	0.039427	15770.88	197135.98	52,556.45	40731.25	12222.43	152780.38
65	24.16	0.041399	16559.42	206992.78	55,184.27	42767.81	12833.55	160419.40
66	23.01	0.043468	17387.39	217342.41	57,943.49	44906.20	13475.23	168440.37
67	21.91	0.045642	18256.76	228209.54	60,840.66	47151.51	14148.99	176862.39
68	20.87	0.047924	19169.60	239620.01	63,882.70	49509.09	14856.44	185705.51
69	19.87	0.050320	20128.08	251601.01	67,076.83	51984.54	15599.26	194990.78
70	18.93	0.052836	21134.49	264181.06	70,430.67	54583.77	16379.23	204740.32

APPENDIX D. WASHER WIRING CONNECTIONS

Machine Type	Machine Action	Product	Probe Mode-trigger connections	Notes:
Egg Washing	Conveyor	DET	Det trigger to wash power - such as wash motor contactor coil	RIN & DET triggers wired together - these triggers are on while washer is running at all times. Detergent (Product 1) is controlled by probe. Rinse (Product 2) motor speed is adjusted to control dose
		RIN	Rinse trigger to wash power	
Large Pot & Pan	Door	DET	Det trigger to wash power - such as wash motor contactor coil	RIN & DET triggers are separate. Detergent (Product 1) is controlled by probe. Rinse (Product 2) run time, speed, and delay can be programmed upon receipt of rinse trigger to control dose
Cage Washer				
Keg Washer		RIN	Rinse trigger to Rinse solenoid	
Tray Washer				
Parts Washer				
Parts Washer (for conductivity only)	Door	DET ONLY	Wash power - such as wash motor contactor coil	Detergent (Product 1) controlled by probe. No rinse typically.
Plating baths				
Food Processing and Dairy Solution Preparation Tanks				
Dip tank				

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