405 E. Santa Clara St., Arcadia, CA 91006-7218
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DEMETER

SERIES
STERILE WATER DISPENSE SYSTEM
INSTRUCTION MANUAL

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Index

Section I – DEMETER INSTRUCTION MANUAL

Section II – DEMETER DRAWINGS

Section III – DEMETER COMPONENT MANUALS

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O: (626) 599-8566 • F: (626) 599-9567

TABLE OF CONTENTS

405 E. Santa Clara St., Arcadia, CA 91006-7218
O: (626) 599-8566 • F: (626) 599-9567

RECEIVING INSPECTION PROCEDURE

This shipment was carefully inspected, checked and properly packaged at Heateflex Corporation and delivered to the shipping carrier in good condition. We fully expect your merchandise to arrive in your hands in excellent operational condition.

ALL PRODUCTS ARE SHIPPED F.O.B. FACTORY; THEREFORE, WHEN IT IS DELIVERED TO THE SHIPPING CARRIER, IT BECOMES YOUR PROPERTY. THUS, IT IS IMPORTANT THAT YOU TAKE NOTE OF ANY DAMAGE, WHETHER OBVIOUS OR HIDDEN. REPORT THIS INFORMATION TO THE TRANSPORTATION COMPANY WITHIN 5 DAYS OF RECEIPT OF THE SHIPMENT AT YOUR PREMISES TO AVOID FORFEITING CLAIMS FOR DAMAGE.

WHAT TO DO IF SHIPMENT IS DAMAGED:

- Leave the items, packing material and carton "as is". Notify your carrier's local office and ask for immediate inspection of the carton and contents.

- After the shipping carrier has made inspection, and you have received acknowledgment in writing as to the damage, please contact our Customer Service Department for return authorization at:

  (626) 599-8566

  If writing for return authorization, please indicate your purchase order number.

- We will either repair or replace the merchandise depending upon the extent of the damage.

- It is your responsibility to follow the above instructions, or the shipping carrier will not honor any claims for damage. If there are any shortages or questions regarding this shipment, please notify us within 10 days.

INTRODUCTION

Your new Demeter - Sterile Water Heater, Pump, & Filter Dispense System offers a safe, reliable and effective solution to automate dispensing, traceability and heating needs. The Demeter Dispense System is designed to reduce water usage as well as maintain high purity requirements. This has been achieved through the use of our patented Heateflex® heaters.

The Heateflex Demeter Dispense System is controlled by a microprocessor-based PLC (Demeter-PLC). The primary function of the Demeter-PLC is to control the discharge temperature of the process fluid and dispense specified volumes. Additionally, the Demeter-PLC provides system monitoring for output fluid temperature and system modes; provides safety interlocks or alarms; sterilization of the Demeter Dispense System and/or Tank; allows data logging and download of alarms/events, and the ability to dispense 16 independent **Dispenses/Recipes.**

The Demeter Dispense System is designed to maintain a user-specified temperature even with variations in the flow rate. High purity is maintained due to the use of PVDF and PFA wetted surfaces (100% PFA is available as an option). These systems are equipped with thermocouples, liquid level sensors, high limit sensors, and thermal fuses to protect the heater module(s) from unnecessary damage due to overheating. To monitor the purity level of the exiting heated Sterile Water, a resistivity sensor is available as an option. All systems come with a pressure by-pass or an optional pressure regulator to ensure that the incoming pressure does not exceed that which the system can withstand. In addition, the Human Machine Interface (HMI) Touch Screen user interface is straightforward and easy to operate with few adjustments needed after initial settings are input into the Demeter-PLC.

Our Demeter Dispense System are equipped with safety devices to protect the users as well as the products that they are processing. These safety devices include 1) an open-door disconnect switch that will protect the user if the electrical enclosure is opened, 2) a capacitive liquid level sensor that monitors the amount of fluid in the heater and shuts off the heater if an inadequate amount of fluid is present 3) heater over temperature control which shuts off the system should the heaters reach a temperature above the "**High Limit Temperature Set Point**" 4) process over temperature which also shuts off the system when the actual temperature exceeds the "**Process Over Temperature Alarm Set Point**" 5) **SCR Alarm** 6) **Pump Fault** 7) **Tank Low Level Alarm** 8) mechanical thermal fuse 9) signal integrity safeties for all critical components 10) water leak sensor that will not only monitor for system leaks but shut off the incoming process fluid, the heaters, and the system as well. As an added safety feature, an optional Ground Fault Circuit Interrupter (GFCI) is available which turns off the heaters and any circuits containing 120 volts or more if any current leak is detected in the circuitry.

We are confident in the quality and reliability of our products and offer technical support if needed.

IMPORTANT NOTE:
The Demeter does not improve the purity or quality of your supply water. The Demeter heats, filters and dispenses to the customer's desired water volume at the desired water temperature. The Demeter is designed so that the user will supply the appropriate high purity and/or laboratory grade water which meets the customer's requirements. To maintain good performance, the customer is responsible for proper cleansing and maintenance of the Demeter.

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FACTORY PERFORMANCE TEST

The following tests detailed below are a summary of the tests performed on all Demeter System after assembly and before shipping. The units are tested with Deionized Water supplied to the unit and discharged to drain. For a more thorough list on all the tests performed please refer to the **Quality Control Documentation**.

I. The Demeter Dispense Control System (Demeter-PLC) is transferred to the PLC (Programmable Logic Controller) and related hardware of the Demeter and checked for functionality.
   a. The inputs and outputs of the PLC are checked and verified.
   b. All components and sensors are checked and tested.
   c. Safety system functionality are checked and tested.
   d. Control system functionality are checked and tested.
   e. Operational system functionality are checked and tested.

II. The Demeter Dispense System is tested to verify the correct operation of the following safety interlocks or alarms:
   a. Components: The components of the Demeter Dispense System is thoroughly checked for functionality, which includes the **Disconnect Switch**, **Emergency Off Switch** (**EMO**), **SCR** or **SSR** (Solid State Relay), **High Limit Thermocouple Control**(s), **Capacitive Liquid Level Sensor**, **Pump Fault**, **Thermal Fuse**, **Leak Sensor**, GFCI (Optional), and Current Transformer (Optional).
   b. **Thermocouple**: All of the thermocouples (T/C) of the Demeter Dispense System are thoroughly checked for functionality, which includes the Heater T/C, Dispense T/C and the High Limit T/C.

III. The Demeter Dispense System is calibrated for pump volume capacity.
   a. The volume capacity of the pump has been determined, calibrated and set based upon the conditions at the Factory.

IV. The Demeter Dispense System is tested at "**Dispense Temperature**" set point parameter set below the maximum temperature possible and a low pump speed. This will test the performance of the controller.
   a. The unit is allowed to operate with the controller "**Dispense Temperature**" set point set to a value below the maximum dispense temperature possible at the factory specified pump speed and flow rate.

V. The Demeter Dispense System is tested at "**Dispense Temperature**" set point parameter to be used by the customer, provided that information is available.

VI. The Demeter Dispense System's **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize** are tested to operate with the "**Normal Sterilize Cycle Temperature Set Point**" and the "**Tank Sterilize Cycle Temperature Set Point**" parameters set to the maximum temperature possible, respectively. This test will insure that two independent **Sterilize Cycles** are functioning properly, the heater module(s) are operating, full heater power is available, and all safeties are functional.
   a. The pump is set to a low flow rate, which introduces the Sterile Water to the heater, and the unit is turned on. The Sterile Water heater is allowed to reach the sterilize temperature set point.

VII. The Demeter Dispense System is calibrated for **Dispenses/Recipes**.
   a. The **Dispenses/Recipes** calibrated and set based upon the conditions at the Factory.

VIII. The Demeter Dispense System is tested for performance and functionality with respect to the dispense temperature and volumes.
   a. The unit is allowed to operate with the controller "**Dispense Temperature**" set point set to the desired temperature and **Dispense Settings**.
   b. The unit is then allowed to dispense the **Dispense** selected. The sample is then verified for temperature and volume accuracy and consistency.

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Basic Safety Precautions

Every effort has been made to insure that this unit will run optimally with a minimum amount of user input or maintenance. However, there are still precautions to be taken whenever operating, performing maintenance, or servicing this unit. This unit makes use of heating elements and electrical components, both of which pose inherent burn, fire, and electrical shock hazards. These hazards can result in injury to personnel, the unit, the plant/facility, and/or the process. Please note the following to aid in the operation of your unit and to decrease the risk of the above-mentioned hazards.

Precautions:

- Carefully read through this and all accompanying literature completely to ensure that you understand the functionality and features of this system. Please become familiar with the integral safeties and controls within this system, and know their functions.
- Always disconnect all electrical power prior to installing, servicing or replacing electric heating elements, components, and/or assemblies.
- Electrical termination enclosures should be selected to match the application's environment and be able to withstand worst-case failures, especially in hazardous locations.
- Avoid fire hazards. Electric heaters and their components can develop temperatures that produce an auto-ignition source. Avoid mounting heaters in atmospheres containing combustible gases, vapor or dust. Article 501 of the National Electrical Code (NEC) requires that the maximum sheath temperature when the heater is continually energized not exceed 80 percent of the surrounding atmosphere's auto-ignition temperature.
- Avoid having heaters come in contact with combustible materials. Keep heaters far enough away from combustible materials to prevent ignition.
- Be aware of the labeling on the unit, such as a lightning-bolt warning symbol or hot surface symbol, which alerts you to a safety hazard that could harm you or the unit.
- While servicing or operating this unit it is advisable to remove all metal from the individual working on the unit. This includes metal bracelets, rings and jewelry, as well as metal rim glasses and wristwatches.
- Keep your clothing, hands, and feet dry at all times whenever working with electrical equipment.
- Pull the fuses, open the circuit breakers, switch the interlocks to the OFF position, or disconnect the circuits from their source of power to protect yourself, the test equipment and the equipment under test.
- Do not troubleshoot or service a circuit with the primary power applied.
- If it becomes necessary to work on the unit with the power applied, keep one hand free at all times (behind you).
- Be sure that there is no power applied to a circuit when making continuity or resistance checks.

- Use the correct tool (i.e. screwdriver, alignment tool, etc.) for the job.
- Do not use metal tools around the connectors when there is power to the unit, as they may cause arcing.
- Turn off power before connecting alligator clips to any circuit.
- Do not take anything for granted when working with inexperienced help. Check every operation before they perform it.
- The operation of this unit creates large amounts of heated process fluid. This fluid is likely to be heated to temperatures above the threshold of safety for human contact. Please be advised of this and take the necessary precautions whenever connecting or disconnecting any plumbing from the system. If you are ever in doubt, turn the unit off, and wait an appropriate amount of time before performing any operations or service involving the plumbing.
- The process fluid within this system may also become pressurized from outside flow sources. It is the user's responsibility to verify that pressure within the system has been relieved externally; in order to prevent exposure to hazardous fluid such heated de-ionized water, or heated chemicals and/or acids.
- This unit has several safety interlocks integrated within the system. However, it is the user's responsibility to verify that incoming power has been disconnected from a remote source prior to opening or servicing the unit. This is advised to prevent user exposure to high voltage and current, and reduce the risk of electric shock.
- The function of this unit is to heat process fluid for use in ultra-pure operations. Therefore during normal operation the unit will accumulate heat within the plumbing and the heater compartment. It is our recommendation that the unit is allowed a sufficient amount of time to cool before any maintenance or inspections are made to the unit in order to prevent user exposure to heated surfaces or air.
- The processes in which this unit is intended involve heated fluids. Take caution when draining they system of fluid as the fluid temperature may be extremely hot and may damage facility plumbing if precautions are not taken.
- The processes in which this unit is intended involve heated fluids. Whenever heated fluids are involved, certain precautions must be taken in order to avoid user injury. This is especially important since it is most likely that this unit will be used with aggressive fluids that can further harm or injure an individual, such as de-ionized water and process acids. User exposure to these types of materials can result in burning, scalding, and in some cases deep tissue damage. To avoid injury it is the user's responsibility to take the appropriate precautions as outlined above, and in all cases dealing with heated or aggressive materials, to use the appropriate safety equipment, such as but not limited to safety goggles and glasses, and chemically resistant gloves and garments.
- Whenever servicing this unit, at least 300 lumens of light is required; otherwise use portable lighting that does not have to be held.

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PRE-INSTALLATION PREPARATION

Before actually installing the Demeter - Sterile Water Heater, Pump, & Filter Dispense System, careful attention must be paid to the requirements of the system. As shown in the drawing section of this manual, the system has electrical, plumbing and physical properties that govern how it is to be installed. Input and output connections are clearly marked on the enclosure of each system as well as the incoming voltage. These connections may vary for different models due to the optional features that may have been added or for particular customer needs (please refer to the drawing section of this manual to better understand the configuration of your system).

IMPORTANT NOTE:
All Water and Air Lines (plumbing or piping) connecting to the Demeter Dispense System should be pre-flushed prior to hook. Make sure to flush out all debris and/or installation particulates so that they are not introduced into the Demeter.

WARNING!!!
The heater module must be installed in the vertical position with the plumbing connected as described in the drawing section of this manual. This PFA immersion type heater should always be under liquid when operating. Operating the heater in air or in a crystalline or precipitate, that may coat the heater, will result in heater burn out and may cause severe damage to your equipment and pose severe risks for a fire.

Units in contact with corrosive or caustic fumes should have the electrical enclosure purged with positive pressure nitrogen to prevent deterioration of controller and electrical components. To prevent heater from generating bubbles, there should be a minimum of 20 psi output pressure.

Failure to conform to this warning may cause severe damage!

Heateflex Corporation assumes no risk for noncompliance. Heateflex Corporation does not warranty any Heateflex Corporation equipment that does not use Heateflex Corporation interlock safety devices.

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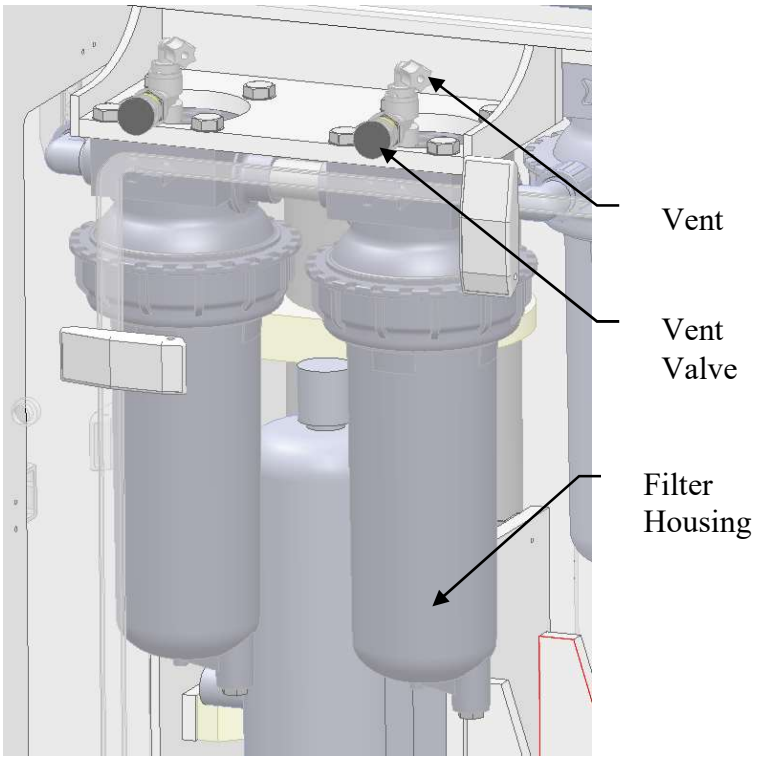
INSTALLATION INSTRUCTIONS

Your new Demeter - Sterile Water Heater, Pump, & Filter Dispense System has been pre-wired and tested prior to shipment. After proper installation, the unit will supply your heated sterile water needs for years to come.

1. Verify that the minimum operating requirements are available, such as electrical power, Deionized Water supply, and air supply. Refer to the Facility Diagram and the **Electrical Schematic Diagram** drawings in Section II for more information.
2. Install the Demeter Dispense System in the desired permanent location.
3. Install incoming electrical power from the main fusible disconnect (customer supplied) to electrical compartment. For point-to-point connections and required voltage refer to the **Electrical Schematic Diagram** in Section II of this manual. All switches and interlocks must remain in the "**OFF**" position.
   Note: It is highly recommended that a qualified electrician or technician perform all electrical connections to the Demeter Dispense System.
4. If the optional Remote EMO feature is available, connection of the **Remote EMO** button is required according to the **Electrical Schematic Diagram** provided, or using a jumper if no **Remote EMO** button is to be used.
5. Connect the incoming Deionized Water supply line from the facility to the "**D.I. Water Supply**" of the Demeter Dispense System. It is recommended that a shut off valve be plumbed in line before the Demeter Dispense System. Refer to the **Facility Diagram** in Section II for connection specifications. Please refer to the "**Important Note**" located in the Pre-Installation Preparation section.
   Note: It is highly recommended that a qualified professional or technician perform all plumbing connections to the Demeter Dispense System.
6. Connect an air supply line with a minimum pressure of 40 psi and maximum pressure of 75psi to the "**Air Supply**" of the Demeter Dispense System. Refer to the **Facility Diagram** in Section II for connection specifications.
7. Connect the "**Drain**" of the Demeter Dispense System to an adequate drain. Refer to the **Facility Diagram** in Section II for connection specifications.
8. Connect the "**Enclosure Drain**" of the Demeter Dispense System to an adequate drain if desired. Refer to the **Facility Diagram** in Section II for connection specifications.
9. Verify that the **Drain Valve** of the **Tank** is completely closed. The **Drain Valve** handle will be perpendicular to the valve (vertical) when completely closed and parallel to the valve (horizontal) when completely opened.
10. Turn "**ON**" the facility Water supply and provide Water to the Demeter Dispense System.

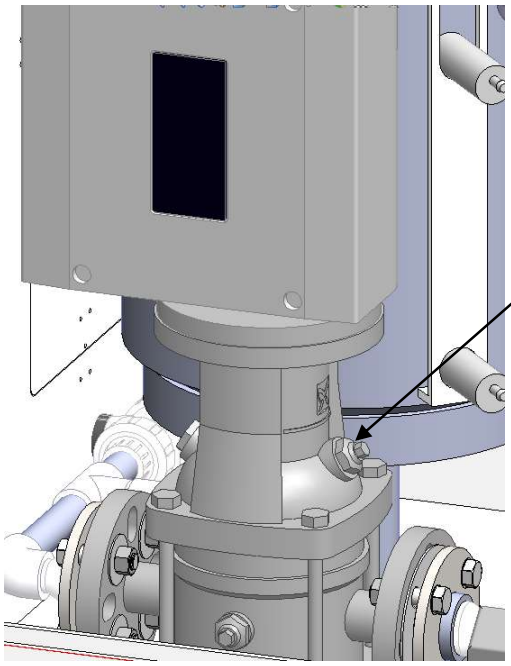
11. Open up the **Vent Valves** on top of the **Filter Housings** located on the back side of the Demeter system, the access panel at the rear of the unit will need to be opened. Keep these valves open until a solid stream of water is coming out. Then close them.



12. Turn "**ON**" the facility air supply and provide an air supply to the Demeter Dispense System.
13. If necessary, adjust the pressure of the incoming air supply by using the provided air pressure regulator located in the plumbing area at the right side of the unit above the heater. To adjust the air pressure, pull the knob out and turn the knob accordingly (clockwise to decrease and counter clockwise to increase). Push the knob back in to lock in the air pressure setting.

INITIAL START UP INSTRUCTIONS

1) Verify that the facility electrical power from the main fusible disconnect (customer supplied) is in the "**OFF**" position and not providing any power to the Demeter Dispense System.
2) Verify that the **Circuit Breaker** is set to the "**ON**" position.
   a. Switch the **Door Interlock Switch** located on the Electrical Enclosure at the back of the Demeter Dispense System to the "**OFF"** position.
   b. Unlock and open the Electrical Enclosure using the provided key.
   c. Locate the **Circuit Breaker**, which is to the right of the **Transformer**. Refer to the **Electrical Component Layout** in Section II if necessary.
   d. Turn the **Circuit Breaker** to the "**ON**" position by moving the switch upwards. The **Circuit Breaker** "status indicator" will be "red" when in the "**ON**" position.
   e. Close and lock the Electrical Enclosure using the provided key.
3) Switch the **Door Interlock Switch** to the "**ON"** position.
4) Verify that the red "**Emergency OFF**" **(EMO) Switch** located at the front of the Demeter Dispense System is not engaged or "pushed in". If the **EMO switch** is engaged, rotate the red switch clockwise slightly until the **EMO Switch** disengages.
5) Turn "**ON**" the facility electrical power and provide power to the Demeter Dispense System.
6) Locate and press the green "**POWER ON**" button at the front of the Demeter Dispense System. The "**POWER ON**" button will illuminate green once depressed.
7) The following events will always occur when the Demeter Dispense System is powered "**ON**":
   a. The Demeter Dispense System will load into "**Standby**" mode.
   b. The **Main Menu** screen will appear.
   c. The **ALARM MENU** key located on the **Main Menu** screen will flicker red indicating that a "critical" alarm is present or has occurred.
   d. The **Tank** will automatically begin to fill and stop provided that the **Tank** is not already full. The **UV Light** will be illuminated while tank is being filled.
8) Press the **ALARM MENU** key located on the **Main Menu** screen to access the **Alarm Menu** screen. The **High Limit Alarm** and **Heater Low Level Alarm** will be active and its respective keys will illuminate red.
   Note: (1) When the Demeter Dispense System is powered "**ON**" the **High Limit Alarm** will always be active according to Factory Mutual (FM) Standards. This is normal and requires that the alarm be "reset" before normal operation can occur.
   (2) During the initial startup of the Demeter Dispense System and when powered "**ON**" the **Heater Low Level Alarm** will be active due to the fact that there is no fluid present in the Demeter Dispense System heater. This is normal and will only occur during the initial startup and facilitation of the Demeter Dispense System. This alarm must be "reset" before normal operation can occur.
9) Press the **SILENCE ALARM** key to eliminate the audio alarm. The **High Limit Alarm** and the **Heater Low Level Alarm** will still be active.
10) Once the **Tank** is full the pump must be primed. The pump is located inside the Demeter Dispense System. Follow the following procedure to prime the pump.



i. Locate the pump priming valve. It is located on the bottom portion of the pump. Open the valve slowly
WARNING! Air and water will shoot out of the valve during this time. If the pump is primed after a Sterilization Cycle, be aware that the water and air released may still be hot.
ii. Keep valve open until a solid stream of water comes out of the valve. Close valve.

11) Once the **Tank** is full of Sterile Water, continue filling the Demeter Dispense System using the **Purge** mode by either of the two methods detailed below (See **Purge** section of this manual for more information):
   a. "Manually" using the **MANUAL PURGE** key located on the **Purge & Filter Vents** screen.
      i. Access the **Purge & Filter Vents** screen by pressing the **SYSTEM SET UP** key and then the **PURGE & FILTER VENTS** key.
      ii. Continuous depression of the **MANUAL PURGE** key is required in order to continuously "purge" or in this case fill the system.
   b. "Automatically" using the **START AUTO PURGE** key located on the **Purge & Filter Vents** screen.
      i. Access the **Purge & Filter Vents** screen by pressing the **SYSTEM SET UP** key and then the **PURGE & FILTER VENTS**.
      ii. Depression of the **START AUTO PURGE** key will "purge" or in this case fill the system for 1 minute (Factory Default). To abort the automatic **Purge** function or filling, press the **STOP PURGE** key.
12) Continue filling the Demeter Dispense System by constant depression of the **MANUAL PURGE** key or by pressing the **START AUTO PURGE** key at least two times until the Demeter Dispense System is completely full and a consistent flow of Sterile Water is visible through the **Plumbing**.
   Note: It is recommended that to check the plumbing of the Demeter Dispense System for leaks during this time.

13) Remove any air in the Demeter Dispense System by "venting" the plumbing and the **Filters**. Refer to Filter Vent section of this manual for more detailed information.
14) Reset the **High Limit** and **Heater Low Level Alarms**.
    Note: The **Heater Low Level Alarm** will be active during the initial startup of the Demeter Dispense System, when there is no fluid present in the Demeter Dispense System heater.
    a. Press the **ALARM MENU** key located on the **Main Menu** screen or the **System Status** screen to access the **Alarm Menu** screen.
    b. Press the **ALARM RESET** key located at the bottom right of the **Alarm Menu** screen. Depression of this key will reset the **High Limit** and **Heater Low Level Alarms** and restore normal operation of the unit.
15) Enter the desired controller parameter values for the following:
    Note: All the necessary controller parameters have been Factory preset and can be modified as desired. See the respective sections of the **Demeter-PLC Controller Manual** for more detailed information.
    a. Alarm Set Points:
        i. **"Process Over Temperature Alarm Set Point**
        ii. **"High Pressure Alarm Set Point"**
    b. Active **Dispenses/Recipes**:
        i. "**Number of Active Dispenses**"
    c. **Dispense/Recipe** Settings Parameters:
    Enter the following settings for each independent **Dispense/Recipe** with respect to the actual "**Number of Active Dispenses**" selected "**Dispense Volume**"
        i. "**Dispense Calibration**" (This may require calibration for each respective **Dispense/Recipe**. Calibrate each **Dispense/Recipe** if necessary. See **Dispense Calibration** for more information.)
    d. **Sterilize Cycle Parameters**:
        i. **Normal Sterilize**
            1. "**Normal Sterilize Cycle Temperature Set Point**"
            2. "**Normal Sterilize Cycle Timer**"
        ii. **Tank Sterilize**
            1. "**Tank Sterilize Cycle Temperature Set Point**"
            2. "**Tank Sterilize Cycle Timer**"
    e. Temperature Set Point:
        i. "**Dispense Temperature**"
16) Verify Weigh Platform has a current calibration certificate. Weigh platform does not have calibration certificate from the factory. It is recommended that the customer have the scale calibrated onsite to receive a calibration certificate.
17) The Demeter Dispense System has been set up and is now ready for use.
    a. Prior to placing the system in the **Purge** mode, the **Sterilize** modes, and the **Dispense** mode ensure that the proper connections are in place.
    b. For more information on:
        i. **Purge** mode refer to the **Purge Mode** section of this manual.
        ii. **Sterilize** modes refer to the **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize** section of this manual.
        iii. **Dispense** mode refer to the **Dispense Mode** section of this manual.

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RECOMMENDED OPERATIONAL INSPECTION/MAINTENANCE

DEMETER - STERILE WATER HEATER, PUMP, & FILTER DISPENSE SYSTEM

To reduce the possibility of unanticipated problems, the Demeter Dispense System should be thoroughly checked every 3 months. A thorough inspection should consist of a check for fluid leaks, confirm correct operation of the safety interlocks, verification of the pump capacity, and verification of each of the independent **Dispenses/Recipes**, as well as a check of the Demeter Dispense System components.

I. Checking for fluid leaks
   a. Visually inspect the bottom panel of the Demeter Dispense System enclosure.
   b. Pressurize the Demeter Dispense System plumbing to a maximum of 60 psi and check for leaks.
   c. Check all plumbing connections and connectors, including the components located behind the subpanel at the back of the Demeter Dispense System. If a leak is present, tighten, fix, or replace the respective component.

II. Checking Safety Interlocks
   a. Simulate the following alarms physically for functionality. (Contact the factory for additional information if necessary.)
      i. **Filter Life Warning Alarm**
      ii. **Heater Low Level Alarm**
      iii. **High Limit Alarm**
      iv. **High Pressure Alarm**
      v. **Leak Sensor Alarm**
      vi. **Low PLC Battery Alarm**
      vii. **Low Touch Screen Battery Alarm**
      viii. **Open Analog Alarm**
      ix. **Over Pressure Alarm**
      x. **Over Temperature Alarm**
      xi. **Pump Alarm**
      xii. **SCR Alarm**
      xiii. **Tank Low Level Alarm**
      xiv. **Thermal Fuse Alarm**

III. **Dispense/Recipe Volumes**
   a. Verify the volume dispensed for each independent **Dispense/Recipe Setting**. (Refer to **Dispense/Recipe Calibration** of this manual for more detailed information.)
      i. Taking note of which **Dispense/Recipe** is active or has been selected, measure the actual volume dispensed by the Demeter Dispense System using an appropriate container. Take several samples and verify that the average of the samples falls within the acceptable tolerance range for the "**Dispense Volume**".
   b. Modify the "**Dispense Calibration**" parameter for the respective **Dispense/Recipe** if necessary. Refer to Section 6.2 of the **Demeter-PLC Controller Manual** for more detailed information.

PURGE MODE

The **Purge** mode will run the Demeter Dispense System pump at its maximum speed and direct/flow Sterile Water through the Demeter Dispense System. This feature can be used to help fill the Demeter Dispense System with Sterile Water during the initial startup of the unit, vent or remove any existing air from the Demeter Dispense System, recirculate the fluid in the Demeter Dispense System and the Tank and accelerate the temperature drop of the Demeter Dispense System. The **Purge** mode can only be utilized when the Demeter Dispense System is in "**Standby**" mode, when the heaters are inactive, and when the following **Alarm** conditions are not active or present.

- **Leak Sensor Alarm**
- **Tank Low Level Alarm**

An indicating mode lamp located on the **System Status** screen next to the "**Purge**" label notifies to the user that the **Purge** feature is active. The mode lamp will illuminate green and will remain "**ON**" as long as the Demeter Dispense System is "purging". The Purge feature can be initiated "manually" or "automatically". Refer to Section 6.3 of the **Demeter-PLC Controller Manual** for more information.

Required Materials/Equipment:

- **Sterilize Port Cap** or **Sterilize Tube**

Preliminary Requirements for the Purge Mode:

Prior to initiating the **Purge** mode verify that the proper connections listed below are in place:

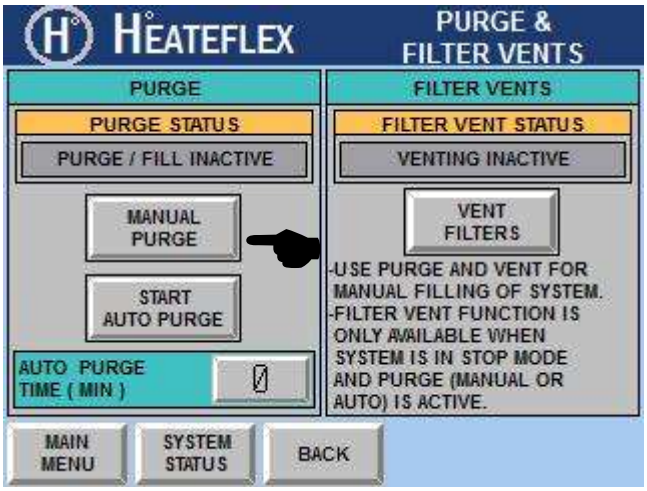
A connection must be made to the "**Sanitize Port**" located on the Demeter Dispense System. Attach either of the following connections detailed below:

a. Use the **Sterilize Port Cap** to plug the "**Sanitize Port**" or
b. Connect the **Sterilize Tube** between the "**Dispense Port**" and the "**Sanitize Port**".

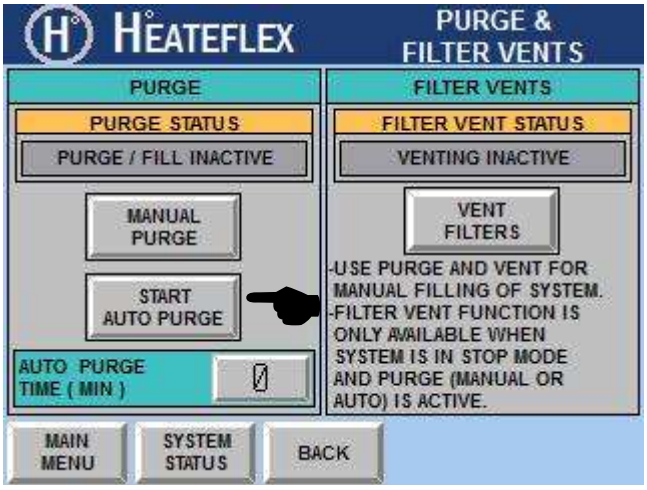
Initiating the Purge Mode:

The **Purge** mode can be initiated two different ways as detailed below:

1. "Manually" using the **MANUAL PURGE** key located on the **Purge & Filter Vent** screen.
   a) Access the **Purge & Filter Vent** screen by pressing the **SYSTEM SET UP** key and then the **PURGE & FILTER VENT**.
   b) Continuous depression of the **MANUAL PURGE** key is required in order to continuously "purge" the Demeter Dispense System.



2. "Automatically" using the **START AUTO PURGE** key located on the **Purge & Filter Vents** screen . Access the **Purge & Filter Vents** screen by pressing the **SYSTEM SET UP** key and then the **PURGE & FILTER VENTS**.
   a) Depression of the **START AUTO PURGE** key will "purge" the Demeter Dispense System for 1 minute, by factory default, and then stop. The **START AUTO PURGE** key will be replaced by the **STOP PURGE** key.



Note: To abort the automatic **Purge** function, press the **STOP PURGE** key located on the **Purge & Filter Vents** screen or the **STOP** key located on the **System Status** screen.

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FILTER VENTING

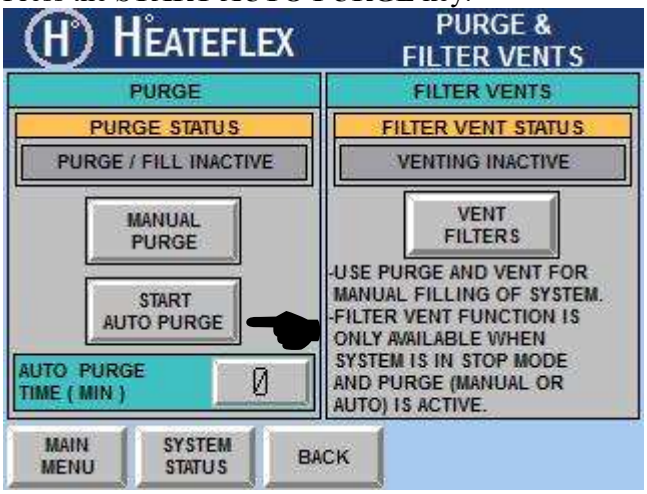
The primary function of the **Filter Vents** is to remove any air that is present in the Demeter Dispense System plumbing and **Filter**. The "**Filter Vent"** valves are located inside, on the back panel, of the Demeter Dispense system and are connected to filter housing inside the Demeter system. It is recommended to vent or remove any air present in the plumbing of the Demeter Dispense System and the **Filter/s** for the following:

- Upon the initial startup of the Demeter Dispense System
- After the **Tank** has been drained completely and refilled
- After the replacement of the **Filters**
- A large amount of air bubbles is visible in the plumbing of the Demeter Dispense System

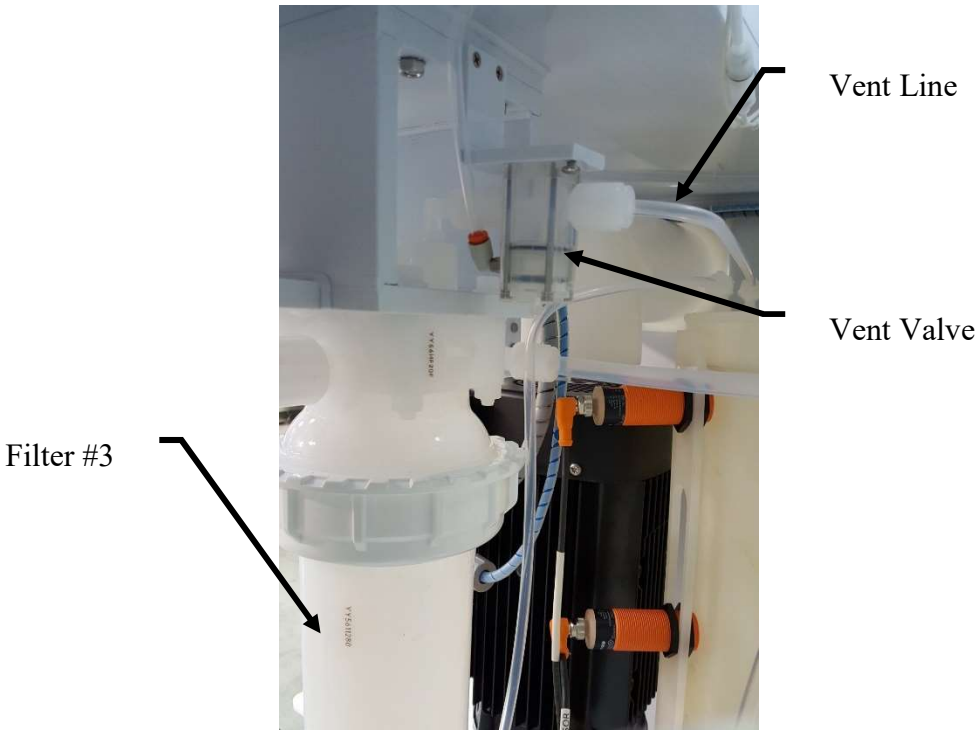
Venting the Demeter Dispense System:

1) Go to the **Purge & Filter Vents** screen.
2) Activate **PURGE** (Manual or Auto)

a. Press and hold the **Manual Purge**
b. Press the **START AUTO PURGE** key.



3) Press **VENT FILTER** key.
   a. Hold down the **VENT FILTER** key until no air bubbles can be seen in the line



4) Once all of the air is removed or vented from the plumbing of the Demeter Dispense System, completely close "**Filter Vent**" by releasing the button.
5) The Demeter system is now vented.

Note: Observation of the plumbing located inside the Demeter Dispense System enclosure, such as the tube connected to the **Filter Vent** port to the air operated valves provides a good indication as to whether or not air is still trapped within the **Filters** and/or plumbing. It may be necessary to repeat step 1-5 more than once.

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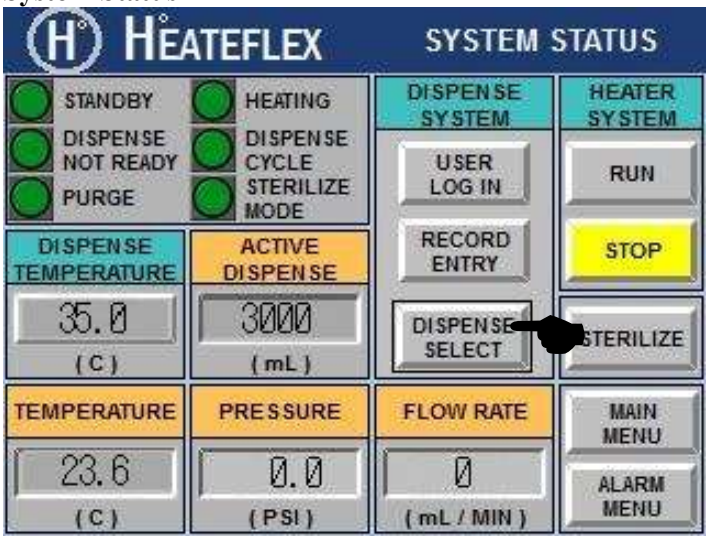
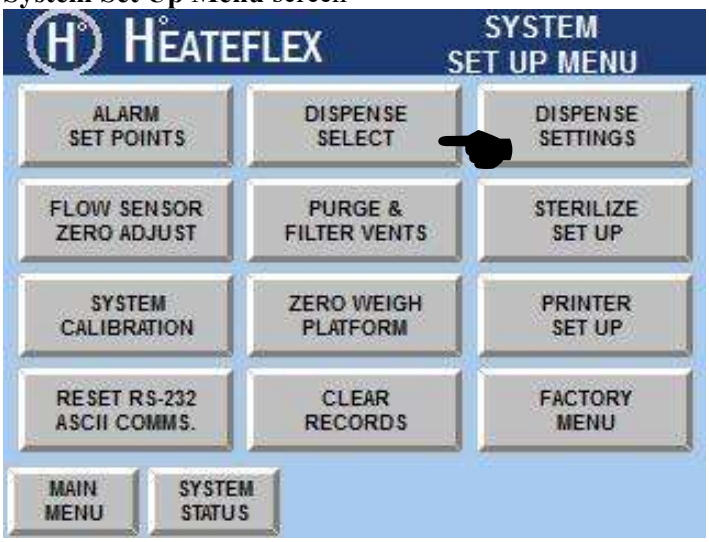
SELECTING A DISPENSE/RECIPE

There are 16 independent user defined **Dispenses/Recipes** positions available on the **Dispense Select** screen. The desired **Dispense/Recipe** can be selected when the Demeter Dispense System is not in a "**Dispense Cycle**" or actively dispensing, provided and the **Dispense/Recipe** is available. To access the **Dispense Select** screen press the **DISPENSE SELECT** key located on the different screens below:

1. **System Status** screen



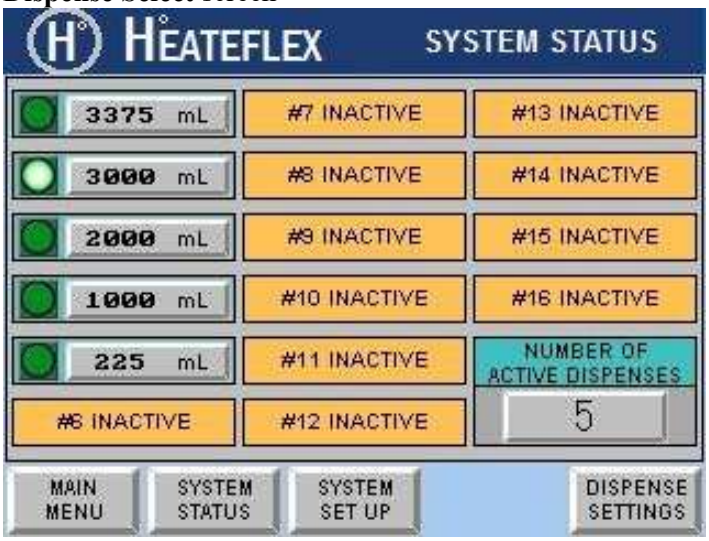
2. **System Set Up Menu** screen



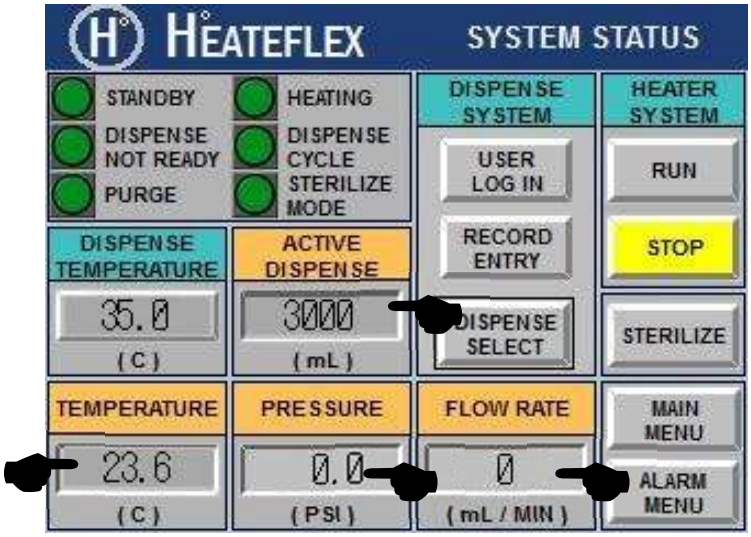
Once the **DISPENSE SELECT** key has been pressed the **Dispense Select** screen will appear as shown above. Please note that the actual number of selectable **Dispenses/Recipes** is dependent on the "**Number of Active Dispenses**" set. To change the **Number of Active Dispenses,** a **Level 3 User Password** is required.

Selecting a **Dispense/Recipe** does not require any **User Password**. Within this screen, select the **Dispense/Recipe** by pressing the button corresponding to the desired **Dispense/Recipe**. An indicating lamp will illuminate green next to the selected or active **Dispense/Recipe**, which is illustrated in the picture above.

Dispense Select screen



The selected **Dispense/Recipe** will be visible on the **System Status** screen underneath the "**Active Dispense**" label to notify the user of the **Dispense/Recipe** that is set. This label will change according to the **Dispense/Recipe** selected. In addition, also on the **System Status** screen are three readouts located under the "**Active Dispense**" labels. Refer to **Dispense Setting Parameters** section of this manual for more information.



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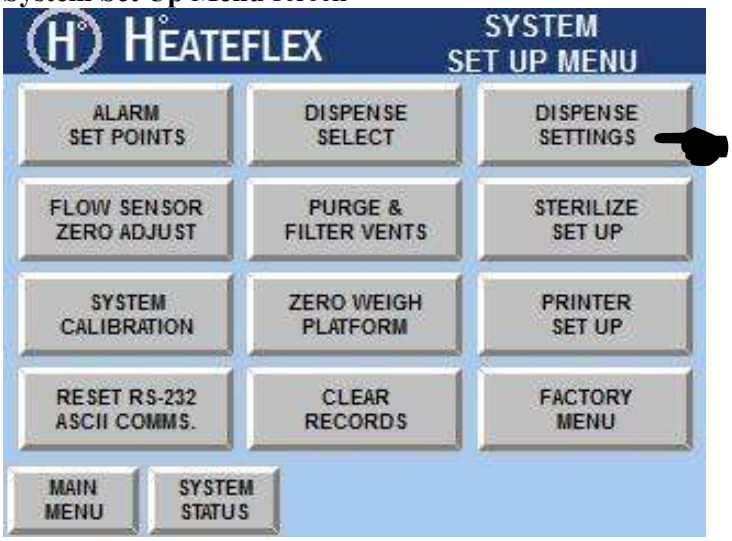
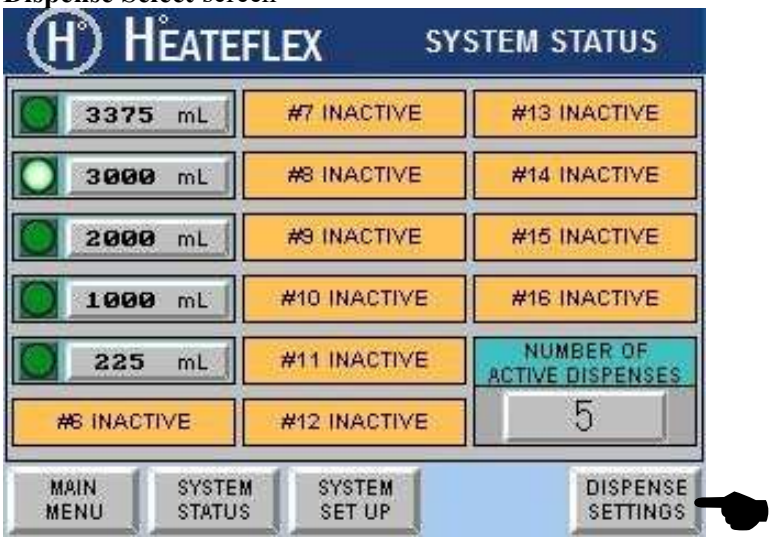
DISPENSE SETTING PARAMETERS

The **Dispense Setting Parameters**: "**Dispense Volume"** and "**Dispense Calibration**" can be modified from the **Dispense Setting** screens when the Demeter Dispense System is not in a "**Dispense Cycle**" or actively dispensing. To access the **Dispense Setting** screens press the **DISPENSE SETTINGS** key on the following two screens:

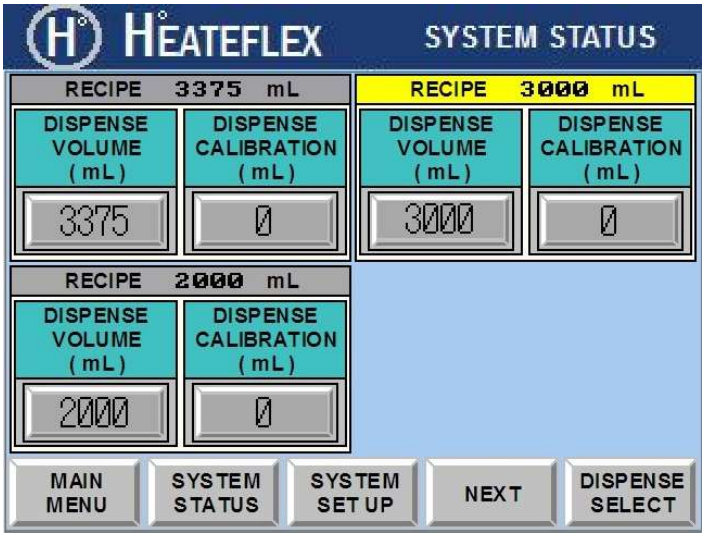
1. **System Set Up Menu** screen



2. **Dispense Select** screen



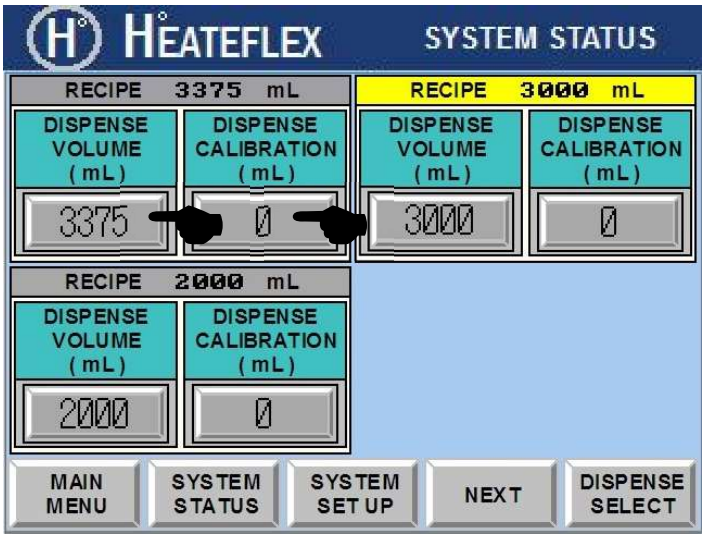
Once the **DISPENSE SETTINGS** key has been pressed the **Dispense Setting** screen will appear.



The **Dispense Setting Parameters** are arranged in columns for each **Dispense/Recipe**. The **Dispense Setting** screens shown are typical and will vary according to the values entered for the respective **Dispense Setting Parameters**. The Dispense label illuminated yellow indicates which **Dispense/Recipe** has been selected and is active. Refer to Section 6.2.2 of the **Demeter-PLC Controller Manual** for detailed information on these screens.

The **Dispense Setting Parameters** are controller parameters that are only used by the **Dispense** mode of the Demeter Dispense System. The "**Dispense Volume**" parameter is the desired volume to be dispensed. The "**Dispense Calibration**" parameter is used for obtaining more accurate volumes and "fine tuning". This is the primary parameter that is used when performing the **Dispense Calibrations**. See **Dispense Calibration** for more information on calibrating each **Dispense/Recipe**. Please note the physical limitations of the Demeter Dispense System when selecting the **Dispenses/Recipes** and setting the **Dispense Setting Parameters**.

A **Level 3 User Password** is required to modify the **Dispense Setting Parameters**. To modify any of the **Dispense Setting Parameters** press the "**Dispense Volume"** or "**Dispense Calibration**" key for the respective column for the **Dispense** to be modified. This is illustrated in the picture below.



1. "**Dispense Volume**"
   a. Press the box underneath the "**Dispense Volume (mL)**" label in the **Dispense/Recipe** column to be modified.
   b. Enter the **User Password**, if necessary.
   c. Enter the new "**Dispense Volume**" value.
2. "**Dispense Calibration**"
   a. Press the box underneath the "**Dispense Calib. (mL)**" label in the **Dispense/Recipe** column to be modified.
   b. Enter the **User Password**, if necessary.
   c. Enter the new "**Dispense Calibration**" value.

Use the **NEXT** and **BACK** keys located at the bottom of the screen to navigate through the **Dispense Setting** screens. Refer to Section 6.2 of the **Demeter-PLC Controller Manual** for specifics on the **Dispense Set Up**.

RECORD ENTRY AND DISPENSE

The Demeter Dispense System has the ability to create logs for **Dispenses** called **Records** which logs the following information about each **Dispense** saved:

- Date and Time – Date and Time of the Dispense
- User ID – User ID number which can be scanned or entered manually into the touchscreen
- Machine ID – Machine ID number which can be scanned or entered manually into the touchscreen
- Fluid Temperature – Actual Temperature of Fluid when Dispensed
- Fluid Volume – Actual Volume of Dispensed Fluid
- Sample ID – Sample ID number to which the Dispense belongs to
- Media ID – Media ID number added to the Sample
- Media Weight
- Weight 1 – Weight of Container + Sample
- Weight 2 – Weight of Container + Sample + Media
- Weight 3 – Weight of Container + Sample + Media + Dispensed Fluid

These **Records** can be printed from the **Print Preview** screen and are saved onto the system (up to 100 Records) after each dispense.

The primary function of the **Dispense Cycle** is to deliver high quality filtered Sterile Water of a specified volume at a specified temperature. The Demeter Dispense System is capable of storing up to 16 independent **Dispenses/Recipes** and process the Sterile Water according to the **Dispense Setting Parameters** entered. The **Dispense** mode will run the Demeter Dispense System at a consistent pump speed when the Demeter Dispense System is not actively "dispensing", which includes heating the Sterile Water to the "**Dispense Temperature**" set point. When the Demeter Dispense System is actively "dispensing" the Demeter Dispense System will vary the pump speed accordingly based on the specified "**Dispense Volume**" to be dispensed. The **Dispense** feature can only be utilized when the Demeter Dispense System is in "**Active**" mode, when no "critical" alarms are active or present, and when the "**Temperature**" is within the dead band range of the "**Dispense Temperature**" set point. A series of labels and mode indicating lamps notifies the user of the **Dispense Cycle** mode status. Refer to Section 5.1.1 of the **Demeter-PLC Controller Manual** for a detailed description of the indicating mode lamps and labels of the System Status screen and section 5.1.7 for information on the Record Entry screen.

The Dispense Cycle can only be initiated through the Record Entry screen. The following will cover system setup for the Dispense Cycle and Creating Record Entries.

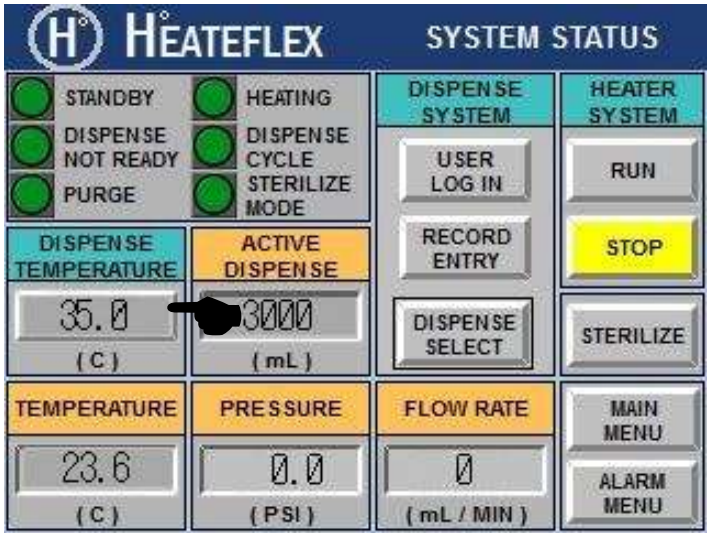
Required Materials/Equipment:

- Dispense Spout
- Sterilize Port Cap (1/2" Flare Cap & Nut)
- Container

Preliminary Requirements for the Dispense Cycle in the Record Entry:
Prior to initiating **Dispense Cycle** in the Record Entry screen, verify that the proper connections and/or requirements listed below are in place:

1) Install the proper connectors to the system for the Dispense Cycle
   a) The "**Sanitize Port**" is plugged with the **Sterilize Port Cap**.
   b) The **Dispense Spout** is attached to the "**Dispense Port**"

2) Set Desired **Dispense Temperature Set Point**
   a) If desired **Dispense Temperature** is entered, skip to step #2 of this section.
   b) Click on display below "**Dispense Temperature**" label
   c) Enter desired dispense temperature set point into keypad and click enter
      i) It is not required for the system to be in "**Standby**" mode to enter the desired dispense temperature.
   d) The value will be shown on the display labeled "**Dispense Temperature**"

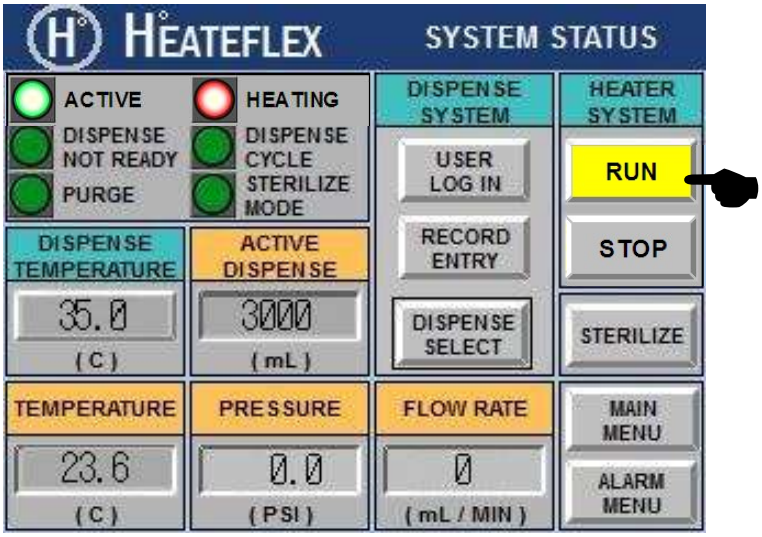


3) Set Desired Dispense Volume
   a) If desired Dispense Volume is displayed under the "Active Dispense" label, skip to step #3 of this section.
   b) Select a Dispense Volume from the Dispense Select Menu (See section about **Selecting a Dispense/Recipe** section for more details)
   c) It is recommended to calibrate the Dispense/Recipes before actual use to ensure accurate dispense volumes. (See **Selecting a Dispense/Recipe** section of this manual for more details)

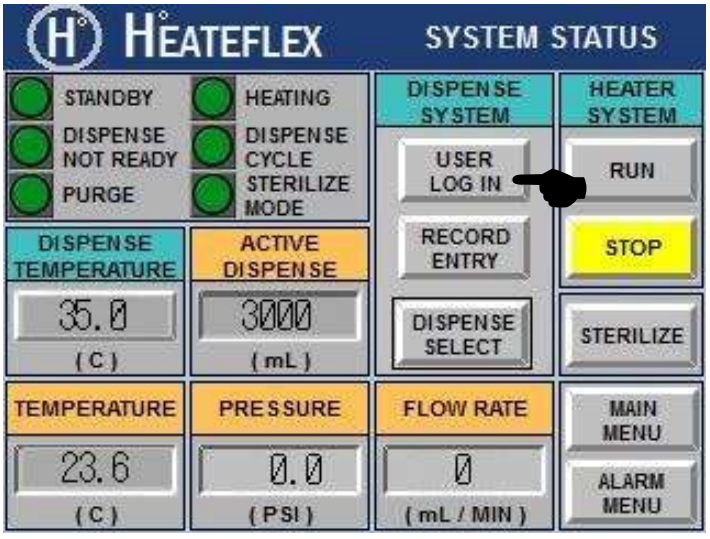
4) Set system into Run Mode
   a) If system is in Run mode skip to step #5 of this section
   b) Go to System Status screen
   c) Set the system into Run mode by selecting the Run button in the Heater System area of the screen
      i) The following will occur when system is set to Run mode

(1) status of the system from "Standby" to "Active" and the lamp left of the system status label will be illuminated green. See figure below
(2) the pump is set to "Trickle" mode which recirculates the fluid through the system
(3) the temperature controller is set to Run mode and will control the heater to heat the fluid to the desired Dispense Temperature. This will be represented by the amber indicating light to the left of the "Heating" label. See figure below

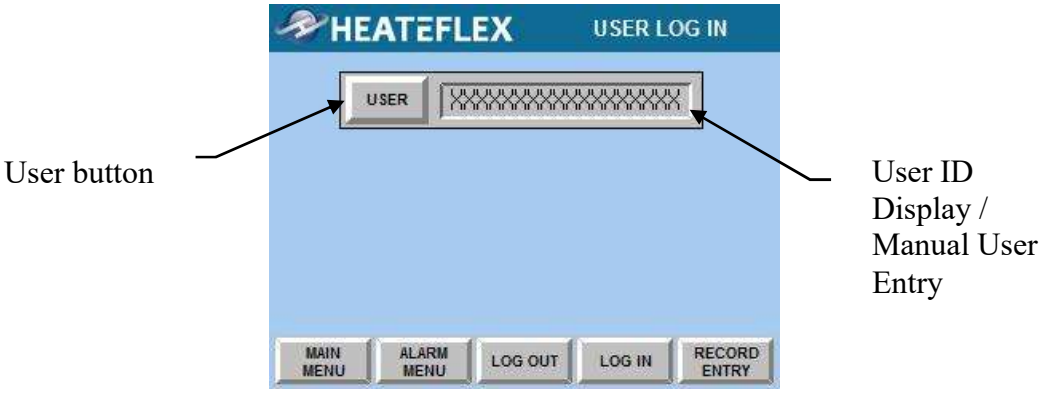
ii) The Normal Run mode will not become active if the following conditions are present:
(1) Alarms are present
(2) Purge Mode



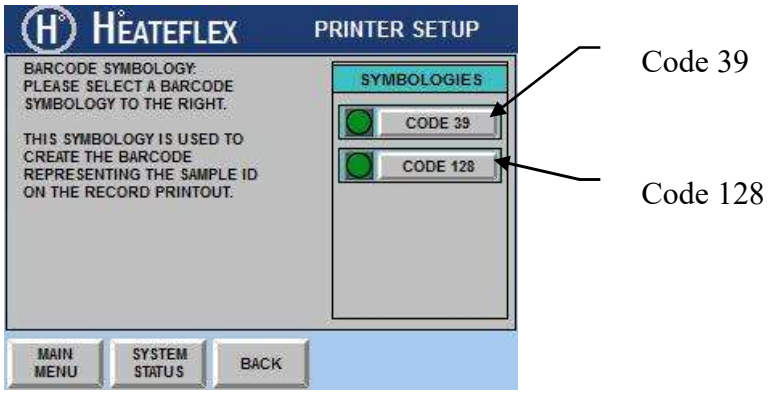
5) User must Log In into the system
a) If there is a User currently Logged in skip to the next section
b) Access the System Status screen from the Main Menu
c) Access the User Log In screen



d) Enter User ID
   i) To scan User ID
      (1) Select the User button to prompt barcode reader to scan the User ID (see **User Log In** screen below)
      (2) Point Barcode Reader at User ID barcode
      (3) Squeeze trigger of Barcode Reader to initiate the scan.
      (4) The scanned User ID will appear in the User ID Display
      (5) To accept the User ID click the Log In button at the bottom
   ii) To manually enter User ID
      (1) Select the User ID Display (see **User Log In** screen below) and a popup keyboard will appear.
      (2) Enter the desired User ID into the keyboard and select Enter (ENT) to accept
      (3) The keyed in User ID will appear in the User ID Display
      (4) To accept the User ID click the Log In button at the bottom
   iii) The maximum allotted characters for the Sample ID are 18.
   iv) The Record Entry button will only be active when there is a User ID Logged In.
   v) To Log out, select the Log Out button at the bottom of the User Log In screen



6) Select the Barcode Symbology
   a) To access the Printer Setup screen go to Main Menu > System Set Up > Printer Set Up
   b) Select the desired Barcode Symbology. There are two codes available:
      i) Code 39
      ii) Code 128
   c) The active Barcode Symbology will have an illuminated green light to the left of the code.

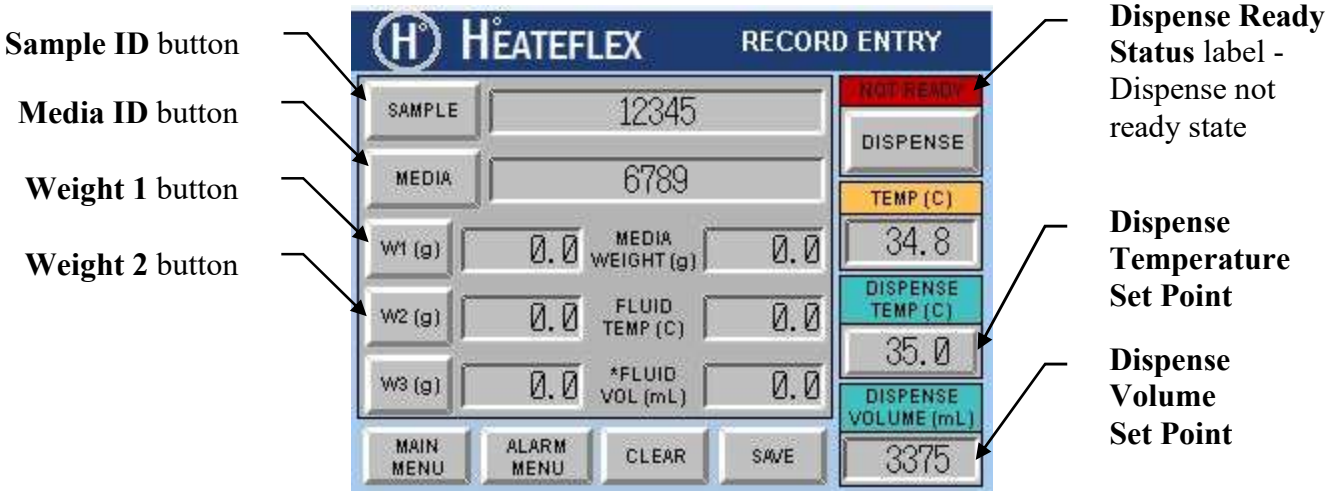


Steps to Creating a Record Entry and Initiating a Dispense Cycle:

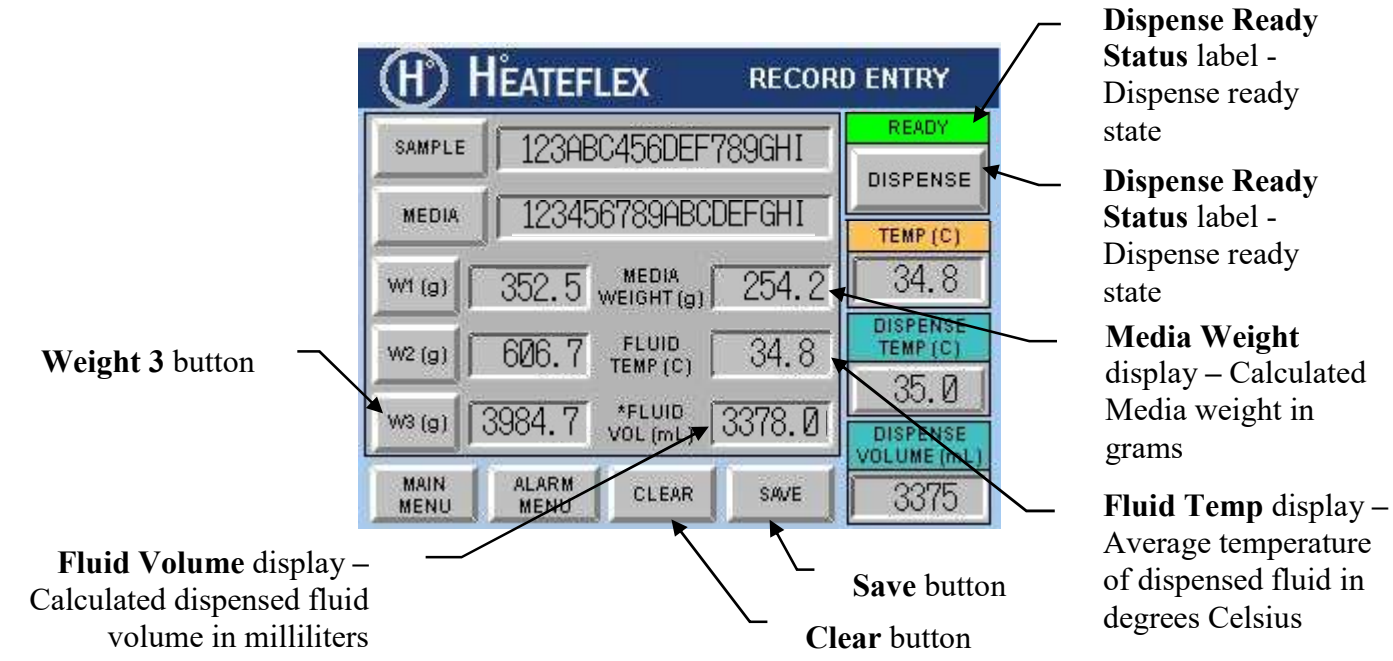
Now that the system is set up for Dispense Cycles, the user can now create record entries for their samples.

1) Access the Record Entry Screen
   a) Access the Record Entry screen from the User Log In screen or from the System Status screen.
      i) A User ID must be Logged In in order to access the Record Entry screen.
2) Enter initial data in the "Record Entry" screen, data pertaining to the sample of which the dispensed fluid is used for prior to the dispense cycle.
   a) Sample ID
      i) To scan Sample ID
         (1) Select the Sample ID button to prompt barcode reader to scan the Sample ID (see **Record Entry** screen below)
         (2) Point Barcode Reader at Sample ID barcode
         (3) Squeeze trigger of Barcode Reader to initiate the scan.
         (4) The scanned Sample ID will appear in the Sample ID Display
      ii) To manually enter Sample ID
         (1) Select the Sample ID Display (see **Record Entry** screen below) and a popup keyboard will appear.
         (2) Enter the desired Sample ID into the keyboard and select Enter (ENT) to accept
         (3) The keyed in Sample ID will appear in the Sample ID Display
      iii) The maximum allotted characters for the Sample ID are 18.
   b) Media ID
      i) To scan Media ID
         (1) Select the Media ID button to prompt barcode reader to scan the Media ID (see **Record Entry** screen below)
         (2) Point Barcode Reader at Media ID barcode
         (3) Squeeze trigger of Barcode Reader to initiate the scan.
         (4) The scanned Media ID will appear in the Media ID Display
      ii) To manually enter Media ID
         (1) Select the Media ID Display (see **Record Entry** screen below) and a popup keyboard will appear.
         (2) Enter the desired Media ID into the keyboard and select Enter (ENT) to accept
         (3) The keyed in Media ID will appear in the Media ID Display
      iii) The maximum allotted characters for the Media ID are 18.
   c) Weight 1 – Measure Weight of Container + Sample
      i) Verify Weigh Platform is level. (See page 8 of the Weighing Platform User Guide for more information on levelling the Weighing Platform)
      ii) Place Container on Weigh Platform
      iii) Place Sample inside Container
      iv) Select the Weight 1 button
      v) The captured weight will appear on the Weight 1 Display
   d) Weight 2 - Measure Weight of Container + Sample + Media
      i) Verify Weigh Platform is level. (See page 8 of the Weighing Platform User Guide for more information on levelling the Weighing Platform)
      ii) Add Media to Container with Sample on Weigh Platform
      iii) Select the Weigh 2 button
      iv) The captured weight will appear on the Weigh 2 Display

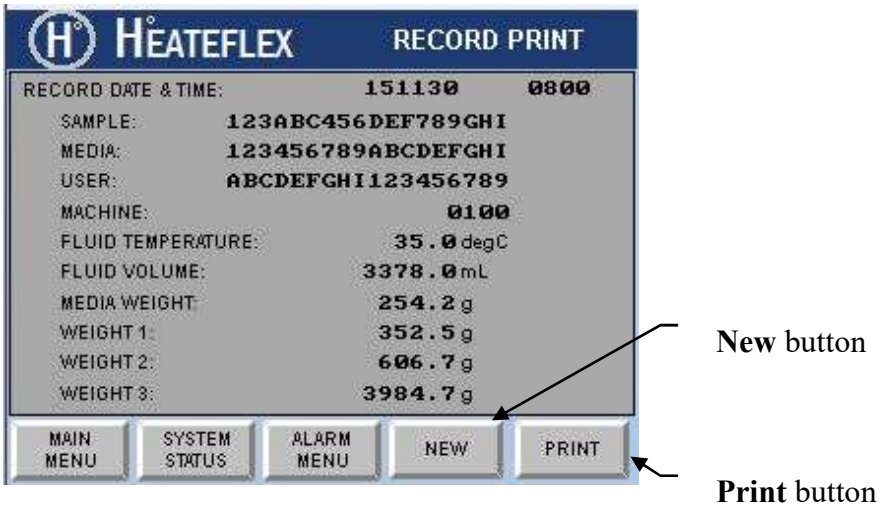
v) The calculated Media Weight will appear in the Media Weight display in grams



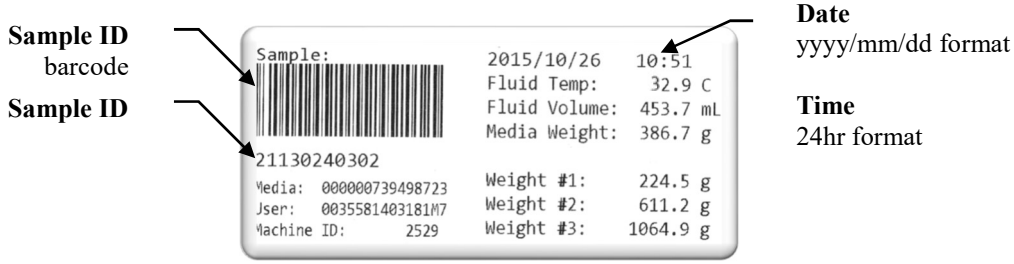
3) Verify the desired Dispense Temperature and Dispense Volume are shown correctly on the record entry screen.
4) Verify that the system is ready to dispense fluid
   a) Look at the upper left hand corner of the Record Entry screen for the Dispense Ready Status label.
      i) When label is highlighted red and the label states “Not Ready” the Dispense is disabled
      ii) When label is highlighted green and the label states “Ready” the Dispense is enabled



5) Dispense Fluid
   a) Verify Dispense Spout is installed on Dispense Port.
   b) Verify that the Container with Sample and Media is directly below Dispense Spout.
   c) Select the Dispense button to dispense fluid.
   d) The average temperature of the dispensed fluid will be shown in the Fluid Temp display in degrees Celsius.
6) Take measurement of Weight 3 - Weight of Container + Sample + Media + Dispensed Fluid
   a) Verify Weigh Platform is level. (See page 8 of the Weighing Platform User Guide for more information on levelling the Weighing Platform)
   b) Verify Container with Sample, Media and Dispense Fluid is on the Weigh Platform.
      i) Select the Weight 3 button
      ii) The captured weight will appear on the Weight 3 Display
      iii) The calculated dispensed fluid volume will appear in the Fluid Volume display in milliliters
7) Save or Clear Record Entry
   a) Once all of the data has been entered into the Record Entry screen, select the Save button to initiate the following:
      i) Save Record Entry data into log
      ii) Transfer Record Entry data to the Record Print screen
      iii) Open Record Print screen.
   b) Clear Record Entry
      i) If the User wishes to start over, not save and clear the data shown on the Record Entry screen, they may do so by selecting the Clear button on the bottom of the Record Entry screen
         (1) All of the data acquired and shown on the Record Entry screen will be deleted and not saved to the Record Entry log.
         (2) The User ID will not be cleared.
8) Print Record Entry Label
   a) The Record Print screen allows the user to review Record Entry data before printing.
   b) To print a label, select the Print button
      i) The user may print as many labels of the current record entry as desired.



c) Example of Record Entry label
   i) The labels are 4"W x 2"H direct thermal. They are top coated permanent adhesive. The 4" diameter roll of labels consists of over 700 labels. See page 22 of the Printer User's Manual for details on loading the labels into printer. The settings have been set at the factory.
   ii) The Sample ID barcode Symbology is set up in the Printer Set Up Menu.



9) Start New Record Entry
   a) When the user is ready to create a New record entry, select the New button at the bottom of the Record Print screen
   b) Upon starting the New Record, the user will be taken back to a blank Record Entry screen to start a new record entry.

Note: A maximum of 100 record entries will be kept. When the number of records exceeds 100 entries the oldest record entry will be deleted and the newest entry will be saved.

STERILIZE CYCLES: NORMAL STERILIZE AND TANK STERILIZE

The primary function of the **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize** are to provide and maintain high quality and high purity Sterile Water by killing bacteria and/or assisting the prevention of bacteria growth. The **Sterilize** mode will run the Demeter Dispense System at various speeds depending on the type of **Sterilize Cycle** that is initiated. When the **Sterilize** mode is active the Sterile Water will heat to a specified temperature for a specified amount of time and flow through the Demeter Dispense System. The **Sterilize Cycles** can ONLY be utilized when the system is in the "**Active**" mode and when no "critical" alarms are active or present. Please note that the **Over Temperature Alarm** is not active when the Demeter Dispense System is in either of the **Sterilize Cycles**. A series of indicating mode lamps and labels located on the **System Status** screen serves to notify the user as to the status and progress of the of the **Sterilize Cycles**.

Due to the high temperature set points that are utilized in both **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize**, inherent air bubble formation may occur which may affect the Demeter Dispense System. As a result, nuisance tripping of the **Heater Low Level Alarm** may prematurely terminate either of the two **Sterilize Cycles** before completion. It may be necessary to re-initiate the selected **Sterilize Cycle**. It is recommended to lower the respective sterilize temperature set points and/or sterilize time if possible to prevent nuisance tripping. Take caution as the Sterile Water, plumbing, **Tank** of the Demeter Dispense System may be extremely HOT during the **Sterilize Cycles** and after its completion.

Although the primary function of the **Normal Sterilize Cycle** and the **Tank Sterilize Cycle** is similar, they are independent of one another and operate according to their respective **Sterilize Cycle** parameters. Furthermore, once either the **Normal Sterilize Cycle** or the **Tank Sterilize Cycle** has been initiated the other will be disabled, i.e. if the **Tank Sterilize Cycle** is active initiating the **Normal Sterilize Cycle** is not permitted.

Normal Sterilize Cycle:

The **Normal Sterilize Cycle** sterilizes the plumbing of the Demeter Dispense System by heating the Sterile Water to a specified temperature in °C ("**Normal Sterilize Cycle Temperature Set Point**") for a specified amount of time in minutes ("**Normal Sterilize Cycle Timer**"), which begins once the Sterile Water temperature has reached the target temperature. During the **Normal Sterilize Cycle**, the Demeter Dispense System will flow water through the system at a consistent low pump speed which allows the Demeter Dispense System to get to the target temperature faster. Refer to Section 6.1.4 of the **Demeter-PLC Controller Manual** for more information about the "**Normal Sterilize Cycle Settings**"

Tank Sterilize Cycle:

The **Tank Sterilize Cycle** sterilizes the Demeter Dispense System plumbing and the **Tank** by re-circulating and heating the Sterile Water to a specified temperature in °C ("**Tank Sterilize Cycle Temperature Set Point**") for a specified amount of time in minutes ("**Tank Sterilize Cycle Timer**"), which begins once the Sterile Water temperature has reached the target temperature. Refer to Section 6.1.4 of the **Demeter-PLC Controller Manual** for more information about the "**Tank Sterilize Cycle Settings**" and how to modify these parameters. The **Tank Sterilize Cycle** operates at higher pump speeds than the **Normal Sterilize Cycle**. The purpose of this is to completely re-circulate the Sterile Water in the Demeter Dispense System and the **Tank** and to remove any air bubbles that may have formed in the heater and/or plumbing. As a result, more time is required in order to reach the target temperature, in comparison to the **Normal Sterilize Cycle** and to raise the temperature of the Sterile Water in the **Tank**. Please note that due to the inherent temperature losses of Demeter Dispense System, the Sterile Water temperature of the **Tank** may be slightly lower than the Sterile Water "**Temperature**" value displayed on the **System Status** screen. Make sure that the **Drain Valve** is completely closed in order to reach the specified "**Tank Sterilize Cycle Temperature Set Point**".

During the **Tank Sterilize Cycle**, the Demeter Dispense System will operate at two different pump speeds, for a certain "period" and "duration" in order to remove air bubbles and to assist in the prevention of **Heater Low Level Alarm** nuisance tripping. Once the **Tank Sterilize Cycle** is initiated, the Demeter Dispense System will operate at a low pump speed for a "period" of 5 minutes and then switch to the maximum pump speed for a "duration" of 5 seconds. The Demeter Dispense System will then operate between these two pump speeds until the **Tank Sterilize Cycle** is complete, which includes the time to reach the specified target temperature and the time specified for the "**Tank Sterilize Cycle Timer**".

Required Materials/Equipment:

- **Sterilize Tube**

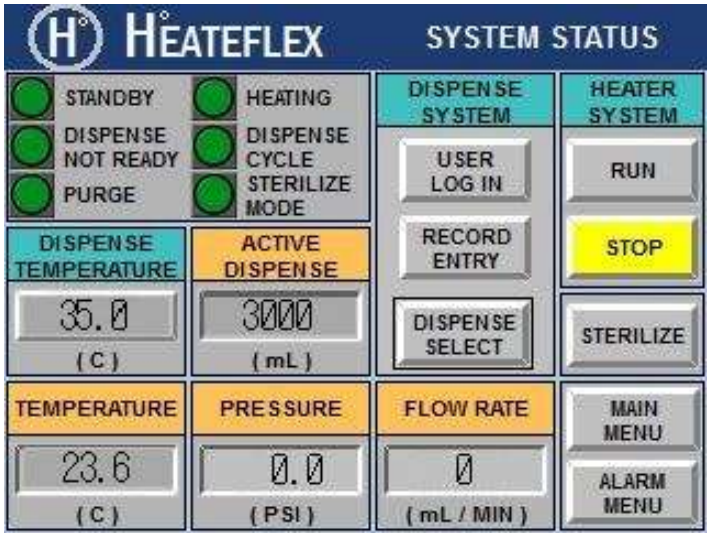
Preliminary Requirements for the Sterilize Cycles: Normal Sterilize and Tank Sterilize:

Prior to initiating either of the **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize** verify that the proper connections and/or requirements listed below are in place:

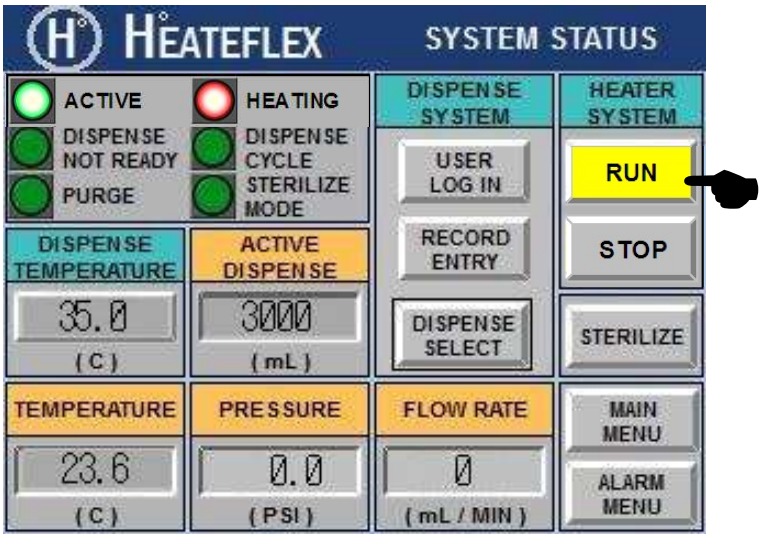
1. The **Sterilize Tube** is connected between the "**Dispense Port**" and the "**Sanitize Port**".
2. Verify that the Manual Valve is set to the closed position.
3. Confirm the respective **Sterilize Cycle** parameters entered and modify if necessary. The **Sterilize Cycle** parameters can be found on the **Sterilize Set Up** screen.

Initiating the Sterilize Cycles: Normal Sterilize and Tank Sterilize:

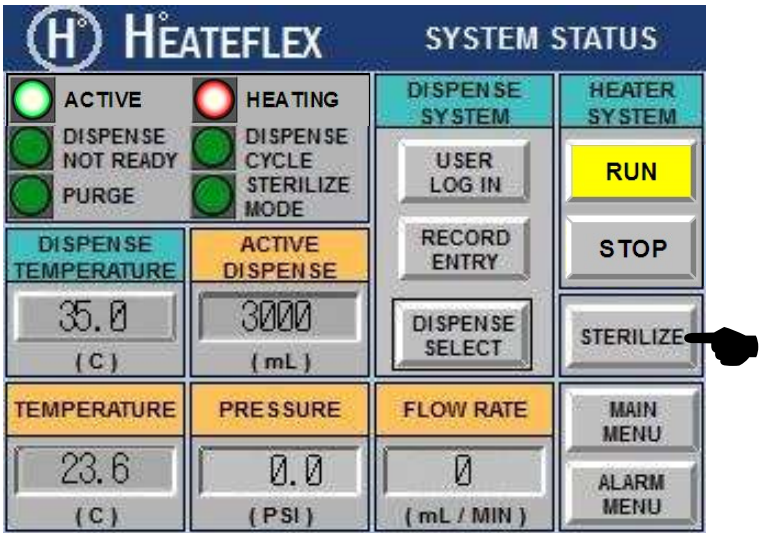
1. Perform and/or verify that the preliminary requirements necessary for the **Sterilize Cycles** are in place.
2. Access the **System Status** screen. Provided that the Demeter Dispense System is in "**Standby**" mode; the "**Standby**" label will be visible, the **STOP** key will be illuminated yellow, and the **System Status** screen will appear similar to the picture shown.



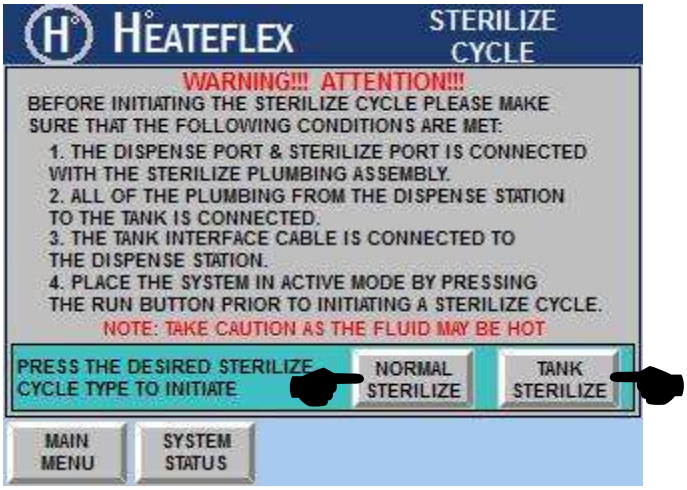
3. Press the **RUN** key. This will place the Demeter Dispense System into "**Active**" mode; the "**Standby**" label will be replaced with the "**Active**" label and its respective mode indicating lamp will be illuminated green; the mode indicating lamp next to the "**Heating**" label will illuminate amber; and the **RUN** key will be illuminated yellow.



4. With the Demeter Dispense System in the "**Active**" mode, press the **STERILIZE** key to access the **Sterilize Cycle** screen.

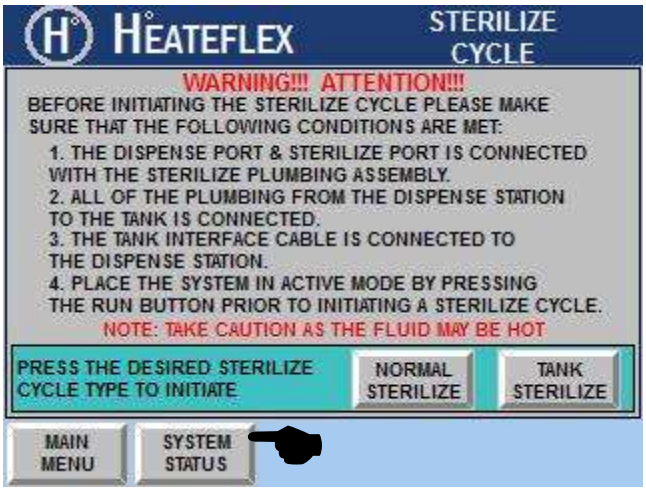


5. The **Sterilize Cycle** screen will appear as shown below, which serves as a reminder and provides a brief summary of the requirements necessary to operate the **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize**.

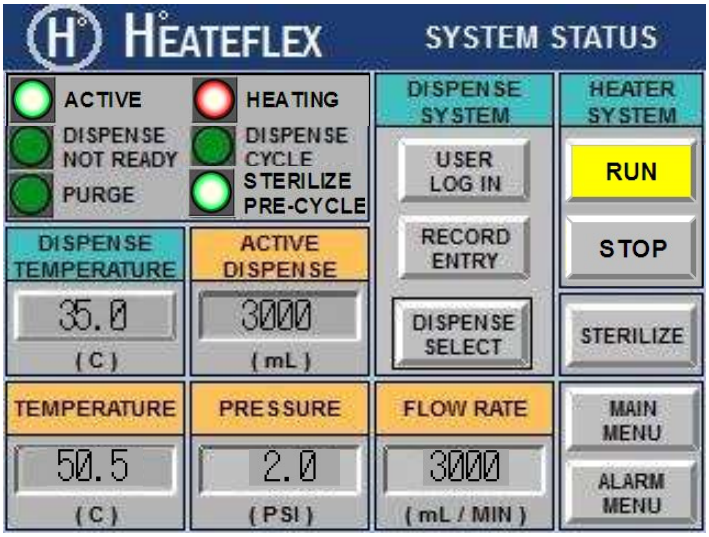


6. Initiate the desired **Sterilize Cycle** by pressing either the **NORMAL STERILIZE** key or the **TANK STERILIZE** key located on the **Sterilize Cycle** screen.
   Note: If the **Tank** is connected to a "Facility Drain", please make sure that the **Drain Valve** is closed when initiating the **Tank Sterilize**.

7. Press the **SYSTEM STATUS** key located on the **Sterilize Cycle** screen to return to the **System Status** screen.



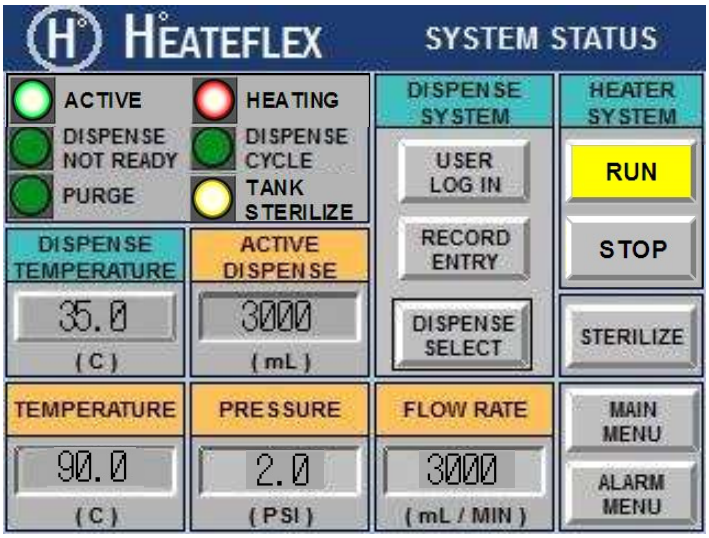
8. The **System Status** screen will appear as shown. The respective **Sterilize Cycle** has begun and is now active. The "**Sterilize Mode**" label will be replaced by the "**Sterilize Pre-Cycle**" label and its respective indicating lamp will illuminate green. During the "**Sterilize Pre-Cycle**" the Demeter Dispense System will heat the Sterile Water according to the specified temperature set point of either the **Normal Sterilize Cycle** ("**Normal Sterilize Cycle Temperature Set Point**") or the **Tank Sterilize Cycle** ("**Tank Sterilize Cycle Temperature Set Point**") depending on which **Sterilize Cycle** has been initiated.



Note: The "**Dispense Temperature**" set point is neglected when either of the **Sterilize Cycles** is active or has been initiated.

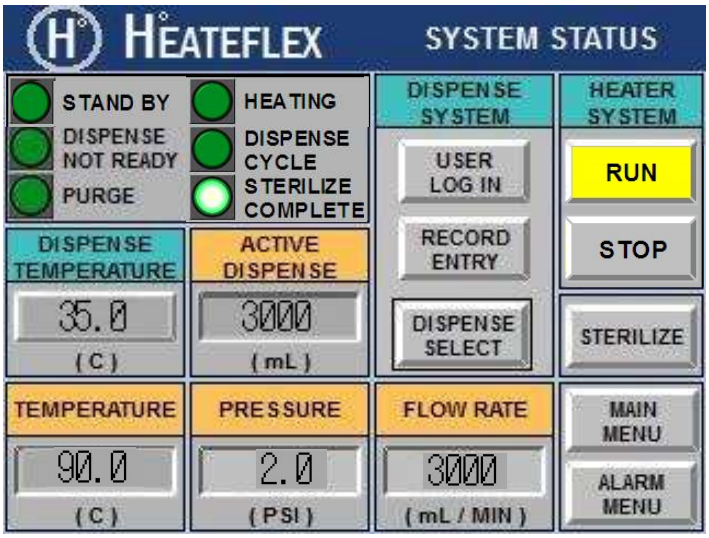
9. Once the Demeter Dispense System reaches the temperature set point of the respective **Sterilize Cycle**, the target temperature will be maintained and a timer will begin counting down according to the timer value entered for either the "**Normal Sterilize Cycle Timer**" or the "**Tank Sterilize Cycle Timer**". In addition, the "**Sterilize Pre-Cycle**" label will be replaced with a "**Normal Sterilize**" or "**Tank Sterilize**" label and its

respective indicating mode lamp will be illuminated yellow, depending on which **Sterilize Cycle** has been initiated. The following picture shown is indicative of the **Tank Sterilize Cycle** being initiated.



Note: Either of the **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize** can be aborted at any time by pressing the **STOP** key.

10. The **Normal Sterilize Cycle** and **Tank Sterilize Cycle** will be complete once the "**Normal Sterilize Cycle Timer**" or the "**Tank Sterilize Cycle Timer**" has respectively timed down. At the conclusion of the either **Sterilize Cycles**, the Demeter Dispense System will automatically return to "**Standby**" mode, the **STOP** key will illuminate yellow, and the "**Normal Sterilize**" label or "**Tank Sterilize**" label will be replaced with "**Sterilize Complete**" label and its mode indicating lamp will be illuminated green. The following picture shown illustrates a "**Sterilize Complete**" scenario.



Note: The "**Sterilize Complete**" label and its mode indicating lamp will remain active at the conclusion of the **Normal Sterilize Cycle** or the **Tank Sterilize Cycle** and will reset if any of the following is done.

a. Pressing the **STOP** key
b. Placing the Demeter Dispense System in the "**Active**" mode by pressing the **RUN** key
c. Initiating the "**Purge**" feature by pressing the **MANUAL PURGE** or **START AUTOMATIC PURGE** key.

When any of the above is done, the "**Sterilize Complete**" label will change to "**Sterilize Mode**" and its mode indicating lamp will turn "**OFF**".

Important Notes:

Following the completion of the **Sterilize Cycles**: **Normal Sterilize** and **Tank Sterilize** please note the following:

- Take caution as the Demeter Dispense System may be extremely HOT. Take the necessary precautions whenever connecting or disconnecting any plumbing from the Demeter Dispense System. This includes attachments such as the **Sterilize Tube**.
- The Sterile Water temperature in the Demeter Dispense System may exceed the desired "**Dispense Temperature**" set point. As a result, the **Tank** many need to be (1) emptied and refilled or (2) mixed with ambient water to ensure that the desired "**Dispense Temperature**" set point is achievable.
- To accelerate the cooling of the Sterile Water in the Demeter Dispense System activate the **Purge** feature by pressing and hold the **MANUAL PURGE** key or pressing the **START AUTOMATIC PURGE** key several times until the system returns to a reasonable temperature.
- It is recommended to check the plumbing fittings periodically after running the **Sterilize Cycles** and re-tighten if necessary.

DISPENSE/RECIPE CALIBRATION

In order for the Demeter Dispense System to provide accurate dispense volumes, calibration of each **Dispense/Recipe** is required. Each **Dispense/Recipe** has been independently calibrated and set based upon the conditions at the Factory. It is recommended that these calibration values set by the Factory be verified and re-calibrated if necessary, prior to the operation of the Demeter Dispense System. In addition, it is also recommended that each **Dispense/Recipe** and its respective "**Dispense Calibration**" parameter be verified periodically and re-calibrated as needed, to ensure optimum performance.

Required Materials/Equipment:

- **Dispense Spout**
- **Sterilize Port Cap**
- Container
- User Password (Level 3)

Preliminary Requirements for Dispense Calibration:

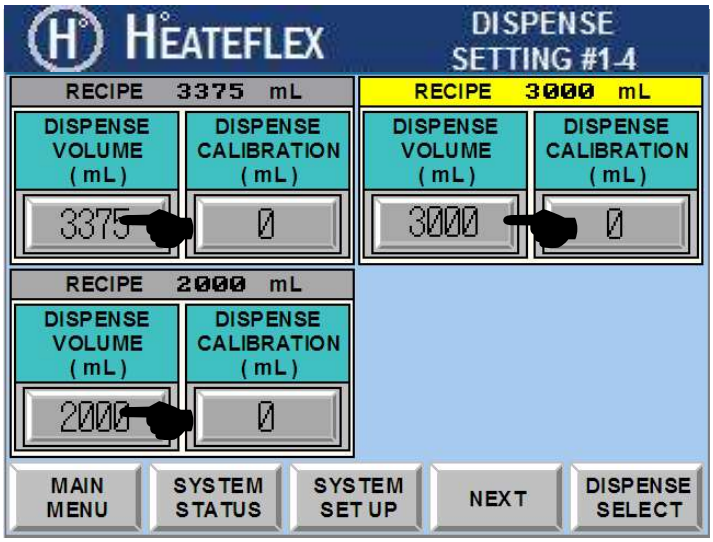
Prior to initiating the **Dispense Calibration** verify that the proper connections and/or requirements listed below are in place:

1. The "**Sanitize Port**" is plugged with the **Sterilize Port Cap (½" Flare Nut** and **½"Flare Plug**.
2. The **Dispense Spout** is attached to the "**Dispense Port**"

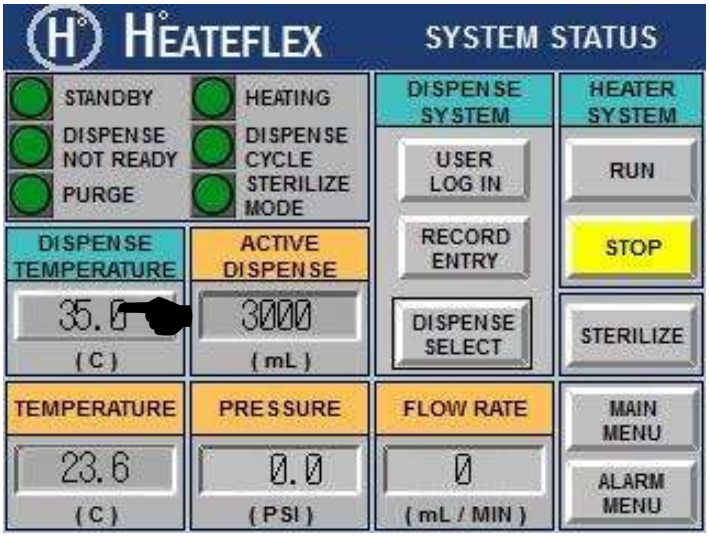
Performing a Dispense Calibration:

Please note that it is not required to place the Demeter Dispense System into "**Standby**" mode to enter the "**Dispense Temperature**" set point, select the **Dispense/Recipe**, or to modify the **Dispense Setting Parameters**. Modification of the "**Dispense Temperature**" set point, changing the selected **Dispense/Recipe**, and modification of the **Dispense Setting Parameters** are not permitted when the Demeter Dispense System is actively dispensing or the "**Dispense Cycle**" is active.

1) Perform and/or verify that the preliminary requirements necessary for the **Dispense Calibration** are in place.
2) Access the **Dispense Setting** screens. Refer to Dispense Settings or Section 6.2 of the **Demeter-PLC Controller Manual** if needed.
3) For each active **Dispense/Recipe**, enter the desired value for "**Dispense Volume**" in milliliters and "**Dispense Calibration**" in milliliters on the **Dispense Setting** screens. A **User Password** is required.

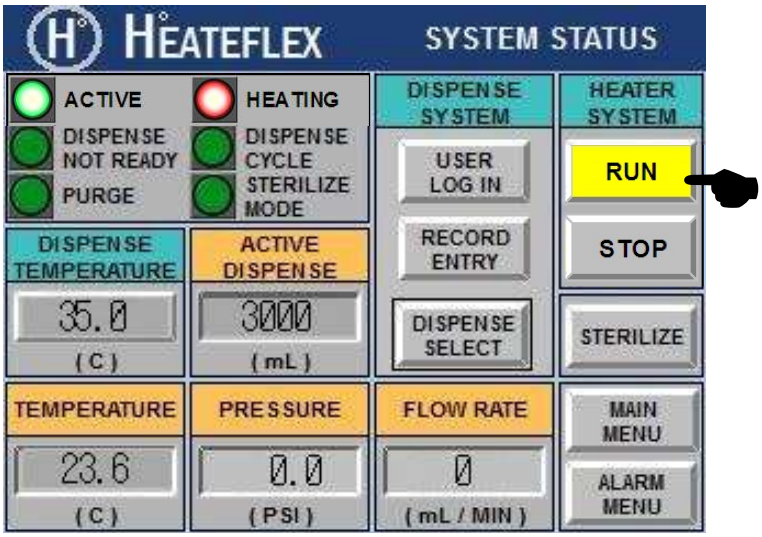


4) For each active **Dispense/Recipe**, enter "0" for "**Dispense Calibration**" on the **Dispense Setting** screens. It is recommended to start at "0" when performing **Dispense Calibrations**.
5) Press the **SYSTEM STATUS** key to return to the **System Status** screen.
6) Access the **System Status** screen. Provided that the Demeter Dispense System is in "**Standby**" mode; the "**Standby**" label will be visible, the **STOP** key will be illuminated yellow, and the **System Status** screen will appear similar to the picture shown below.



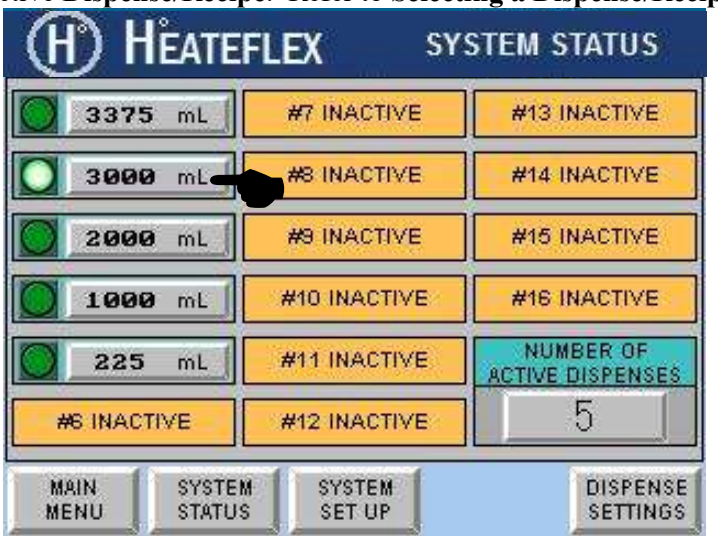
7) Enter the desired temperature set point at which the Dispense Calibration is to take place. Press the box located underneath the "**Dispense Temperature**" label, which is illustrated in the picture above.
   Note: (1) It is recommended to calibrate the **Dispenses/Recipes** at the desired "**Dispense Temperature**".
   (2) The "**Dispense Temperature**" set point does not require a **User Password** and can be modified at any time.

8) Press the **RUN** key. This will place the Demeter Dispense System into "**Active**" mode; the "**Standby**" label will be replaced with the "**Active**" label and its respective mode indicating lamp will be illuminated green; the mode indicating lamp next to the "**Heating**" label will illuminate amber; and the **RUN** key will be illuminated yellow.



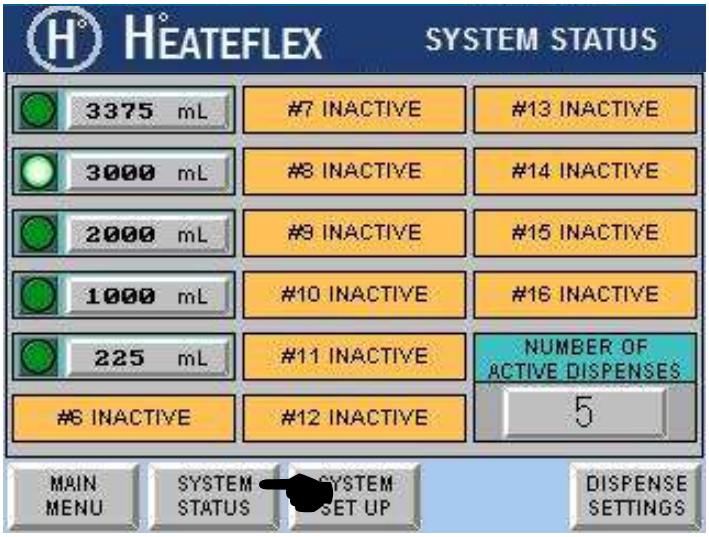
9) Once the "**Temperature**" of the Sterile Water is within the "**Dispense Temperature Dead Band**" (**DB**) range, the mode indicating lamp next the "**Dispense Not Ready**" label will illuminate green and the "**Dispense Not Ready**" label will change to "**Dispense Ready**". The **Dispense Cycle** is now available to start processing Sterile Water.

10) Access the **Dispense Select** screen by pressing the **DISPENSE SELECT** key. Within the **Dispense Select** screen, select the **Dispense/Recipe** to be calibrated by pressing the button corresponding to **Dispense/Recipe**. An indicating lamp will illuminate green next to the selected or active **Dispense/Recipe**. Refer to **Selecting a Dispense/Recipe.**



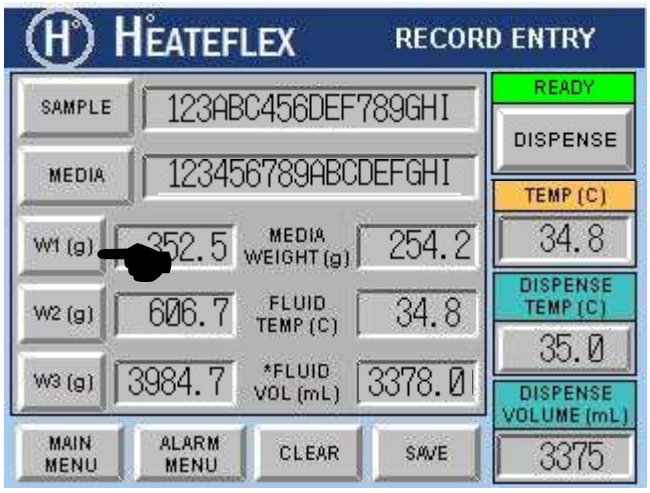
Note: The active or selected **Dispense/Recipe** cannot be changed while the Demeter Dispense System is in a "**Dispense Cycle**" or actively dispensing.

11) Press the **SYSTEM STATUS** key to return to the **System Status** screen.

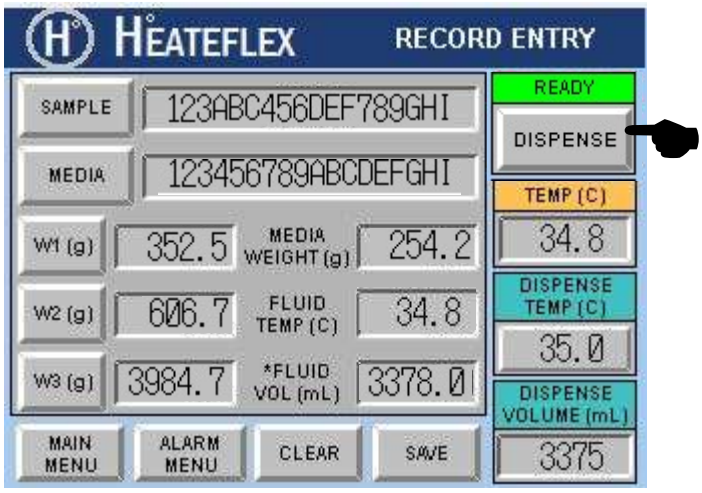


12) Place a container onto the center of the **Weigh Platform** directly underneath the **Dispense Spout**. This container will be used to "catch" the fluid to be measured. Use a container size appropriate to the volume being dispensed.

13) Return to the Record Entry screen. Take the initial measurement of the empty container by pressing W1 key.



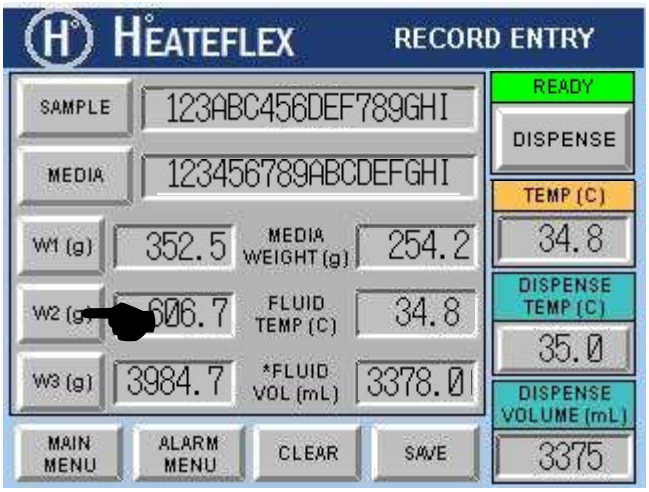
14) Press the **DISPENSE** key. The Demeter Dispense System will dispense Sterile Water through the "**Dispense Port**" at the "**Dispense Temperature**" and "**Dispense Volume**" specified for the **Dispense/Recipe**. The indicating lamp next to the "**Dispense Cycle**" label located on the **SYSTEM STATUS** screen will illuminate green and remain active as long as the system is dispensing.



Note: The "**Dispense Cycle**" can be aborted any time by: (1) pressing the **STOP** key which will place the Demeter Dispense System into "**Standby**" mode (2) pressing the **DISPENSE** key which will only abort the "**Dispense Cycle**" and leave the Demeter Dispense System in "**Active**" mode

15) After the "**Dispense Cycle**" has completed, wait a few seconds for the remaining drops of water to fall into the container.

16) Take a measurement of the weight of the container with the dispensed water by selecting the **W2** key. The difference in weight between **W1** and **W2** will be shown in the Media Weight display. [Grams = mL (approximately)]
Note: Take caution as the Sterile Water that is dispensed may be HOT depending on the "**Dispense Temperature**" set point defined.



Note: Provided that the "**Temperature**" of the Sterile Water is within the **DB** range, (which is indicated by the "**Dispense Ready**" label and its indicating lamp) the **DISPENSE** key may be pressed again to initiate the "**Dispense Cycle**".

17) Record the mass of the sample.

a. As an added step, it is recommended that the temperature of the sample be measured and recorded to verify that the "**Temperature**" of the Sterile Water is within an acceptable range of the "**Dispense Temperature**" set point.

b. Use a table similar to the one below to record data. This will help determine the calibration value for the dispense

Temperature SP		C
Target Volume		mL
Volume Range (2% of Target Vol)		mL
Max Volume (Target+Range)		mL
Min Volume (Target-Range)		mL

Actual Calibration	0		
Volume Dispensed Counter	**Dispensed Volume (Run 1)**	**ABS DEV= Dispense - Target Volume**	**Actual Temperature**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Average			
Suggested Calibration (Target-Average)			

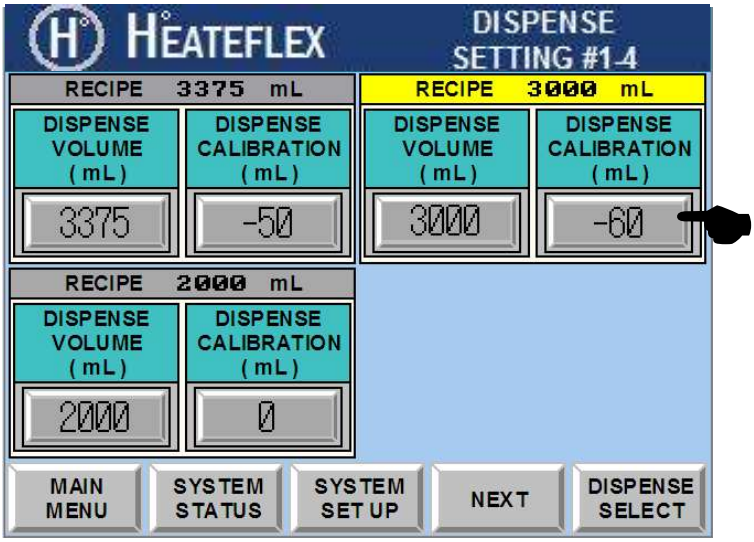
18) Discard the sample and clear the Record Entry by selecting the **CLEAR** key.

19) Repeat steps 13-18 and take approximately 5-10 samples.

20) Determine the "average mass" of the samples collected.

21) Determine the difference or offset between the "average mass" and the "**Dispense Volume**" setting specified, target volume. This value will be used as the "**Dispense Calibration**" parameter.

22) Enter this value as the "**Dispense Calibration**" for the respective **Dispense/Recipe**. See **Dispense Settings** section of the manual.



23) With the new "**Dispense Calibration**" value entered, repeat steps 13-22 until the volumes dispensed by the Demeter Dispense System fall within the acceptable tolerance range.
24) Repeat this process (steps 10-23) for additional **Dispenses/Recipes**.

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FILTER REPLACEMENT

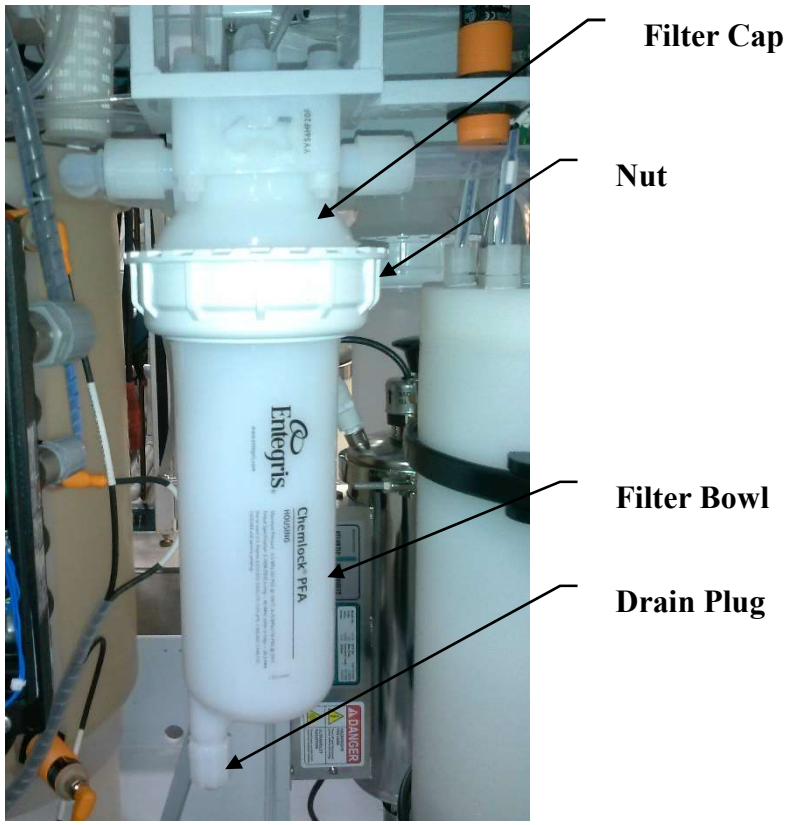
The Demeter Dispense System contains a **Filter/s** which provides added filtration and ultra-pure Sterile Water. The **Filter** life expectancy is based upon the actual operational usage of the Demeter Dispense System and also the quality of the Sterile Water from the supply. It is recommended that the date and time of **Filter** replacement be recorded in order to enhance the **Filter** life expectancy and system performance. When performing **Filter** maintenance on the Demeter Dispense System, please note the orientation of the **Filters**, as they are "flow directional dependent". Improperly installed **Filters** will affect the flow capacity of the Demeter Dispense System and affect the overall system performance. Make sure that the proper filter cartridge preparations have been followed prior to installing the replacement filter cartridge (follow the filter manufacturer's directions for "wetting" the filter cartridge).

Required Materials/Equipment:

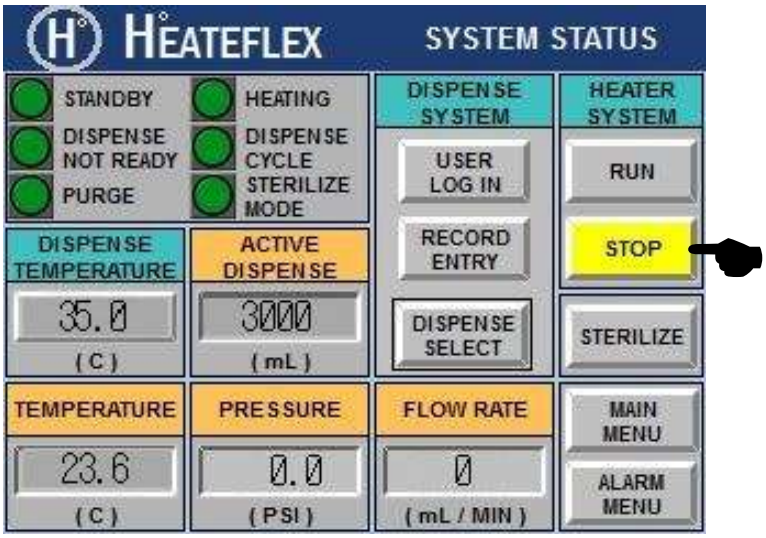
- **New Filter**
- Container

Replacing the Filters:

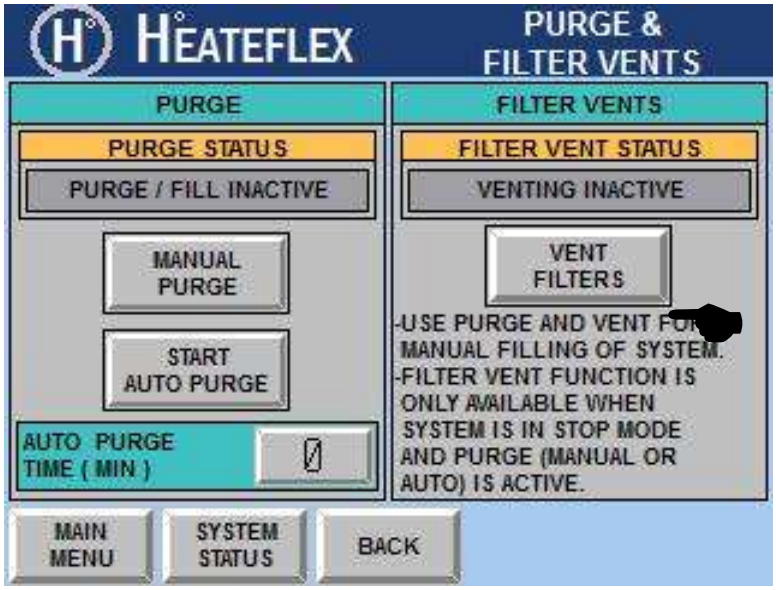
The picture shown illustrates key components of the Demeter Dispense System plumbing associated with **Filter** maintenance.



1) Press the **STOP** key on **System Status** screen. Make sure the flow rate is "0."



2) Go to the **Purge & Filter Vents** screen.



"

3) Open the "**Filter Vent #3**" valve to relieve the pressure in the Demeter Dispense System. Refer to **Filter Vents** section for more information if needed.
4) Turn "**OFF**" the Demeter Dispense System.
5) Open the Demeter-Dispense System enclosure door & remove if necessary.
6) Removing "**Filter #3**" from the Demeter Dispense System:
    a. Locate "**Filter #3**".
        i. Place a container underneath the filter to catch the drain fluid
        ii. Open the drain plug located on the bottom of the filter bowl.

iii. Wait until all the fluid has drained out.
iv. Unscrew the nut from the filter cap.
v. Remove the filter cartridge from the filter cap.

7) Installing the "**New Filter Cartridge**":
vi. Place the "**New Filter**" into Filter Cap
vii. Screw the filter bowl back onto the filter cap.
viii. Install the drain plug.
8) Retighten all fittings.
9) Turn "**ON**" the Demeter Dispense System and remove any air present by "venting" the plumbing and the **Filters**. Refer to **Filter Vents** section for more detailed information if needed.
10) As an additional step, it is recommended to verify that there are no leaks present:
b. Check all of the fittings at both **Filters** and re-tighten if necessary.
c. Check all of the fittings along the "**Heater Output Manifold Tube**" and the "**Heater Output Manifold**", including the "**Heater Output**" fitting and re-tighten if necessary.
11) Reattach Demeter-Dispense System enclosure door if previously removed and close the enclosure door.

TROUBLE SHOOTING

For the Demeter Dispense System

ISSUE	SOLUTION
The Demeter Dispense System will not power "**ON**".	• Verify that facility power is present to the system. • Verify that the **Circuit Breaker** is set to the "**ON**" position. • Verify that the **Disconnect Switch** is set to the "**ON**" position. • Verify that the "**Emergency OFF**" **(EMO) switch** is not engaged or "pushed in". • Check the fuses. See the **Electrical Schematic Diagram** for more information.
The **Tank** will not fill.	• The Demeter Dispense System is powered "**OFF**". • Check the facility Sterile Water supply to the Demeter Dispense System. • Check the facility air supply (65 psi) to the Demeter Dispense System. • Verify that the **Pressure Regulator** is set to 65psi. • Verify that no air leaks are present. • Check the **Liquid Level Sensors** at the **Tank**. • Check the **Solenoid Valve** and/or **Air Operated Valve** (**AOV**). • Check the **Tank Drain Valve**.
The volume capacity of the Demeter Dispense System is below specification during Purge and/or Pump Calibration.	• Check the Demeter Dispense System connections to the **Tank**. • Verify that an adequate amount of Sterile Water is present in the **Tank**. • Check the Demeter Dispense System for Sterile Water leaks. • Check the **Filters** and replace if needed.
The Demeter Dispense System will not go into "**Active**" mode.	• Verify that no "critical" alarms are present.
There is no Sterile Water flow through the Demeter Dispense System when in **Purge** mode or "**Active**" mode.	• Check the Demeter Dispense System connections to the **Tank**. • Verify that an adequate amount of Sterile Water is present in the **Tank**. • Check the Demeter Dispense System for Sterile Water leaks. • Check the **Filters** and replace if needed.

ISSUE	SOLUTION
The Demeter Dispense System heaters will not power "**ON**".	• Verify that no "critical" alarms are present. • Verify that the "**Dispense Temperature**" set point is above the temperature of the Sterile Water coming in. • Check the heater fuses. • Check the **Heater Master Relay**, **Heater Safety Relay**, and **SCR**. • Check the "CR10" and/or the **Temperature Controller**.
The Demeter Dispense System is not controlling temperature.	• Check the **Heater Thermocouple** and/or the **Dispense Thermocouple**. • Check the heater fuses. • Check the **Temperature Controller** and/or **Temperature Controller** parameters. • Check the **SCR**.
The Demeter Dispense System will not **Purge**.	• Verify that an adequate amount of Sterile Water is present in the **Tank**. • Check the Demeter Dispense System for Sterile Water leaks. • Check the **Leak Sensor**.
The Demeter Dispense System will not "**Dispense**".	• Verify that no "critical" alarms are present. • The "**Dispense Temperature**" set point or dead band has not been reached. • A **Dispense/Recipe** has not been selected. • Verify that a flow of Sterile Water is present in the Demeter Dispense System when "**Active**" and/or that an adequate amount of Sterile Water is present in the **Tank**. • Check the facility air supply (65 psi) to the Demeter Dispense System. • Verify that no air leaks are present. • Check the **Solenoid Valves (SV)** and/or **Air Operated Valve** (**AOV**).

ISSUE	SOLUTION
The "**Dispense Volume**" for the Demeter Dispense System is not within tolerance.	• Check the "**Dispense Calibration**" setting. • Check the "**Filter Vents**" and make sure they are completely closed. • Check the facility air supply (65 psi) to the Demeter Dispense System. • Check the Demeter Dispense System for Sterile Water leaks. • Check the **Solenoid Valve (SV)** and/or **Air Operated Valve (AOV)**. • Too much air exists in the plumbing, vent the system. • Check the **Pump**. • Check the **Filters** and replace if needed.
The Sterile Water "**Dispense Temperature**" of the Demeter Dispense System is not within tolerance.	• If the dispense temperature is too high the temperature of the Water from the **Tank** may be too high. Drain and refill the Sterile Water in the **Tank** or mix the Sterile Water in the **Tank** with ambient temperature Sterile Water. • Check the **Heater Thermocouple** and/or the **Dispense Thermocouple**. • Verify that the **Dispense Thermocouple** is at the correct insertion depth. • Check the **Temperature Controller** and/or **Temperature Controller** parameters.
The Demeter Dispense System will not initiate the **Sterilize Cycles**: **Normal Sterilize** or **Tank Sterilize**.	• Verify that the Demeter Dispense System is in "**Active**" mode. • Verify that no "critical" alarms are present. • Check the **Liquid Level Sensor** settings.
The "**Normal Sterilize Cycle Temp. Set Point**" and/or the "**Tank Sterilize Cycle Temp. Set Point**" is not achieved when either of the **Sterilize Cycles** is initiated.	• Verify the value entered for the "**Normal Sterilize Cycle Temp. Set Point**" or the "**Tank Sterilize Cycle Temp. Set Point**. • The Demeter Dispense System is in the "**Sterilize Pre-Cycle**" mode. Allow time to reach the specified set point. • Check the heater fuses. • Check the **Temperature Controller** and/or **Temperature Controller** parameters. • Check the Demeter Dispense System heater.

ISSUE	SOLUTION
The Sterile Water at the **Tank** is not at temperature during the **Tank Sterilize**.	• Verify that the **Tank Drain Valve** is completely closed. • Check the **Temperature Controller** and/or **Temperature Controller** parameters. • Check the Demeter Dispense System heater.
Heater Low Level Alarm (during "**Standby**" mode)	• This is normal during the initial startup of the Demeter Dispense System. Activate the **Purge** mode to fill the Demeter Dispense System and reset the alarm. • The Sterile Water fluid level in the heater is below the **Liquid Level Sensor**. Activate the **Purge** mode and reset the alarm. • The Demeter Dispense System has just performed either of the **Sterilize Cycles**: **Normal Sterilize** or **Tank Sterilize**. Activate the **Purge** mode and reset the alarm. • Check the **Liquid Level Sensor** settings. • Check the **Liquid Level Sensor**. Contact the Factory for assistance.)
The Dispense/Recipe selected does not appear on the **System Status screen.**	• The "Number of Active Dispenses" parameter has been changed from a larger value to a lower value and the Dispense/Recipe needs to be re-selected.
The History Log will not save to the compact flash memory card.	• The compact flash memory card capacity is too large. • Verify the compact flash memory card compatibility with the Demeter Dispense System.
The **Barcode Reader, Printer,** and/or **Weigh Platform** is not responding.	• Verify communication cables are properly connected. • The PLC Serial modules is stuck in a command. • Reset the PLC Serial Modules through the **"RESET RS232 ASCII COMMS."** screen.
The Weight is not zero when the **Weigh Platform** is empty.	• Verify all debris is clear from weigh platform. • Use the **Zero Capture** function on the **"Weigh Platform Zero Capture"** screen to "zero" weigh platform.
Printer is not printing labels	• Confirm that the power button located on the printer is set to the **ON** position. • Confirm that the communication cable is properly connected.

EQUIPMENT SPECIFICATIONS

THIS EQUIPMENT MUST ONLY BE USED WITHIN THE RANGE OF ENVIRONMENTAL CONDITIONS LISTED IN THE EQUIPMENT SPECIFICATIONS. THIS EQUIPMENT MUST BE INSTALLED WITH CUSTOMER SUPPLIED EXTERNAL SWITCH OR CIRCUIT BREAKER. SWITCH OR CIRCUIT BREAKER MUST BE:

1. **IN CLOSE PROXIMITY TO THE EQUIPMENT.**
2. **WITHIN EASY REACH OF THE OPERATOR.**
3. **MARKED AS THE DISCONNECTING DEVICE FOR THE EQUIPMENT.**

Electrical Voltage:	208VAC +/-10%
Amperage:	27 Amps, (29 AMPS 25% SAFTEY)
Phases:	3 Phase current
Frequency:	50/60HZ
Temperature setting range:	0~50°C (Dispense Cycles) 0~94°C (Sterilize Cycles)
Operating air supply:	65 PSI (75 MAX)
Temperature control accuracy:	+/- 2°C
System Connections (Enclosure):	
Dispense Port connector:	½" TUBE
Sanitize Port connector:	½" FLARE
DI Water Supply (Input) connector:	¾" FNPT
Enclosure Drain connector:	¾" FNPT
Air Supply connector:	¼" TUBE PRESSIN
Foot print (H x W x D):	65.5" x 34.3" x 28.6"
Tank Volume:	36L / 10 Gallons (approx.)
Weight:	370 lbs.
Touchscreen Battery life:	3 years
PLC Battery life:	5 years
UV Light Lamp life:	10000 hours
External communication function:	RS-232
Safety Controls:	1. DISCONNECT SWITCH 2. HEATER LOW LEVEL ALARM 3. HIGH LIMIT ALARM (HEATER ELEMENT) 4. LEAK SENSOR ALARM 5. OPEN ANALOG ALARM 6. OVER TEMPERATURE ALARM 7. HIGH PRESSURE ALARM 8. OVER PRESSURE ALARM 9. PUMP FAULT ALARM 10. SCR ALARM 11. TANK LOW LEVEL ALARM 12. THERMAL FUSE ALARM
Operational usage:	INDOOR USE ONLY
Maximum operating pressure:	60PSI @ 95°C.
Maximum fluid temperature:	99°C.
Temperature resolution:	+/-.1°C.
Maximum operating altitude:	6,600feet (2,000meters)
Ambient temperature range:	5°C. ~ 40°C. (operating) -40°C. ~ 60°C. (storage)

405 E. Santa Clara St., Arcadia, CA 91006-7218
O: (626) 599-8566 • F: (626) 599-9567

Maximum relative humidity:	80% up to 31°C. 76.7% @ 32°C. 73.3% @ 33°C. 70.0% @ 34°C. 66.7% @ 35°C.	63.3% @ 36°C. 60.0% @ 37°C. 56.7% @ 38°C. 53.3% @ 39°C. 50.0% @ 40°C. and above

SUGGESTED SPARE PARTS

Model No. DM1-1-9N-01-A1-P100

ITEM #	QTY.	PART NO.	DESCRIPTION
1.	1	AM1241B	System Heater Module, LH7, 9.6kW, 208VAC, 3-Phase.
2.	2	AT0100	Thermocouple Assy., Type J, ¼" Dia, Encapsulated. (Heater)
3.	2	AT0100D	Thermocouple Assy., Type J, 1/8"Dia, 10ft.(Dispense)
4.	1	AT0809	Thermal Fuse Assy., 104°C.
5.	1	AG0420-S	Ground Wire Assembly, Tantalum Rod.
6.	4	307767A	Liquid Level Sensor, Capacitive, PNP/NPN, 10-40VDC, M30.
7.	1	404020	Filter Cartridge; 10", 222 Type, 1.0 Micron. (F1)
8.	1	404016A	Filter Cartridge; 10", 222 Type, 0.1 Micron. (F2)
9.	1	404011H	Filter Cartridge; 10", 222 Type, 0.2 Micron. (F3)
10.	1	404006	Filter, ULPA, ½"MNPT, 5"L, GLS MICFBR/PP. (Tank Filter)
11.	1	311711F	Filters for Cooling Fan. 5 Pack
12.	1	402136	Valve, Pressure Relief, 60 PSI, ¼" FNPT.
13.	1	400022A	Valve, Diaphragm, Pneumatic, PFA, ½" Flare, 3-way.
14.	1	400318	Valve, Diaphragm, Pneumatic, PFA, ½"FNPT, 2-way.
15.	1	400057A	Valve, Diaphragm, Pneumatic, PFA, ¼" Flare, 2-way.
16.	1	400037A	Valve, Check, PTFE/PFA, ½"Flare.
17.	4	310405	Valve, Solenoid, 24VAC, 24VAC, NC, w/o base.
18.	3	400550	Valve, Needle, PP, ¼"MNPT, Angle.
19.	1	400085	Valve, Manual Ball, 2Way, PVDF, 25mm.
20.	1	403041	Pump, 9.7GPM, 230/460VAC, 3-PH, 316SS.
21.	2	F30003C	Flange Gasket, Full Face, PTFE,1-1/4" ANSI.
22.	1	307369B	Pressure Transducer, Back Mount, Digital, 0-100PSIG, 4-20mA.
23.	1	307294A	Flow Sensor, PFA, Ultrasonic, 0-20mA, ½"Tube.
24.	1	308105	Leak Sensor Switch, Model LLDS, 12-24VDC, PNP.
25.	1	501105	Regulator, Pressure, 0-150psi.
26.	1	306551	Temp. Controller, 100-240VAC, R-SP, Retransmit, 4-20mA, Pulse SSR.
27.	1	306021	Limit Controller, 0-160C, T/C "J", 120VAC, SPDT, Display.
28.	1	306653	Temp. Transmitter, T/C "J/K", 24VDC, Analog Output.
29.	1	306130	PLC, Touch Screen, 5" STN, Serial & USB Blk.
30.	1	306111	PLC, CP1H, 4/2 Analog I/O, 24DI, 16DO, Trans, 120-240VAC/24VDC.
31.	1	306140	PLC, Comm. Module, RS-232C Serial Option.
32.	1	306141	PLC, Comm. Module, RS-422/485 Serial Option.
33.	2	F40021	PLC, CJ1W, RS-232 Comm. Unit, 2 Ports.
34.	1	309808A	Power Supply, 100-240VAC-24VDC, 2.2Amps.
35.	1	306181A	Cable, Communication, NT to PLC, 9-Pin.
36.	1	1000820	Contactor, 3-P, A38, 1NO, 24VAC/50/60Hz.
37.	1	300377	Contactor, 3-P, 24VAC/50/60Hz.

405 E. Santa Clara St., Arcadia, CA 91006-7218
O: (626) 599-8566 • F: (626) 599-9567

ITEM #	QTY.	PART NO.	DESCRIPTION
38.	1	309800	Transformer; Primary: 200-240V; Secondary: 120, 24, 12V.
39.	1	305110A	Circuit Breaker, 2-pole, 3Amp, 480VAC.
40.	1	300854	DIN SCR, 3-PH, 2LEG, 20A, 600V.
41.	3	301407	Fuse, 30A, 600VAC, Type HSJ, Bolt Type.
42.	1	301008	Fuse, 2.5A, 250VAC, 5mm x 20mm.
43.	1	301011	Fuse, 1.0A, 250VAC, 5mm x 20mm.
44.	1	301010	Fuse, 5.0A, 250VAC, 5mm x 20mm.
45.	4	300108	Relay, DPDT, 24V AC/DC, Coil.
46.	14	300107	Relay, SPDT, 24V AC/DC, Coil.
47.	1	308226	Handle Disconnect Switch, Red/Yellow.
48.	1	308224	Disconnect Switch, Load Break 40A, 3-P, 600VAC.
49.	1	304369S	EMO, Push Button, 2 NC. 40mm.
50.	1	304349-A	PB, Illuminated, Momentary, Green, Round 16mm, LED, SPDT, 24VAC/DC.
51.	1	304355-A	PB, Momentary, Red, Round 16mm, SPDT, 24VAC/DC.
52.	1	211891B	Sterilize Manifold, PFA, ½" T Flare, x ½" T Flare.
53.	1	211890B	Dispense Spout, HPF, ½" T Flare x ½" Tube
54.	1	206776	Plug/Cap, ½" Flare, PFA.
55.	1	211124	Nut, PFA, ½" Flare.
56.	1	320100	UV Light, 120VAC, 3GPM, ¾"MNPT.
57.	1	406000	Barcode Reader, 1D/2D, Handheld Imager,
58.	1	406000p	Power Supply, for Barcode Reader, RS232, 120VAC>
59.	1	406100	Printer, Direct Thermal, RS232, 220VAC
60.	1	406100-Z2	Label, Direct Thermal, 4" x 2"L x 4"OD, 735 Count.
61.	1	405800T	Weigh Terminal, 85-264VAC; 1 to 8; 350Ohm, RS232
62.	1	405800	Weigh Platform, 6kg capacity, 0.1 Readability, IP65.

405 E. Santa Clara St., Arcadia, CA 91006-7218
O: (626) 599-8566 • F: (626) 599-9567

CONTROLLER PARAMETERS

Temperature Controller Parameters (Factory Default)

Part Number: 306551

Engineering Parameters

Function	Symbol	Setting	Function	Symbol	Setting
1. F10	SPCH	1	47. F43	Eho3	0
2. F10	dE	1	48. F43	E1L3	0
3. F10	Deut	100	49. F43	EH3	2.0
4. F10	dSoP	0	50. F43	EVT3	0.0
5. F11	Fn1	0	51. F43	EEo3	0
6. F11	Fn2	0	52. F44	ES4	0
7. F11	Fn3	1	53. F44	Eho4	0
8. F11	Fn	2	54. F44	E1L4	0
9. F21	InP	1 [Type J]	55. F44	EH4	2.0
10. F21	UnIT	0 [°C]	56. F44	EVT4	0.0
11. F21	PGdP	1	57. F44	EEo4	0
12. F21	PGSH	100.0	58. F45	CTr1	800
13. F21	PGSL	0.0	59. F45	CTA1	0
14. F21	PoV	105.0	60. F45	HbS1	1
15. F21	Pun	-5.0	61. F45	HbC1	5
16. F21	boS	0	62. F46	CTr2	800
17. F21	sQr	0	63. F46	CTA2	0
18. F21	PFrQ	1 [60Hz]	64. F46	HbS2	1
19. F21	SMP	0 [50ms]	65. F46	Hbc2	5
20. F22	rInP	15 [4-20mA]	66. F50	Pd	0
21. F23	d1sL	6	67. F50	PdA	3.0
22. F30	LoGC	2	68. F50	CAm	0
23. F30	oTT1	0.0	69. F50	MCH	0
24. F30	oTT2	0.0	70. F50	TrK	1
25. F30	oTT3	0.0	71. F50	MVTS	0
26. F30	oTT4	0.0	72. F50	PVTS	0
27. F30	EXC	0000	73. F51	oS	1
28. F30	ALC1	1111	74. F51	1ddP	0
29. F30	ALC2	0011	75. F51	DGA	6.0
30. F30	55	0011	76. F51	oHH	1.0
31. F33	Ao	1	77. F51	oHL	1.0
32. F33	AHS	100.0	78. F51	AoVE	0
33. F33	ALS	0.0	79. F51	AunE	0
34. F41	ES1	5	80. F51	PSM	0.0
35. F41	EHo1	0	81. F51	rMV1	-5.0
36. F41	E1L1	0	82. F51	rMV2	-5.0
37. F41	EH1	2.0	83. F51	orU	0.0
38. F41	EVT1	0.0	84. F51	ord	0.0
39. F41	Eeo1	0	85. F51	oLH	105.0
40. F42	ES2	0	86. F51	oLL	-5.0
41. F42	Eho2	0	87. F51	orU2	0.0
42. F42	E1L2	0	88. F51	ord2	0.0
43. F42	EH2	2	89. F51	oLH2	105.0
44. F42	EVT2	0.0	90. F51	oLL2	-5.0
45. F42	EEo2	0	91. F51	PFF	0
46. F43	ES3	0	92. F51	PFFS	1.00

Temperature Controller Parameters (continued)

Engineering Parameters (Continued)

Function	Symbol	Setting
93. F51	dTP	0
94. F51	US	1.000
95. F51	dbPA	0
96. F52	ATB	0
97. F52	ATC	1
98. F52	ATH	10.0
99. F52	ATon	105.0
100. F52	AToF	-105.0
101. F52	PLH	100.0
102. F52	PLL	0
103. F52	1LH	3600
104. F52	1LL	0
105. F52	dLH	3600
106. F52	dLL	0
107. F52	PcLH	100.0
108. F52	PcLL	1.0
109. P52	1cLH	3600
110. F52	1cLL	0
111. F52	dcLH	3600
112. F52	dcLL	0
113. F52	PAJ	1.00
114. F52	1AJ	1.00
115. F52	dAJ	1.00
116. F52	PcAJ	1.00
117. F52	1cAJ	1.00
118. F52	dcAJ	1.00
119. F53	Ydb	2.0
120. F53	YHS	1
121. F53	Ybr	0
122. F53	PoS	AdJ
123. F53	moT	10
124. F53	oLA	150.0
125. F53	VAL	0
126. F53	YASo	0
127. F54	STS	0
128. F54	STPK	1.00
129. F54	ST1K	1.00
130. F54	STdK	1.00
131. F55	CHrG	0
132. F55	rSG	0
133. F55	CHrd	10.0
134. F55	CHrT	1.0
135. F60	CmP1	0
136. F60	CmP2	2
137. F70	SVrT	60
138. F70	STdP	1
139. F71	SLH	100.0
140. F71	SLL	0.0

Operation Parameters

Symbol	Setting
1. ATU	Off
*Note: Auto Tune done at Temp. S.P. of 35°C.	
2. STU	oFF
3. A-M	Auto
4. r-L	rEm
*Note: Must be changed to remote when using 4-20mA analog remote input signal.	
5. r-S	rUn
*Note: Must be changed to STOP when entering **Temperature Controller** parameters.	
6. LnKA	oFF

Set Up Parameters

Symbol	Setting
1. Pb	0
2. dF	oFF
3. Pr	1.000
4. rb	000.0
5. dF2	oFF
6. rr	1.000
7. T	002.0
8. LCK	0000

Parameter Settings

Symbol	Setting (Area1)	Setting (Area2)
PID Temp	36C	90C
1. EV1	100	100
2. P	7.4	15.3
3. 1	36	53
4. d	9	13
5. rPT	0	0
6. SVrU	oFF	oFF
7. SVrd	oFF	oFF
8. AST	0	0
9. LNKA	oFF	oFF

405 E. Santa Clara St., Arcadia, CA 91006-7218
O: (626) 599-8566 • F: (626) 599-9567

Scale Terminal Parameters

Part Number: 405800T

Engineering Parameters

Scale – Type 1.1

Setup Feature	Setting
7. Name	Scale 1
8. Approval	None

Scale – Capacity and Increment 1.2

Setup Feature	Setting
1. Units	g
2. Capacity	0006000
3. Increment	0.1
4. x10 Always	Disabled

Scale – Calibration 1.3

Setup Feature	Setting
1. GEO Code	16
2. Linearity	Disabled

Scale – Zero 1.4

Setup Feature	Setting
1. Auto Zero	Gross
2. Auto Zero Range	0.5d
3. Under Zero Blanking	5d
4. Pushbutton Zero	+/- 2%

Scale – Tare - Type 1.5.1

Setup Feature	Setting
1. Pushbutton Tare	Enabled
2. Net Sign Correction	Disabled

Scale – Tare – Auto Clear 1.5.2

Setup Feature	Setting
1. Auto Clear Tare	Disabled
2. Clear After Print	Disabled

Scale – Rate 1.6

Setup Feature	Setting
1. Weights Unit	None
2. Time Unit	Seconds
3. Measurement Period	1 sec
4. Output Average	1 sec

Scale – Filter 1.7

Setup Feature	Setting
1. Low Pass Filter	medium
2. Stability Filter	Disabled

Scale – Stability 1.8

Setup Feature	Setting
1. Motion Range	Disabled

Scale – Log or Print 1.9

Setup Feature	Setting
1. Auto Print	Disabled

Application – Target Operation 2.1

Setup Feature	Setting
1. Tolerance Type	Weight Deviation (0)
2. Output Type	Concurrent (0)
3. Target Source	Displayed Weight (0)
4. Target Latching	Enabled (1)

Application – Target Values 2.2

Setup Feature	Setting
1. Target	0.00 kg
2. -Tol	0.00 kg
3. +Tol	0.00 kg
4. Spill	0.00 kg
5. Fine Feed	0.00 kg

Application – Comparator 1 2.3

Setup Feature	Setting
1. Comparator 1 Source	Disabled (0)
2. Comparator 1 Active	< (0)
3. Limit 1	0.0 g

Application – Comparator 2 .2.3

Setup Feature	Setting
1. Comparator 2 Source	Disabled (0)
2. Comparator 2 Active	< (0)
3. Limit 2	0.00g

Application – Comparator 3 2.3

Setup Feature	Setting
1. Comparator 3 Source	Disabled (0)
2. Comparator 3 Active	< (0)
3. Limit 3	0.0g

Application – Discrete I/O – Discrete Inputs 2.4.1

Setup Feature	Setting
1. Input 1 Polarity	+ True (0)
2. Input 1 Assignment	None (0)
3. Input 2 Polarity	+ True (0)
4. Input 2 Assignment	None (0)

Application – Target Operation 2.4.2

Setup Feature	Setting
1. Output 1 Assignment	None (0)
2. Output 2 Assignment	None (0)
3. Output 3 Assignment	None (0)
4. Output 4 Assignment	None (0)

Terminal – Serial Number 3.1

Setup Feature	Setting
1. Serial Number	N/A

Terminal – Screen Saver 3.2

Setup Feature	Setting
1. Screen Saver	10 min

Terminal – Region 3.3

Setup Feature	Setting
1. Menu Language	English (0)
2. Setup Language	English (0)

Terminal – User 3.4

Setup Feature	Setting
1. Password Protection	Disabled (0)

Terminal – Menu Keys 3.5

Setup Feature	Setting
1. Calibration Access	Enabled (0)
2. Target Access	Disabled (0)
3. Comparators Access	Disabled (0)

Communication – Output Template 4.1

1. Format	GTN, multiple lines
2. Print Scale Name	Disabled (0)

Communication – Connections – COM1 4.2

Setup Feature	Setting
1. COM1 Assignment	Demand Output (3)

Communication – Connections – COM2 4.2

Setup Feature	Setting
1. COM2 Assignment	Not Selectable

Communication – Serial – COM1 4.3.1

1. Baud Rate	9600 (5)
2. Data Bits	8 (1)
3. Parity	None (0)

Communication – Serial – COM2 4.3.2

1. Baud Rate	Not Selectable
2. Data Bits	Not Selectable
3. Parity	Not Selectable
a. Interface	Not Selectable
4. Modbus Node Address	Not Selectable
5. Modbus Data Format	Not Selectable

6. Communication – PLC – Analog Output 4.4

1. Analog Output	Not Selectable
2. Source	Not Selectable
3. Zero Value	Not Selectable
4. Full Scale Value	Not Selectable

High Limit Controller Parameters

Part Number: 306023

Description	Setting
High Temperature Set Point	125 °C

Air Pressure Regulator

Part Number: 501105

Description	Setting
Air Pressure Set Point	65 psi

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January 01, 2016

HEATEFLEX CORPORATION'S MATERIAL WARRANTY

Heateflex Corporation warranties the equipment offered to be free from defects in material and workmanship, under normal handling and proper usage, for a period of one year from the date of shipment. All products purchased from manufacturers by Heateflex Corporation will carry that manufacturer's warranty period. This expressed warranty is in lieu of, and excludes all other representations made by advertisements or by agents. There are no implied warranties for the equipment.

Heateflex Corporation agrees to correct any defect in workmanship or material which may develop under normal handling and proper usage during a period of one year from the date of shipment or, by its option, to repair or replace the defective equipment F.O.B. Arcadia, California, USA. Purchaser's remedies shall be limited exclusively to the right of repair or replacement. Heateflex Corporation shall not be liable for any expenses incurred by the purchaser or any other person by reason of the use, misuse, sale, or fabrication of the equipment regardless of whether the equipment conforms to the specifications.

Items returned for warranty repair must be prepaid and insured for shipment. Warranty claims are processed on the condition that prompt notification of a defect is given within the warranty period. Heateflex Corporation shall have the sole right to determine whether, in fact, a warranty situation exists.