SmartFOAM

Electronic Foam Proportioning Systems

Models:

Class A only – 1.7AHP, 2.1A

Class A/B – 3.3, 5.0, 6.5

FOAM SETUP GUIDE

FSG-MNL-00177

HALE PRODUCTS, INC / CLASS 1
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U.S.A. Telephone: 352-629-5020
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IDEX FIRE SUPPRESSION GROUP

GODIVA

APPARATUS INFORMATION

Hale SmartFOAM System Serial Number	
In Service Date	
Fire Department	
Engine Number	

Calibration Factors:

Water Flow – high calibration point	Water flow		Pulses	
Water Flow – low calibration point	Water flow		Pulses	
Class A Foam Factor				

NOTICE!

Hale Products does not assume responsibility for product failure resulting from improper maintenance or operation. Hale Products is responsible only to the limits stated in the product warranty. Product specifications contained in this manual are subject to change without notice.

All Hale products are quality components -- ruggedly designed, accurately machined, precision inspected, carefully assembled and thoroughly tested. In order to maintain the high quality of your unit, and to keep it in a ready condition, it is important to follow the instructions on care and operation. Proper use and good preventive maintenance will lengthen the life of your unit.

REVISION RECORD

REV	Date	Page	Description
A	APR2018	All	New Issue

NOTES

SAFETY

IMPORTANT!

THE HALE SMARTFOAM MODELS 2.1A AND 1.7AHP CLASS "A" ELECTRONIC FOAM PROPORTIONING SYSTEMS ARE DESIGNED FOR OPTIMUM SAFETY OF ITS OPERATORS AND TO PROVIDE RELIABLE AND SAFE FOAM CONCENTRATE INJECTION. FOR ADDED PROTECTION AND BEFORE ATTEMPTING INSTALLATION OR OPERATION PLEASE FOLLOW THE SAFETY GUIDELINES LISTED IN THIS SECTION AND ADHERE TO ALL WARNING, DANGER, CAUTION AND IMPORTANT NOTES FOUND WITHIN THIS GUIDE.

THIS SECTION ON SAFETY MUST BE CAREFULLY READ, UNDERSTOOD AND ADHERED TO STRICTLY BY ALL INSTALLERS AND OPERATORS BEFORE ATTEMPTING TO INSTALL OR OPERATE THE SMARTFOAM PROPORTIONING SYSTEM.

INCORPORATE THE WARNINGS AND CAUTIONS AS WRITTEN WHEN DEVELOPING DEPARTMENTAL APPARATUS OPERATING PROCEDURES.

GUIDELINES

READ ALL INSTRUCTIONS THOROUGHLY BEFORE BEGINNING ANY INSTALLATION OR OPERATION PROCESS.

- ❑ Installation should be performed by a trained and qualified installer, or your authorized Hale Products service representative.
- ❑ Be sure the installer has sufficient knowledge, experience and the proper tools before attempting any installation.
- ❑ Make sure proper personal protective equipment is used when operating or servicing apparatus.
- ❑ A foam tank low level sensor must be utilized to protect the Hale Foam proportioner from dry running. *Failure to use a low level sensor with the Hale Foam system voids warranty.*
- ❑ DO NOT permanently remove or alter any guard or insulating devices, or attempt to operate the system when these guards are removed.
- ❑ Make sure all access/service panels and covers are installed, closed and latched tight, where applicable.
- ❑ DO NOT remove or alter any hydraulic or pneumatic connections, electrical devices, etc. DO NOT tamper with or disconnect safety features or modify protective guards (such as covers or doors). DO NOT add or remove structural parts. *Doing so voids the warranty.*

Any of the above could affect system capacity and/or safe operation of the system and is a serious safety violation which could cause personal injury, could weaken the construction of the system or could affect safe operation of the SmartFOAM Proportioning System.

WARNING!

NO MODIFICATIONS OR ADDITIONS MAY BE MADE TO THE SMARTFOAM PORPORTIONING SYSTEM WITHOUT PRIOR WRITTEN PERMISSION FROM:

HALE PRODUCTS, INC
607 NW 27th Avenue
Ocala, Florida 34475 USA
Telephone: 352-629-5020
FAX: 800-533-3569

- ❑ All electrical systems have the potential to cause sparks during service. Take care to eliminate explosive or hazardous environments during service and/or repair.
- ❑ To prevent electrical shock always disconnect the primary power source before attempting to service any part of the Hale Foam system.
- ❑ To prevent system damage or electrical shock the main power supply wire is the last connection made to the Hale Foam motor controller.
- ❑ Release all pressure then drain all concentrate and water from the system before servicing any of its component parts.

- ❑ Do not operate system at pressures higher than the maximum rated pressure.
- ❑ Use only pipe, hose, and fittings from the foam pump outlet to the injector fitting, which are rated at or above the maximum pressure rating at which the water pump system operates.
- ❑ Hale Foam proportioning systems are designed for use on negative ground direct current electrical systems only.
- ❑ Do not mount radio transmitter or transmitter cables in direct or close contact with the SmartFOAM control unit.
- ❑ Before connecting the cord sets and wiring harnesses, inspect the seal washer in the female connector. If the seal washer is missing or damaged, water can enter the connector causing corrosion of the pins and terminals. This could result in possible system failure.
- ❑ Always disconnect the power cable, ground straps, electrical wires and control cables from the control unit or other Hale Foam system equipment before electric arc welding at any point on the apparatus Failure to do so could result in a power surge through the unit that could cause irreparable damage.
- ❑ DO NOT connect the main power lead to small leads that are supplying some other device, such as a light bar or siren.
- ❑ When operating the Hale SmartFOAM in Simulated Flow mode, an outlet for the foam concentrate must be provided to prevent excessive pressure build up in the discharge piping or hoses.
- ❑ Make sure the foam tank and foam concentrate suction hoses are clean before making final connection to foam pump. If necessary, flush tank and hoses prior to making connection.
- ❑ Check all hoses for weak or worn conditions after each use. Ensure that all connections and fittings are tight and secure.
- ❑ Ensure that the electrical source of power for the unit is a negative (–) ground DC system, of correct input voltage, with a reserve minimum current available to drive the system.
- ❑ The in-line strainer/valve assembly is a low pressure device and WILL NOT withstand flushing water pressure in excess of 45 PSI (3 BAR).
- ❑ When determining the location of Hale Foam system components keep in mind piping runs, cable routing and other interferences that could hinder or interfere with proper system performance.
- ❑ Always position the check valve/injector fitting at a horizontal or higher angle to allow water to drain away from the fitting. This avoids the possibility of sediment deposits or the formation of an ice plug.
- ❑ The cord sets provided with each Hale Foam system are indexed to ensure correct receptacle installation (they insert one way only). When making cord set connections DO NOT force mismatched connections as damage can result in improper system operation.
- ❑ Make sure all connections are sound, and that each connection is correct.
- ❑ The cables shipped with each Hale Foam system are 100% tested at the factory with that unit. Improper handling and forcing connections can damage these cables which could result in other system damage.
- ❑ There are no user serviceable parts inside Hale Foam system electrical/electronic components. *Opening of the motor controller or controller unit voids the warranty.*
- ❑ Use mounting hardware that is compatible with all foam concentrates to be used in the system. Use washers, lock washers and cap screws made of brass or 300 series stainless steel.
- ❑ When making wire splice connections, make sure they are properly insulated and sealed using an adhesive filled heat shrink tubing.
- ❑ ALWAYS connect the primary positive power lead from the terminal block to the master switch terminal or the positive battery terminal.
- ❑ Use a minimum 8 AWG type SGX (SAE J1127) chemical resistant battery cable and protect with wire loom.
- ❑ Prevent corrosion of power and ground connections by sealing these connections with silicone sealant provided.
- ❑ Prevent possible short circuit by using the rubber boot provided to insulate the primary power connection at the Hale SmartFOAM motor controller.

SYSTEM INSTALLER START-UP

On initial power-up of the Hale SmartFOAM system at the installer facility, the following procedures must be followed.

INITIAL SYSTEM POWER CHECK

Watch the display on the controller unit as the apparatus electrical system is turned ON. Check the controller unit readout for:

- ❑ SmartFOAM booting screen is shown for three seconds.
- ❑ SmartFOAM splash screen is shown for three seconds.
- ❑ SmartFOAM version screen is shown for two seconds.
- ❑ SmartFOAM preset screen is shown (default) **OR** SmartFOAM classic FoamLogix screen is shown. (The screen shown depends on the “display format” chosen in the user menu).

(See Figure 44**: Controller Unit Initialization**).

If a default display does not appear, refer to the TROUBLESHOOTING section for possible WARM-UP/ SYSTEM CHECKING causes and solutions.

INITIAL SYSTEM CHECK

After initial system power-up the low tank level sensor operation, foam pump operation, and flow sensor calibration must be checked per the following:

CAUTION!

WATER IS USED AT THE SYSTEM INSTALLER FACILITY TO VERIFY LOW TANK LEVEL SENSOR SYSTEM READY OPERATION AND FOAM PUMP OPERATION AS THE END USER SPECIFIED FOAM CONCENTRATES MAY NOT BE READILY AVAILABLE.

DO NOT PUMP WATER WITH THE HALE FOAM-LOGIX FOAM PUMP FOR MORE THAN ONE (1) MINUTE. DO NOT ATTEMPT TO CALIBRATE FOAM PUMP FEEDBACK SENSOR WITH OTHER THAN END USER SPECIFIED FOAM CONCENTRATE.

MAKE SURE THE BYPASS VALVE IS IN THE BYPASS POSITION WHEN PUMPING WATER WITH THE FOAM PUMP.

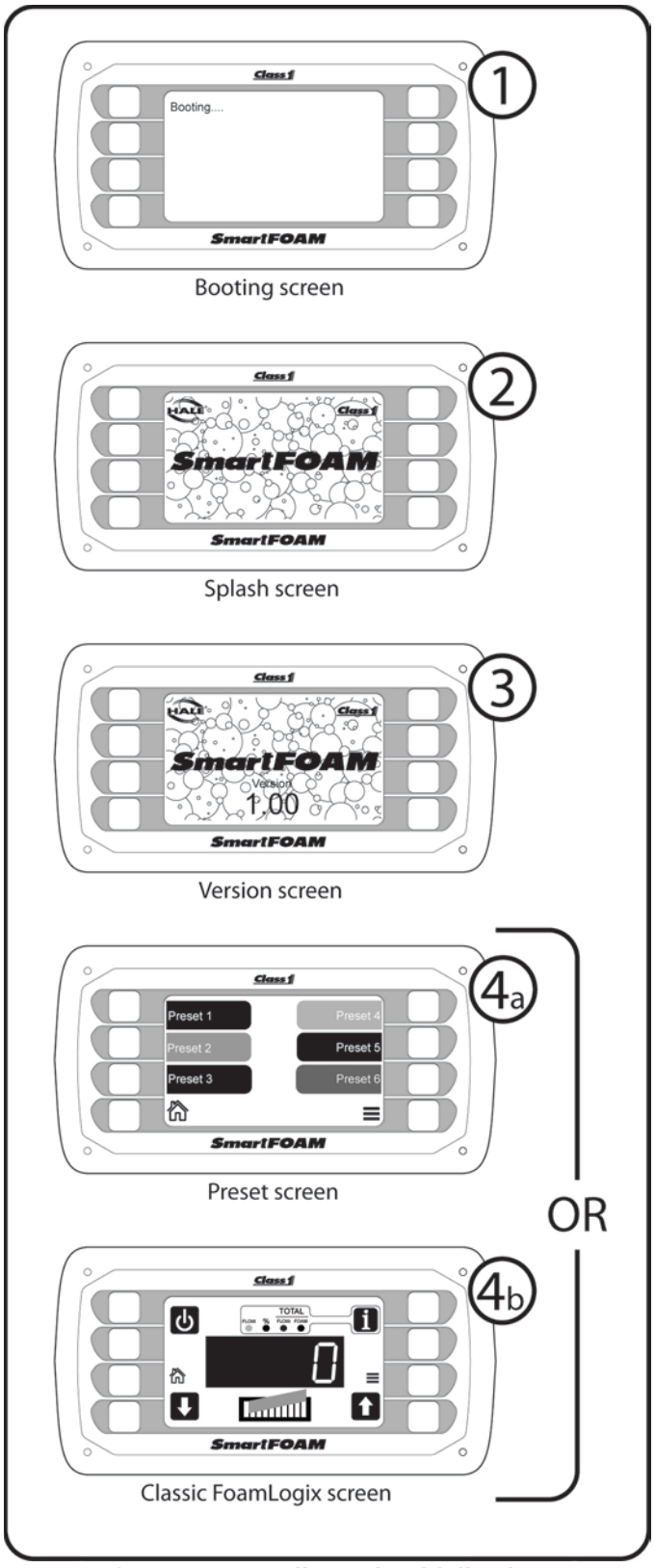


Figure 1**: Controller Unit Initialization**

Upon initial power-up with the foam tanks empty, the display on the controller unit will display a warning bar indicating that the foam tank is low.

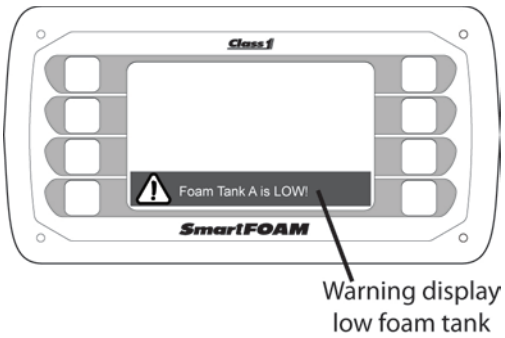


Figure 2**: Low Foam Tank Warning**

1. Fill the foam concentrate tank with WATER. The **"**low foam tank" warning indication clears from the display indicating the low tank level sensor is operating properly.
2. Place the bypass valve's handle to the **BYPASS** position to check the foam pump operation. Place a calibrated five gallon container at the discharge end of the bypass hose.
3. Place the system in simulated flow mode:
    a. Press the MENU button.
    b. In the menu select the "simulated water flow" button.
    c. In the simulated water flow screen press the ON/OFF button to toggle simulated water flow. The icon indicates the current state.
    d. Set the simulated flow to 100 GPM by using the INCR/DECR buttons.
    e. Press the MENU button to return to the menu.
    f. Press the RETURN button to return to the operation screen.

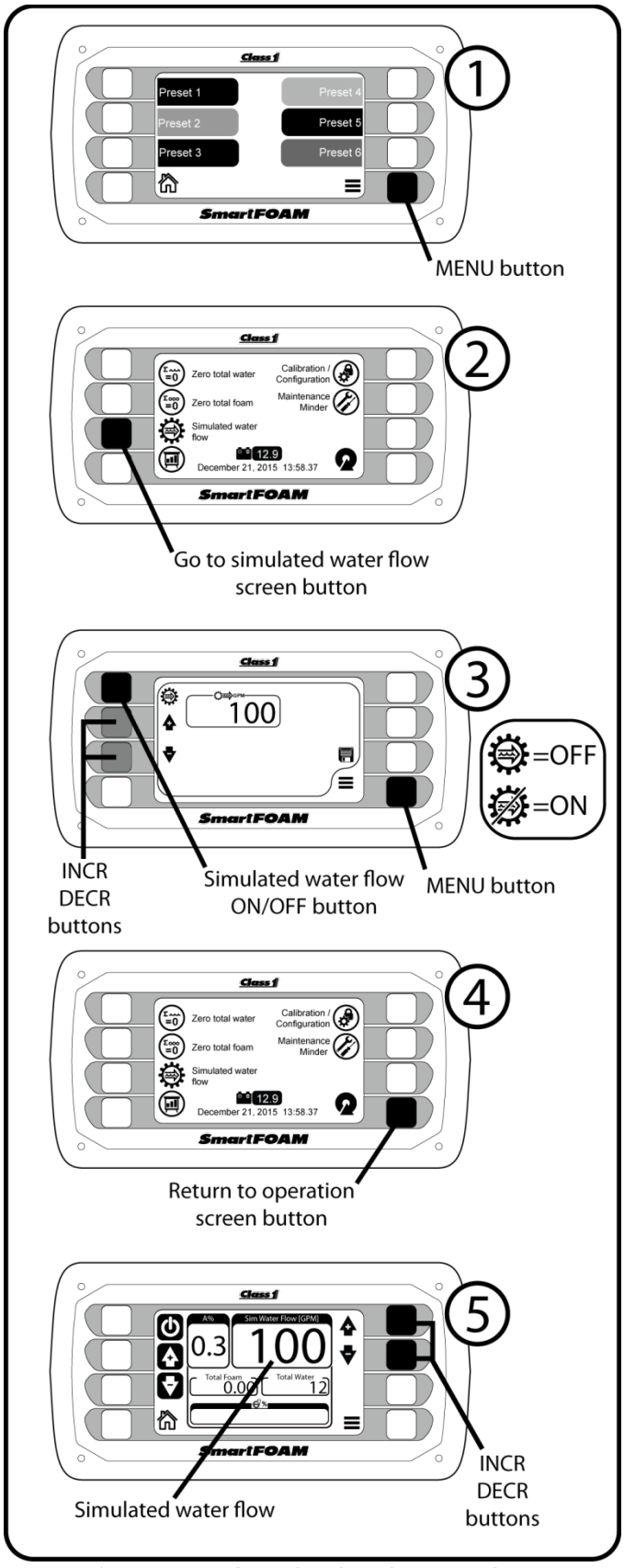


Figure 3**: Setting Simulated Water Flow**

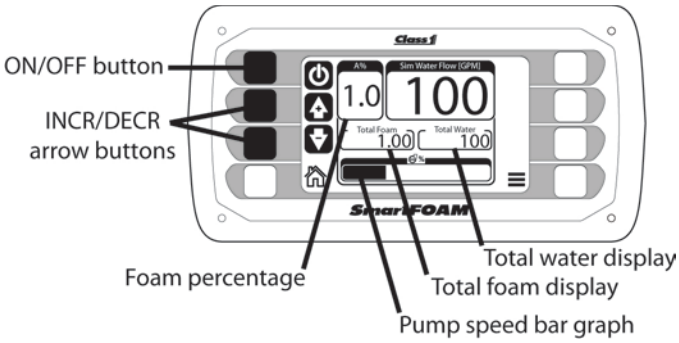


Figure 4**: SmartFOAM Buttons and Indicators**

4. Set the foam injection rate to 1.0% by pressing the INCR or DECR arrow buttons.
5. Press the ON/OFF button to energize the Hale SmartFOAM system.
    a. The Pump Speed bar graph will increase to indicate the motor is running.
    b. Observe the discharge at the bypass hose to make sure the foam pump is operating.
6. After one minute press the ON/OFF button again to stop the foam pump. Approximately one gallon (3.8 liters) of water should discharges into the container. The TOTAL FOAM display reads approximately 1.00.
7. Exit simulated water flow. Use the steps described in step 3 and Figure 46**: Setting Simulated Water Flow**.
8. Drain water from the foam tank and concentrate lines and return the bypass valve's handle to the **INJECT** position.
9. Verify operation of the flow sensor. Also calibrate the flow sensor using the calibration procedures. See "User Calibration".

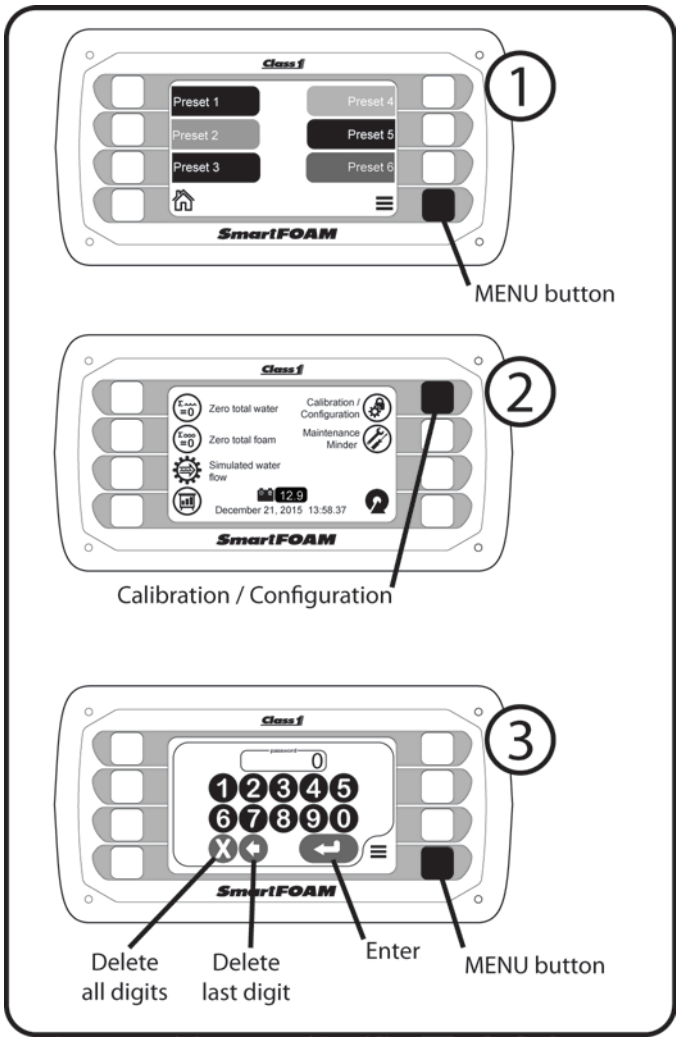
This completes the Hale SmartFOAM system operation checks accomplished at the system installer facility.

Foam pump feedback calibration along with setting of user specified default simulated flow and concentrate injection rates should be accomplished upon delivery to the end user using actual end user specified foam concentrates and default values.

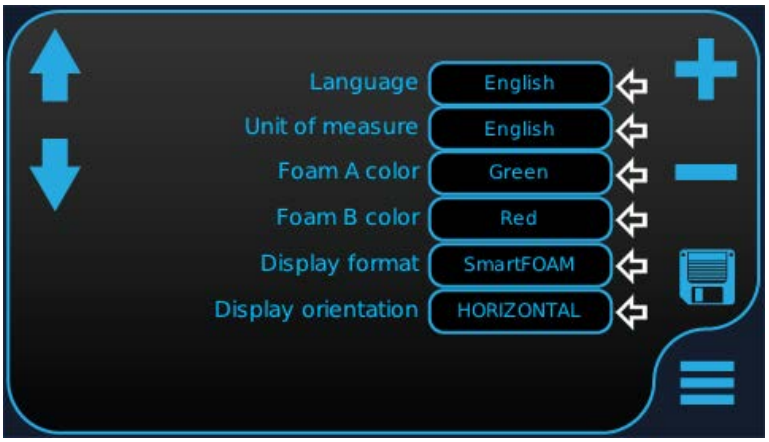
System Setup:

Enter the OEM screen

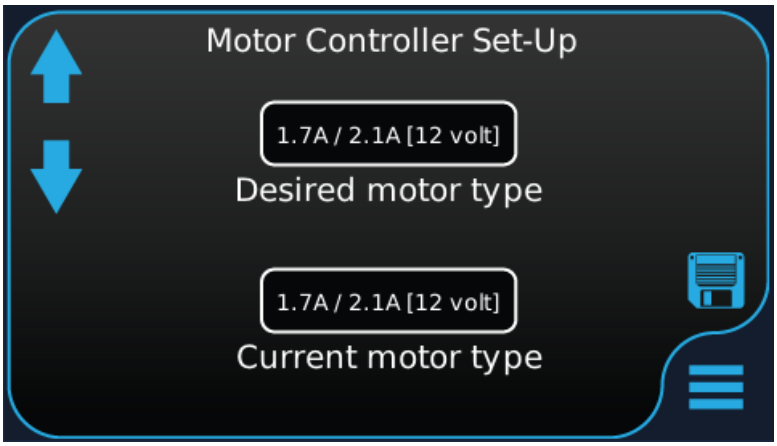
1. Press the MENU button to go to the system menu.
2. Press the Calibration/Configuration button on the system menu screen.
3. Use the touch screen keypad to enter the password **2314**.
    a. Press the “Enter” touch screen button to submit the password.
    b. Press the “Delete last digit” touch screen button to erase the last digit entered.
    c. Press the “Delete all digits” touch screen button to erase all of the digits entered.
4. System settings will need to be set for your configuration including:
    a. Foam System Control
        i. Single, Dual Parallel, Dual Series
    b. Foam Pump Model:
        i. Piston Pumps: 1.7, 2.1
        ii. Gear Pumps: 3.3, 5.0, 6.5
    c. Tank Selector:
        i. None, MST, MDT, ADT
    d. Other settings can be changed adjusted as desired.



1. Use the touch screen keypad to enter the password **2314**.
    a. Press the “Enter” touch screen button to submit the password.
    b. Press the “Delete last digit” touch screen button to erase the last digit entered.
    c. Press the “Delete all digits” touch screen button to erase all of the digits entered.
2. System settings will need to be set for your configuration including:
    a. Foam System Control
        i. Single, Dual Parallel, Dual Series
    b. Foam Pump Model:
        i. Piston Pumps: 1.7, 2.1
        ii. Gear Pumps: 3.3, 5.0, 6.5
    c. Tank Selector:
        i. None, MST, MDT, ADT

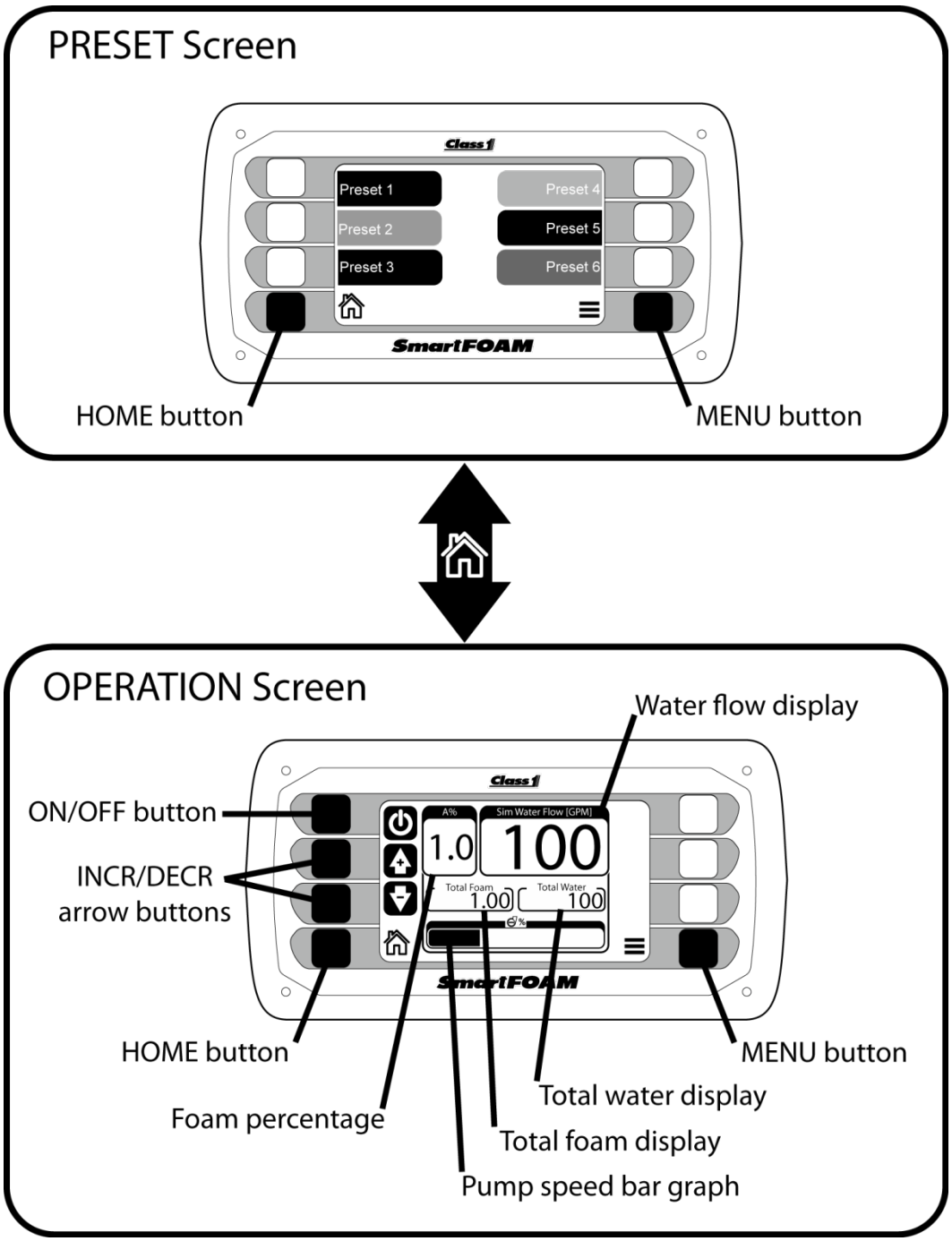


1. Use the touch screen keypad to enter the password **66867**.
    a. Press the “Enter” touch screen button to submit the password.
    b. Press the “Delete last digit” touch screen button to erase the last digit entered.
    c. Press the “Delete all digits” touch screen button to erase all of the digits entered.
2. System settings will need to be set for your configuration including:
    a. Use the Up and down arrows to select the pump model and voltage of the truck/unit.
    b. Hit the save button on the right side of the display



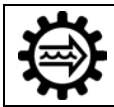
The preset and operation screens:

The SmartFOAM controller will show the PRESET screen after a power cycle. This allows the user to select a preset with which to start operation. Pressing a preset button will automatically change the view to the OPERATION screen.
The OPERATION screen shows the operational information for the foam system including the buttons and indicators used to control the system.
Press the HOME button to toggle between the OPERATION and PRESET screens.



To place the system in simulated flow mode:

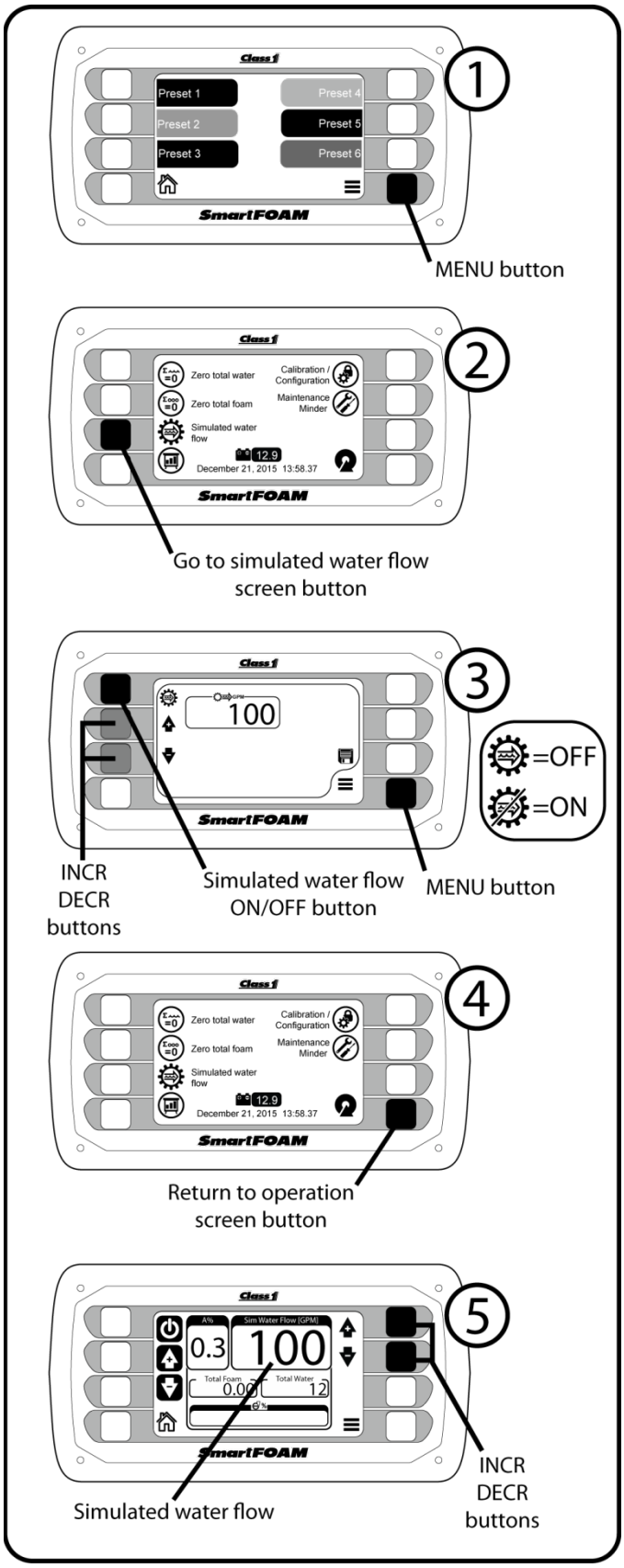
1. Press the MENU button.
2. In the menu select the “simulated water flow” button.
3. In the simulated water flow screen press the ON/OFF button to toggle simulated water flow. The icon indicates the current state.

	Simulated flow is currently OFF
	Simulated flow is currently ON

   Set the simulated flow to desired rate by using the INCR/DECR buttons.

   Press the MENU button to return to the menu.
4. Press the RETURN button to return to the operation screen.
5. The operation page shows the simulated water flow in orange.

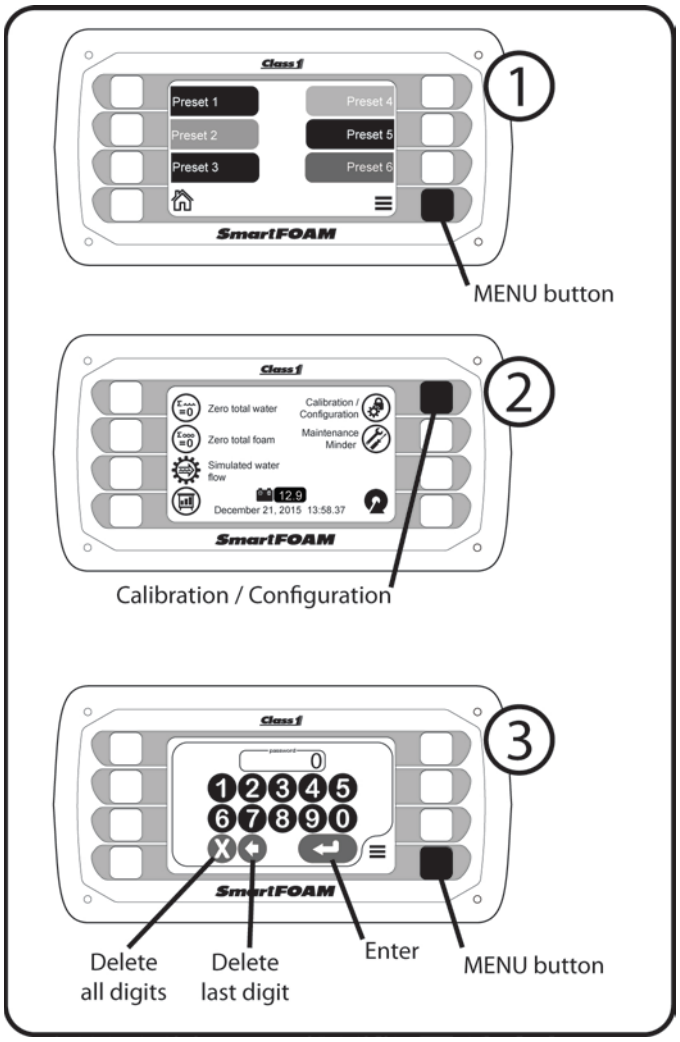
   Modify the simulated flow rate by using the orange INCR/DECR buttons on the right side of the display.



Foam calibration:

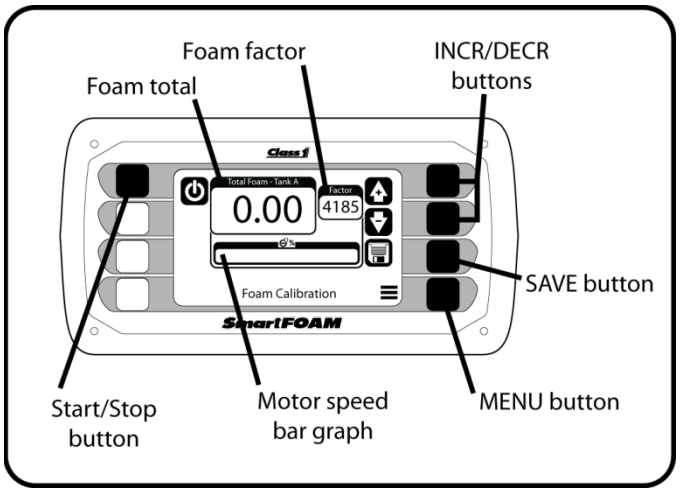
Enter the foam calibration screen

3. Press the MENU button to go to the system menu.
4. Press the Calibration/Configuration button on the system menu screen.
5. Use the touch screen keypad to enter the password **1560**.
    a. Press the “Enter” touch screen button to submit the password.
    b. Press the “Delete last digit” touch screen button to erase the last digit entered.
    c. Press the “Delete all digits” touch screen button to erase all of the digits entered.



Calibrate the foam

1. Place a graduated measure container at the outlet of the bypass hose capable of containing the expected volume of foam concentrate.
2. Start the Hale SmartFOAM foam pump by pressing the Start/Stop button.
3. Watch the level of foam in the graduated measure container and stop the foam pump when at the desired level by pressing the Start/Stop button again.
4. Adjust the reading in the foam total display to match the actual volume by using the INCR and DECR arrow buttons.
5. Press the SAVE button.
6. Repeat the procedure to verify that the setting is correct.
7. Press the MENU button to exit the foam calibration screen.



INSTALLATION AND DELIVERY CHECKLIST

After the Hale SmartFOAM system is installed, use the following check list to verify installation and ensure proper system setup when the apparatus is delivered to the end user.

INSTALLATION

Date	Initials	Checklist item
		❑ System properly installed. (“Start-Up Check List”)
		❑ Tank level sensor function verified. (“System Installer Start-Up”)
		❑ Foam pump operation checked. (“System Installer Start-Up”)
		❑ Foam tank and hoses drained of water. (“System Installer Start-Up”)
		❑ Flow sensor function checked and calibrated. (“User Calibration”)

DELIVERY

Date	Initials	Checklist item
		❑ Foam tank filled with user specified foam concentrate. (Complies with Hale approved concentrate compatibility list.)
		❑ Foam pump priming checked.
		❑ Water flow sensor calibration verified with Pitot and smooth bore nozzle.
		❑ Default simulated water flow value set to end user specification.
		❑ Foam preset text and injection rates set to end user specification.
		❑ Foam concentrate feedback value verified and calibrated with end user specified foam.
		❑ Proper Hale SmartFOAM system operation demonstrated to end user in accordance with manual procedures.
		❑ End user trained in proper operation of Hale SmartFOAM system in accordance with manual procedures.
		❑ Warranty registration card filled out by end user and mailed to Hale Products.
		❑ Two copies of Description, Installation, and Operation manual provided to end user.

SmartFOAM passwords

Menus
1849 - User menu
2314 - OEM menu
57643 - Factory menu

Set-up
1023 - Preset configuration
6679 - Water calibration (primary paddlewheel)
9766 - Direct water calibration (primary paddlewheel)
6681 - Water calibration (secondary paddlewheel)
1866 - Direct water calibration (secondary paddlewheel)
1560 - Foam calibration
9999 - Maintenance interval screen for resetting intervals
66867 - Motor driver set-up. Sets the motor driver to a specific current range (i.e. 3.3 12V, etc)
5804 - Load all defaults

Debugging
3564 - Download the data logger