



SMOGHOG[®] PLUS CONTROLLER

OWNER'S MANUAL



KNOW YOUR EQUIPMENT

Your SmogHog system should provide many years of trouble-free service. This manual will help you understand the operation of your SmogHog unit. It will also help you understand how to maintain it in order to achieve top performance. For quick future reference, fill in the system and filter information in the spaces below. Should you need assistance, call the Parker Hannifin customer service number shown below. To expedite your service, have the following information available when contacting Parker Hannifin.

UNIT ORDER #: _____

UNIT MODEL #: _____

UNIT SERIAL #: _____

SYSTEM ACCESSORIES:

INSTALLATION DATE: _____

SAFETY PRECAUTIONS

We have provided many important safety messages in this manual and on the SmogHog Electronic Air Cleaner. Always read and obey all safety messages.



This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others. All safety messages will follow the safety alert symbol and the word “DANGER”, “WARNING”, or “CAUTION”. These words mean:



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

IMPORTANT SAFETY INSTRUCTIONS



WARNING

To reduce the risk of fire, electric shock, or injury when using the air cleaner, follow these basic precautions.

- Use two or more people to move and install the SmogHog system.
- The air cleaner must be properly grounded.
- Disconnect power before servicing.
- Replace all access panels before operating.
- Wear protective clothing and safety glasses when handling collection components or servicing the air cleaner.
- Electrical connections should only be made by qualified personnel and be in accordance with local and national codes and regulations.
- Do not use in explosive atmospheres.
- Use nonflammable cleaners.
- Do not collect emissions which are explosive.
- Keep flammable materials and vapors, such as gasoline, away from air cleaner.
- The unit should be inspected frequently and dirt removed to prevent excessive accumulation which may result in flash-over or fire damage.
- The SmogHog System should not be used for support of personnel or material.
- Operate only in a safe and serviceable condition.

Table of Contents

Know Your Equipment.....	2
Safety Precautions	3
Important Safety Instructions	3
1. SmogHog Controller Operation.....	6
1.1 Main Operation	6
1.1.1 Blower Running	7
1.1.2 Wash Cycle	7
1.2 Wash Cycle Details Screen.....	8
1.3 SmogHog Power Pack Alarming Screen.....	8
2. SmogHog Maintenance	10
2.1 Maintenance Screens	10
2.2 HMI/Local Switch.....	11
2.2.1 HMI Position	11
2.2.2 Local Position.....	11
2.3 PTT Wash Valves Screen.....	11
2.4 PTT Outputs Screen.....	12
2.5 VFD Screen	12
2.6 IO Monitor Screen.....	12
3. SmogHog Initial Cnfiguration	14
4. Wash Profile Configuration.....	16
5. SmogHog Alarming	18
5.1 Alarming	18
5.2 Alarm Reset vs. Alarm Silence.....	19
6. Setting HMI Date & Time.	20
6.1 How to Navigate	20
7. Drawings.	21

MODELS

1. The SmogHog Controller platform has three versions available including; 1) Basic No-Wash, 2) Basic Wash, and 3) Plus. The Basic No-Wash controller can be applied to any SmogHog PSH or PSG size or model. The Basic Wash controller can be applied to SmogHog PSG with 1-3 wash cleaning valves including PSG 11-1/11-2/11-3, 12-1/12-3/12-3, 13-1/13-2/13-3, 14-1, 21-1, 22-1, 23-1, 31-1, 32-1, 33-1. The Plus controller can be applied to any PSG model that has the ESP wash system. The Basic No-Wash, Basic Wash and Plus controller each include a 7-inch color touchscreen user interface to access the functions specific to each controller as listed below.

CONTROLLER FUNCTIONS	CONTROLLER MODELS		
	BASIC No-Wash	BASIC Wash	PLUS
PSG Models	All PSG, PSH	1-3 wash valves	All
Alarm messaging and logging	Yes	Yes	Yes
Blower Start Failure	Yes	Yes	Yes
Low Detergent Level			Yes
Fire Alarm	Yes		Yes
HMI Battery	Yes	Yes	Yes
Hood System Fault	Yes		Yes
Past 150 faults	Yes		Yes
Power Pack Fault	Yes		Yes
VFD Fault			Yes
VFD Running	Yes		Yes
Wash System Fault		Yes	Yes
BMS Integration	Yes		Yes
Common Fire Alarm	Yes		Yes
Power Pack Alarm	Yes		Yes
VFD Alarm	Yes		Yes
Wash Cycle Active			Yes
ESP Wash System		Yes	Yes
Day of Week, Time of Day		Yes	Yes
Hot Water Recovery		Yes	Yes
Wash Cycle, Custom		Yes	Yes
Wash Cycle, Standard		Yes	Yes
Wash Cycle, Solid Fuel		Yes	Yes
Fire Alarm Contact	Yes	Yes	Yes
Hood System Contact	Yes		Yes
HMI	Yes	Yes	Yes
Main Panel Mount	Yes		
Remote Mount		Yes	Yes
Main controller	Yes	Yes	Yes
Start/Stop Button	Yes		Yes
Power Light	Yes	Yes	Yes
Status Lights			Yes
Power Disconnect	Yes	Yes	Yes
Power Pack Status	Yes		Yes

1. SMOGHOG PLUS CONTROLLER OPERATION

1.1 Main Operation

These instructions require the following conditions:

- The system has been configured per initial configuration instructions (instructions begin on page 14).
- Main 3-phase power is on.
- 120VAC power is on.
- Detergent tank is full.
- All BMS signals are not in a fault condition.

If after power-up the main screen does not appear as shown in Figure 1, follow the initial configuration instructions.

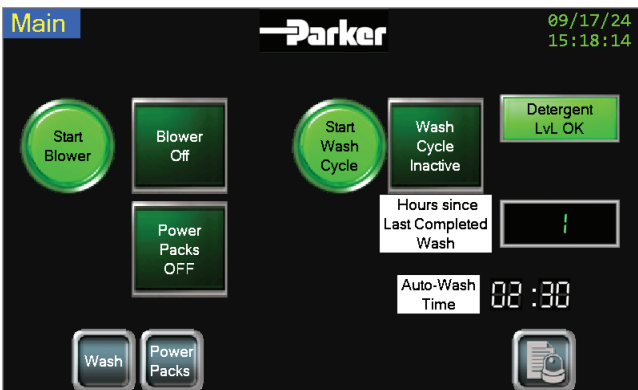


FIGURE 1. Main Operator Screen - Idle

1.1.1 Blower Running

1. Press the 'Start Blower' button to turn on the blower. The Blower Running indicator will illuminate when the blower is running.
2. The system is also equipped to accept a Blower Start signal from the client hood system seen in Figure 2a.



FIGURE 2. Main Operator Screen - Blower Running

NOTE: The Customer Start signal overrides the manual Start/Stop button. Manual control is only active when the customer start signal is turned off.



FIGURE 2a. Customer Start Signal

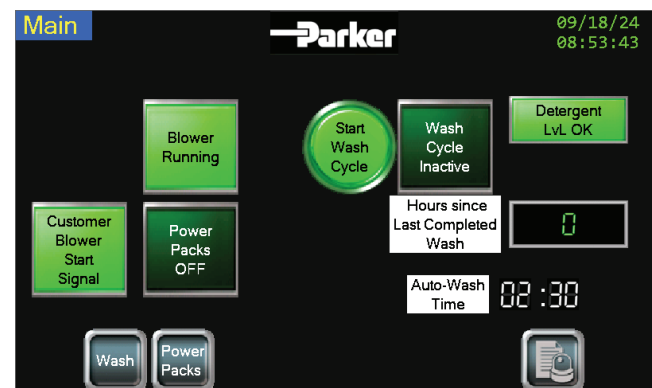


FIGURE 2b. Customer Start Signal - Blower Running

- 40 seconds after Blower Running turns on the Power Packs will turn on and the indicator will illuminate as shown in Figure 3.



FIGURE 3. Main Operator Screen - Power Packs ON

1.1.2 Wash Cycle

To start an On-Demand Wash Cycle:

- Press the green 'Start Wash Cycle' button. Wash Cycle Active will illuminate as shown in Figure 4. The Hours Since Last Completed Wash field will become the Wash Time Remaining field.



FIGURE 4. Wash Cycle Active

- As the wash cycle runs the indicator changes and provides information as to the state of the wash cycle. The stages are shown in Figures 4a-4g.

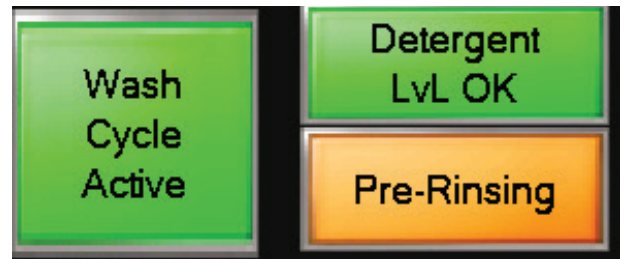


FIGURE 4a. Pre-Rinsing



FIGURE 4b. Washing



FIGURE 4c. Soaking



FIGURE 4d. Rinsing

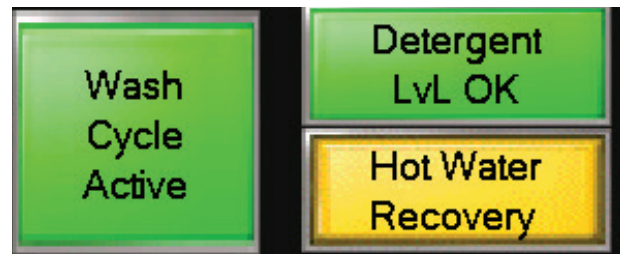


FIGURE 4e. Hot Water Recovery



FIGURE 4f. Draining



FIGURE 4g. Drying

- Once the Wash Cycle has completed, the display will revert back to Figure 2. Hours Since Last Completed Wash will read zero.

Wash Cycle Notes:

- When the wash cycle starts, the blower status changes to off and the Blower Start/Stop button disappears.
- When the wash cycle starts the dry out portion of the cycle, the blower will turn on.
- When the wash cycle completes, the blower will remain off until either the Start Blower button is pressed or a customer start signal is received.
- When Enable Over-ride activated, the wash cycle will override the customer start signal control of the blower.
- When Soap Next Wash button is pushed the system will use detergent during the next wash cycle.
- Press the "Wash" Button (located at the bottom of the display) to view wash configuration information.

1.2 Wash Cycle Details Screen:

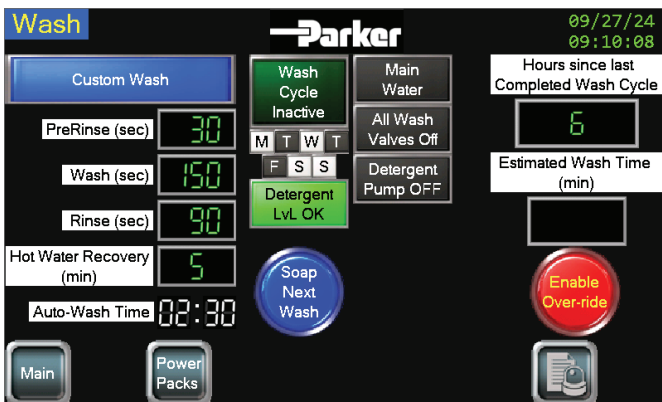


FIGURE 5. Wash Screen

The Wash Cycle Details screen displays:

- The wash profile selected.
- Wash timing associated with the selected wash profile.
- Wash Cycle Status.
- Days of the week selected for detergent usage (only for Custom Wash).
- Current step of the wash cycle.
- Status of the main water valve, wash valves, detergent pump, and detergent tank level.
- Count-down time remaining in current wash cycle.
- Time since last completed wash cycle.
- Auto-Wash time.
- Soap Next Wash
- Wash Over-Ride.

1.3 SmogHog Power Pack Alarming Screen

- To check the SmogHog Power Pack status, press the 'Power Packs' button located at the bottom of either the Main or Wash screens.
- The Power Pack alarming screen will match the unit layout selected, as shown in Figure 6a-6c.

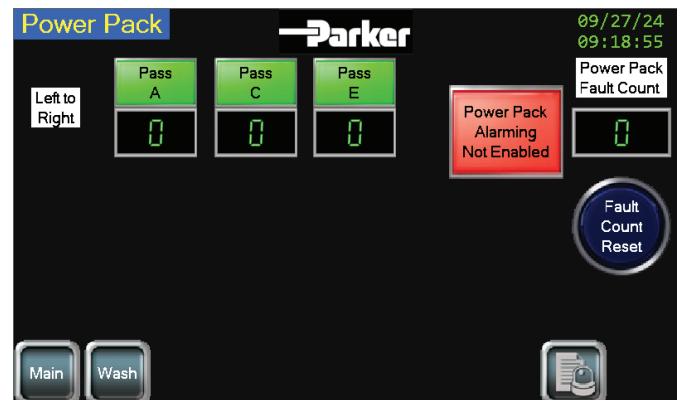


FIGURE 6a. ESP Tier Left to Right

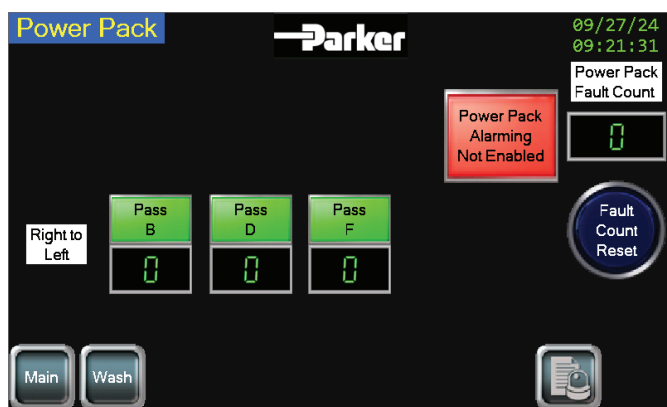


FIGURE 6b. ESP Tier Right to Left

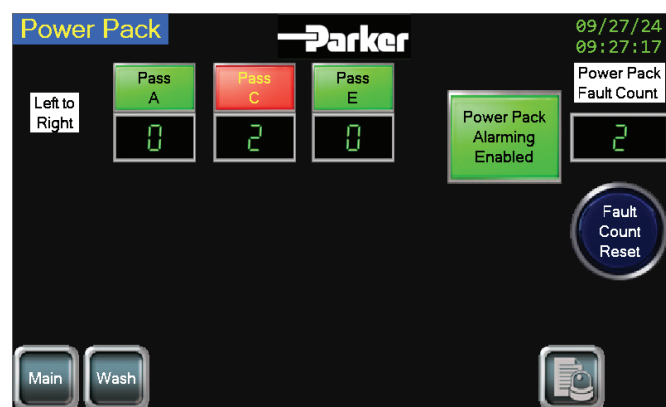


FIGURE 6d. ESP Tier Fault

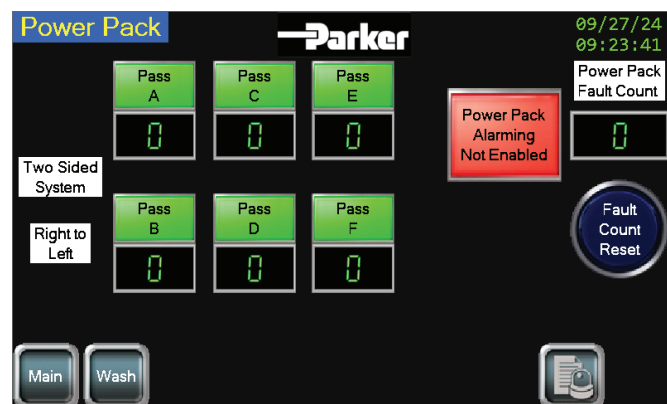


FIGURE 6c. ESP Tier two-sided system

Note: A Power Pack “fault” may be but is not limited to one of the following:

- When a Power Pack is no longer functional. This requires replacement.
- When a Power Pack is discharging to vaporize material the cell has collected.
- When SmogHog collection cell needs cleaning.
- When feed through insulator is cracked and bleeding current.
- When SmogHog collection cell is damaged, needs to be repaired or replaced.
- When SmogHog collection cell is still wet from the wash cycle. No action required.

3. If any Power Pack faults have occurred, the display will show how many per pass and the total number across all passes. Any active fault will display red as shown in Figure 6d below.
4. To reset the fault counters, press and hold the ‘Fault Counter Reset’ button for three seconds.

2. SMOGHOG MAINTENANCE

2.1 Maintenance Screens

Maintenance screens are provided for service and troubleshooting functionality. Maintenance screens are indicated by a gray background color in contrast to the black background of the operating screens.

1. To access the Maintenance screen menu, press and hold the 'Main' button located at the top left of the Main Operator screen shown in figure 7 below. Enter the technician level password using the pop-up keyboard.



FIGURE 7. Main Operator Screen



FIGURE 8. System Input Keyboard

2. Once the password is entered and accepted, the Main Maintenance screen will open.

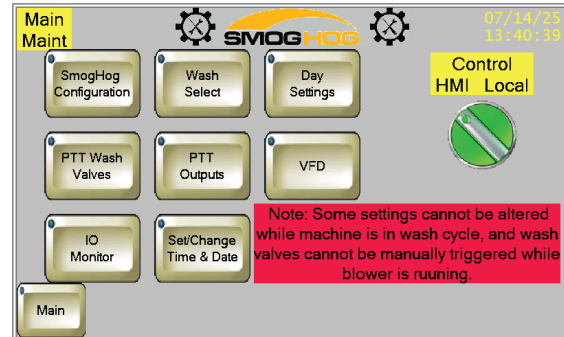


FIGURE 9. Main Maintenance Screen

The following maintenance functions/screens area available to select, as seen in Figure 9:

- HMI/Local control switch
- To test and verify the Wash Valves, Press the 'PTT (Push to Test) Wash Valves' button.
- To test and verify the BMS (Building Maintenance System) signals, press the 'PTT Outputs' button.
- To test and monitor the VFD, press the 'VFD' button.
- To test and verify other I/O, press the 'IO Monitor' button.

NOTE: As noted on this screen, if the machine is performing a wash or the blower is running you will not be permitted to access the associated screens.

The operation and functionality of each screen will be detailed later in this section.

2.2 HMI/Local Switch

This is a software feature that toggles the source of control inputs. Figure 10 shows the switch in Local position.

2.2.1 HMI Position

In the HMI position, all start & stop signals originate from the HMI. The controls on the main enclosure are ignored, with the exception of 'Wash Cycle Stop' and 'Blower Stop'. These remain enabled so that the system can be stopped locally without the HMI, which may be located remote.

2.3.2 Local Position

In the Local position, the system ignores the HMI controls. This is done for the safety when performing maintenance or service. In this position, the blower cannot be started, and a wash cycle cannot be initiated.

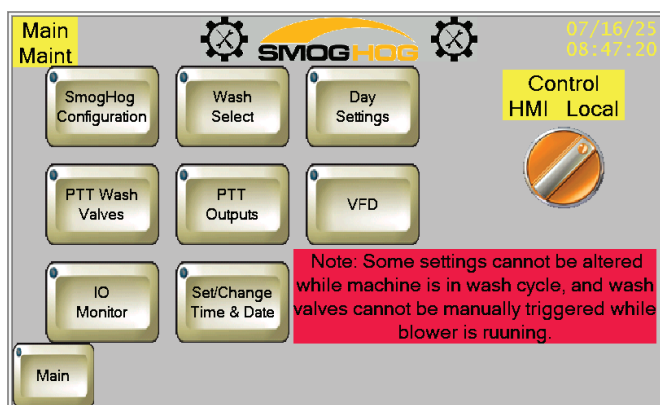


FIGURE 10. Main Maintenance Screen - Local

Once control has been switched to local press the 'Main' button on the Main Maintenance screen to return to the Main Operator screen. With the control set to Local, the Main Operator screen will have a flashing display as shown in Figure 11.

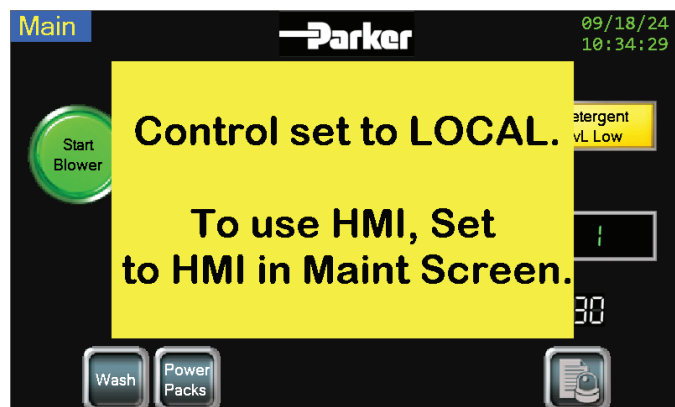


FIGURE 11. Main Operator Screen - Local Control

2.3 PTT Wash Valves Screen:



FIGURE 12. PTT Wash Valve Screen

Pressing the 'PTT Wash Valves' button opens the PTT Wash Valve screen seen in Figure 12.

The number of wash valves is determined by the system configuration. Figure 12 is an example of a 9 valve system.

By definition, Valve #1 will always be the top wash assembly of the first pass. On a double wide system Valve #1 will always be the top wash assembly of the first pass on the right-hand side (as viewed facing the inlet of the SmogHog).

Pressing and holding any of the buttons will turn on the selected valve while the button is held.

There are also buttons to turn on the Main Water Valve and the Detergent Pump.

With the Main Water Valve OFF, the wash valves will actuate without water.

If water is necessary for confirmation of function or inspection of spray nozzles press the Main Water Valve button to turn on, then press any of the wash valves. Wash valves will remain on for as long as the button is depressed.

When complete, press the Main Water Valve to turn it off.

Press the Previous button to return to the Main Maintenance screen.

NOTE:

Upon leaving the PTT Wash Valve screen, the Main Water Valve will be turned off.

NOTE: Only one button can be pressed at a time.

2.4 PTT Output Screens:

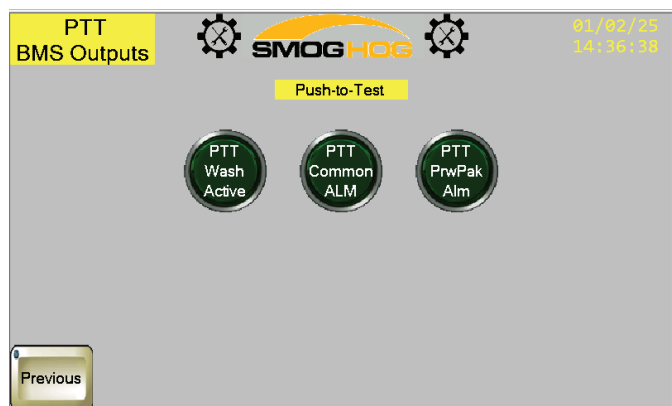


FIGURE 13. PTT Output Screens

Pressing the 'PTT Outputs' button opens the PTT Outputs screen seen in Figure 13.

The PTT Outputs screen allows verification BMS inter-connect signals.

Pressing and holding the buttons for Wash Valve Active, Common Alarm and Power Pack Alarm will turn on the selected signal while the button is pressed.

Press the Previous button to return to the Main Maintenance screen.

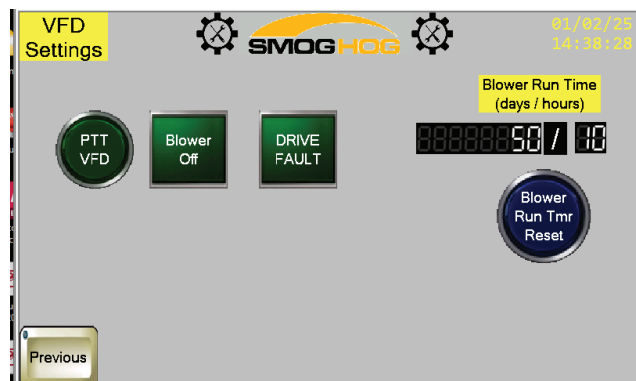


FIGURE 14. VFD Screen

2.5 VFD Screen:

Pressing the 'VFD' button opens the VFD screen seen in Figure 14. Press and hold the PTT VFD button to momentarily run the blower.

NOTE: If the blower is running, the PTT VFD button will not be visible, as shown in Figure 14a.

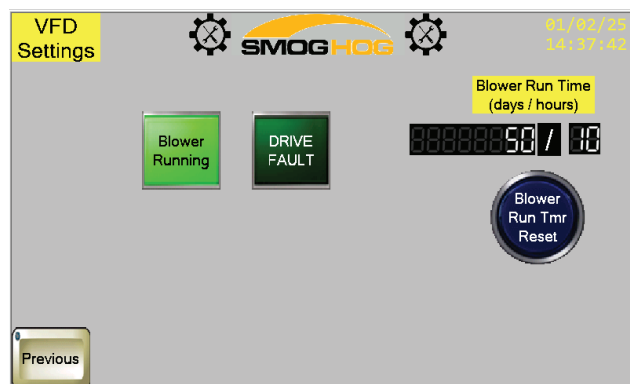


FIGURE 14a. VFD Screen - Running

The Blower Run Timer displays the total run time in days and hours the blower has been running.

If the blower is replaced, the 'Blower Run Timer Reset' button can be pressed and held for 5 seconds to reset the timer.

The Drive Fault indicator represents that a fault has occurred. Refer to the VFD display for additional details. Figure 14b shows a drive fault. In the event of an alarm or warning, the screen border will change to the associated event color.



FIGURE 14b. VFD Screen in Alarm

2.6 IO Monitor Screen:

Pressing the 'IO Monitor' button opens the IO Monitor screen seen in Figure 15.

The IO Monitor screen shows the current state of all inputs and outputs connected to the PLC. Orange indicates the input or output is active.

To identify the function of any of the I/O, press the point of interest. Figure 16 below shows DI05 being pressed and its corresponding ID.

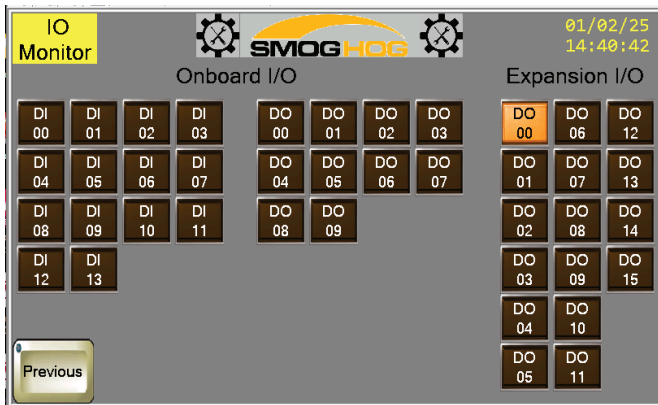


FIGURE 15. IO Monitor Screen

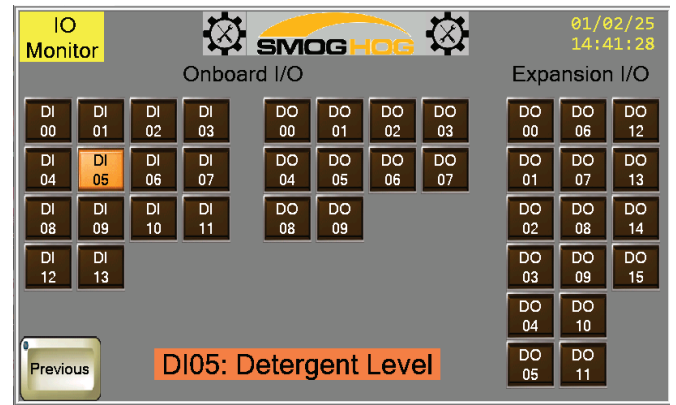


FIGURE 16. IO Monitor Screen - Identification

3. SMOGHOG INITIAL CONFIGURATION

On system initial power up and startup, the HMI will display as shown in Figure 17.

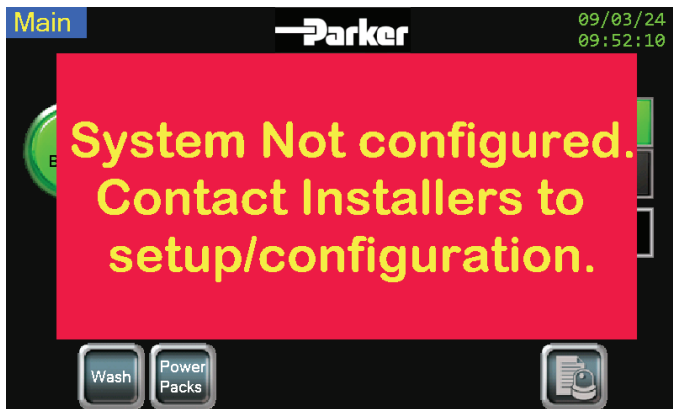


FIGURE 17. Main initial startup, unconfigured

1. To configure the system, press and hold 'Main' found in the top left of the screen for 3 seconds. Enter the appropriate level password using the pop-up keyboard.

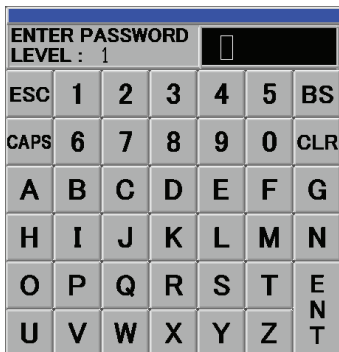


FIGURE 18. System Input Keyboard

2. Once the password is entered and accepted, the Main Maintenance screen will open.

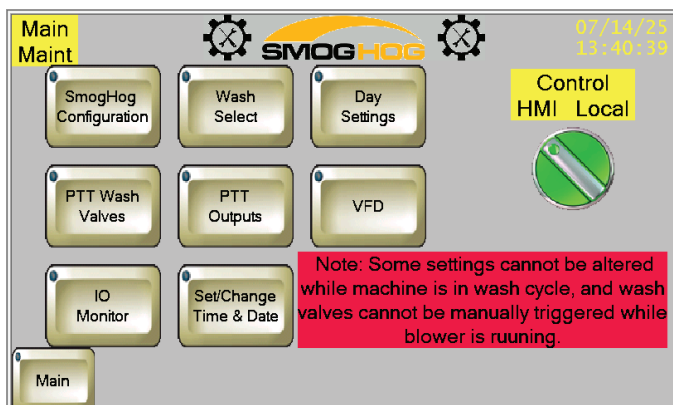


FIGURE 19. New Main Maintenance Screen

3. Press the 'SmogHog Configuration' button to begin configuration.

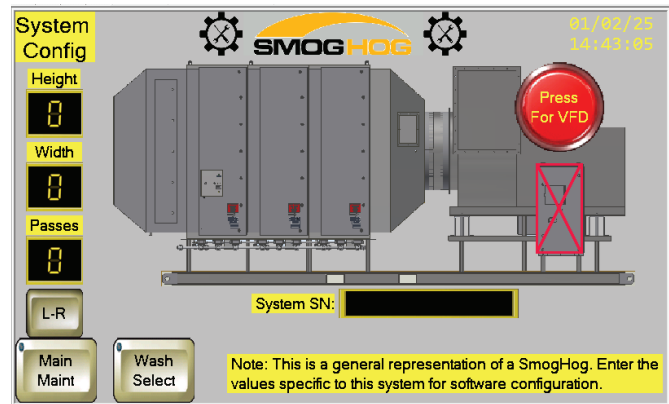


FIGURE 20. PSG Configuration

4. Press the 'Height' field to enter the system height (number of cells tall).
5. Press the 'Width' field to enter the system width (number of cells wide).
NOTE: If the width is wider than 3, the display will show "Double-Wide" as in Figure 20a.
6. Press the 'Passes' field to enter the number of passes.
7. Press the 'L-R' button to select if the system is oriented Left-to-Right or Right-to-Left.
NOTE: Pressing the 'L-R' button will change the orientation of the displayed system as shown in Figure 20b.

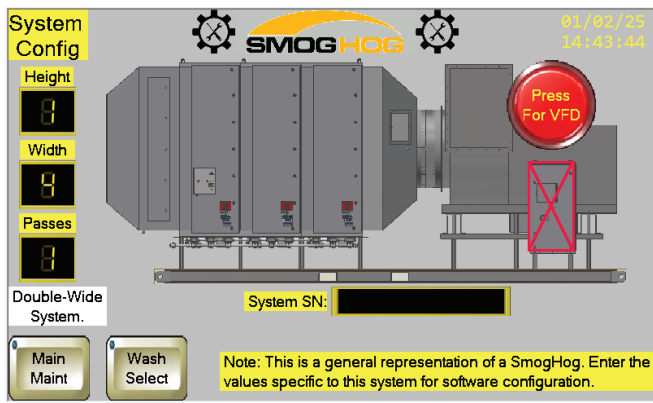


FIGURE 20a. Double Wide System



FIGURE 20d. Serial Number Keyboard

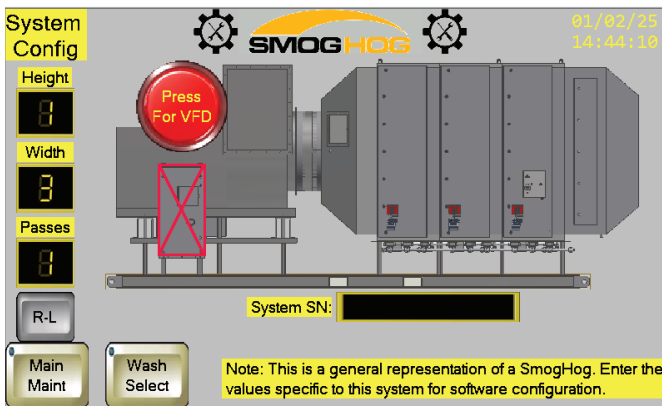


FIGURE 20b. Right to Left

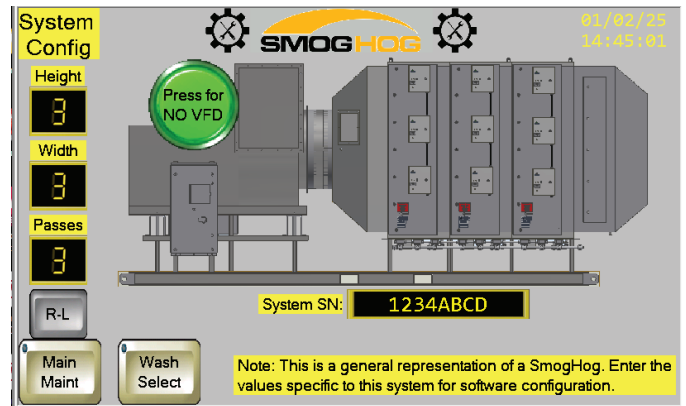


FIGURE 20e. Fully configured PSG system

8. If the system has a VFD, select the red 'Press For VFD' button.

NOTE: The crossed out area turns off and the button changes as shown in Figure 20c.

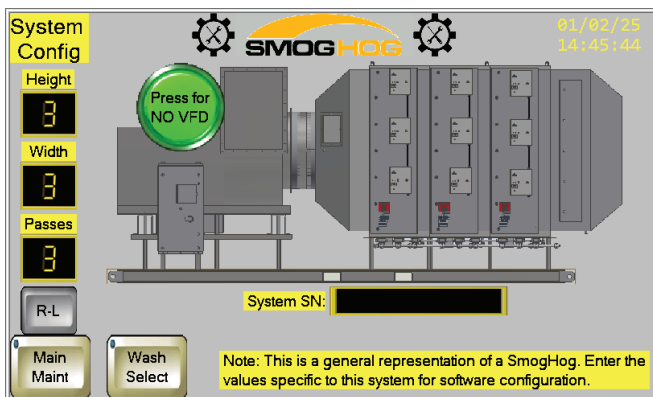


FIGURE 20c. VFD Selected

9. To enter the system serial number, press the 'System SN' field and use the alpha-numeric keyboard that pops up.

NOTE: System configuration screens are only accessible to authorized service technicians.

4. WASH PROFILE CONFIGURATION

The wash profile configuration is part of the initial system configuration. To make changes after the initial configuration is completed, select Wash Select from the Main Maintenance Screen and continue as directed in the following steps.

- From the 'Main' maintenance screen, press the 'Wash Select' button. Enter the appropriate level password using the pop-up keyboard.



FIGURE 21. Wash Profile Selection Screen

- Select the desired wash profile. If neither the 'Standard' or 'Solid Fuel' presets are appropriate for the specific application, select the 'Custom Wash' button.

NOTE: If either 'Standard' or 'Solid Fuel' are selected, the corresponding button changes from a circle to an illuminated square as shown below.



FIGURE 21a. Standard Wash Selected

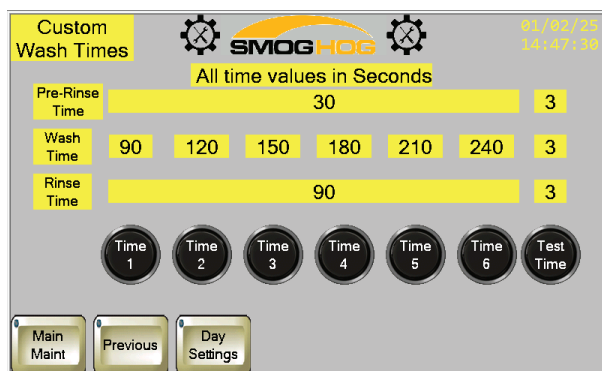


FIGURE 21b. Custom Wash Profile Selection Screen

- If 'Custom Wash' was selected, press the desired custom wash time.

NOTE: The Wash Time and selected time profile will change color and shape as shown in Figure 21b below.

NOTE: Skip this step if the 'Standard' or 'Solid Fuel' profile was selected.

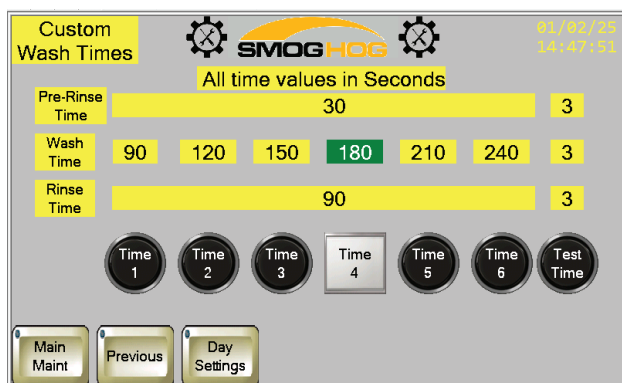


FIGURE 21c. Custom Wash Profile Selected

- Press the 'Day Settings' button to open the day of week screen as shown in Figure 21c.

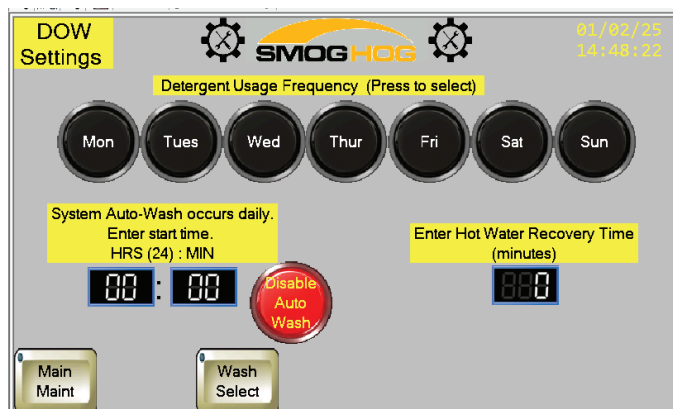


FIGURE 22. Day of Week Configuration Screen

5. Select the detergent usage frequency by pressing the desired days of the week for detergent to be used.

NOTE: The day of week button will change shape when selected as shown in Figure 22a.

6. Enter the Auto-Wash start time in hours and minutes for the auto wash to occur.

NOTE: The start time is in 24 hour format.

7. Enter the Hot Water Recovery time by pressing the Hot Water Recovery field.

NOTE: Field will accept values between 1 and 120min. Hot water recovery time occurs after operation of every 3rd valve. For example, a 15 valve wash system will have water recovery between valves 3 and 4, valves 6 and 7, valves 9 and 10, valves 12 and 13.

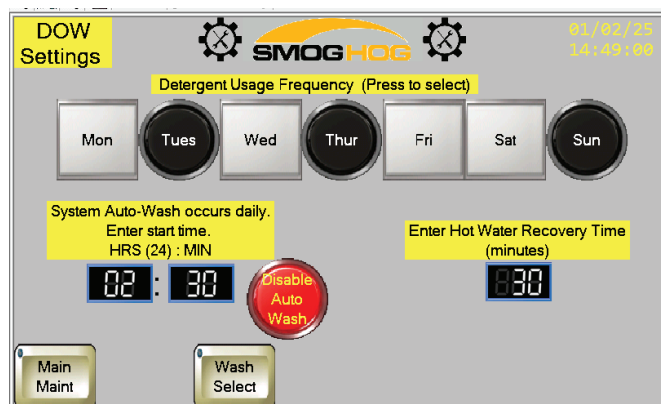


FIGURE 22a. Day of Week configuration screen showing detergent usage on Monday, Wednesday, Friday, and Saturday. Auto-Wash with a scheduled start time of 2:30am and a Hot Water Recovery time of 30min.

NOTE: To disable Auto-Wash press the red Disable Auto-Wash button. The wash time field will have a flashing red X through it and the button changed to green. In this mode, only an On-Demand wash is possible.

To reenable Auto-Wash, return to the Day of Week settings and press the green Enable Auto-Wash button.

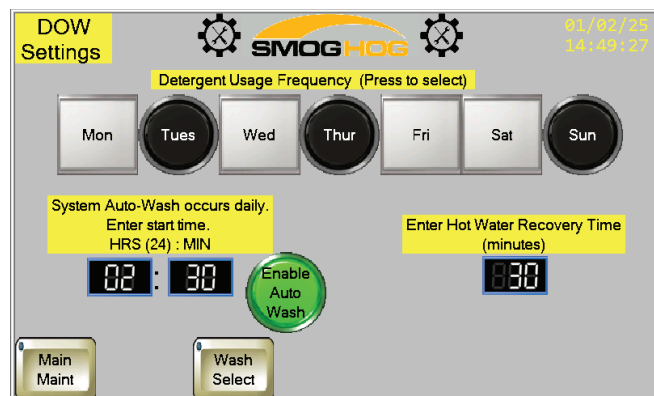


FIGURE 22b. Detergent Frequency Selection Screen – Auto-Wash Disabled

This completes the system configuration.

8. Press the 'Main Maint' button to return to the Main Maintenance screen.

NOTE: The 'SmogHog Configuration', 'Wash Select' and 'Day Settings' configurations screen are accessible to the end-user but are password protected such that an operator cannot readily access them.

NOTE: Hot water recovery is after every 3rd valve. So, if a system has 15 valves, it'll recover between 3 and 4, 6 and 7, 9 and 10, 12 and 13.

5. SMOGHOG ALARMING

5.1 Alarming

Alarms are triggered by the following events:

- VFD/Blower Fault
- BMS (Building Management System) Fire Alarm
- Blower failed to start.

Warnings are triggered by the following events:

- Power Pack Fault:
- Cumulative count of 150 faults within 30 minutes.
- Power Pack failure.
- Detergent Level low
- System has not been washed for 72 hours.
- Hood System fault
- HMI Battery Fault

1. During an Alarm Event, the borders of the Main Operator, Wash, and ESP Tier screens, will turn red and there will be an alarm banner across the screen. Figure 23 is an example of this state.

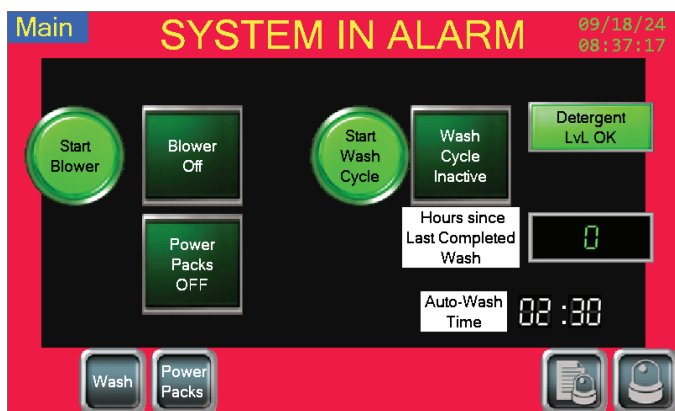


FIGURE 23. Alarm Event

2. A Warning Event will cause the borders of the screens to turn yellow as shown in Figure 24.

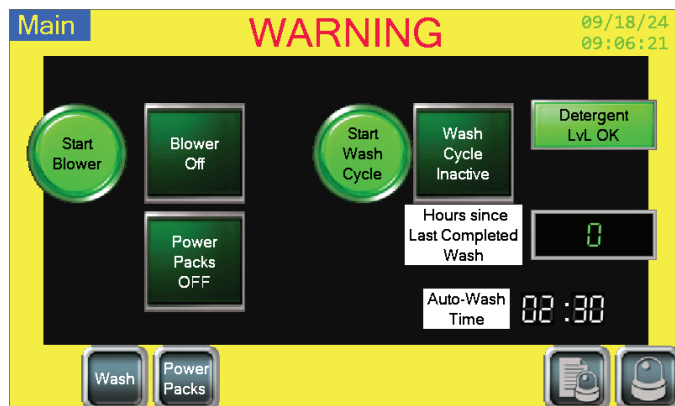


FIGURE 24. Warning Event

3. To view the active alarm or warning, press the 'Active Alarm' button located at the lower right corner of the display. This will take you to the Active Alarm screen.

NOTE: This button is only visible when there is an active alarm or warning.

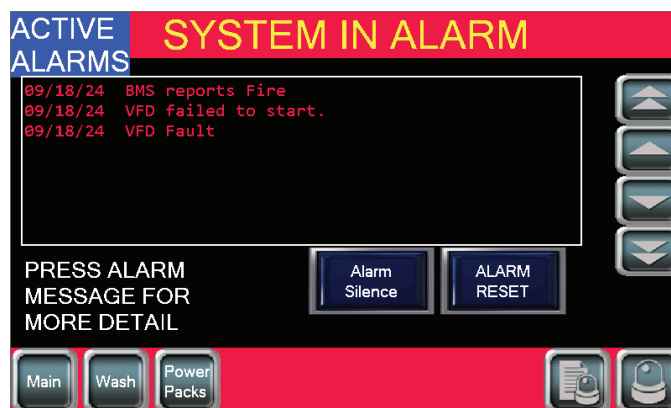


FIGURE 24a. Active Alarm Screen – Alarms



FIGURE 24b. Active Alarm Screen – Warnings

4. Press the 'Alarm Silence' button to hide the alarm/warning banner. The event will continue to show active on the active alarm screen.

NOTE: If another event occurs after the Alarm Silence button is pressed, the Alarm/Warning banner will turn on again.

5. Once an event is resolved the 'Alarm Reset' button can be pressed to remove the alarm.
6. The system will provide additional details for alarms and warnings. Select the event to get to the specific event details. Figure 25 shows an example detail screen for the VFD/Blower Fault alarm.

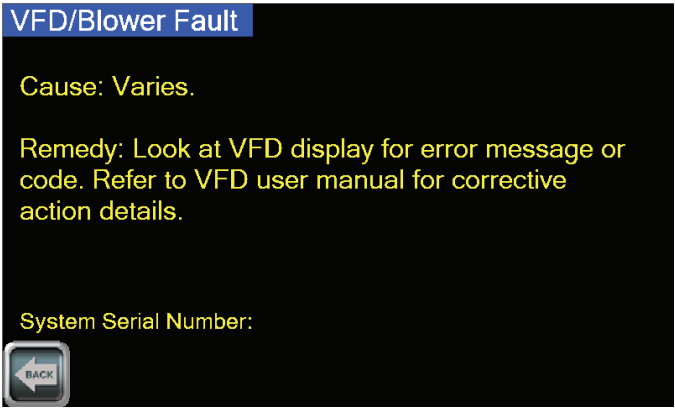


FIGURE 25. VFD Alarm Description

- 7. The system also provides an Alarm History page. The Alarm History button is available at all times on all the Operator screens. Figure 26 is the image used for the Alarm History button.



FIGURE 26. Alarm History Button

- 8. To scroll to past events, press the Scroll Enable button located on the right margin. Then press the up/down arrows to scroll. The single arrows scroll one entry. The double arrows jump 5 entries.
- 9. Alarm History spans for 100 FIFO (first in, first out) events. Although not an alarm or warning, the history also includes Wash Cycle Completed as shown in Figure 27.

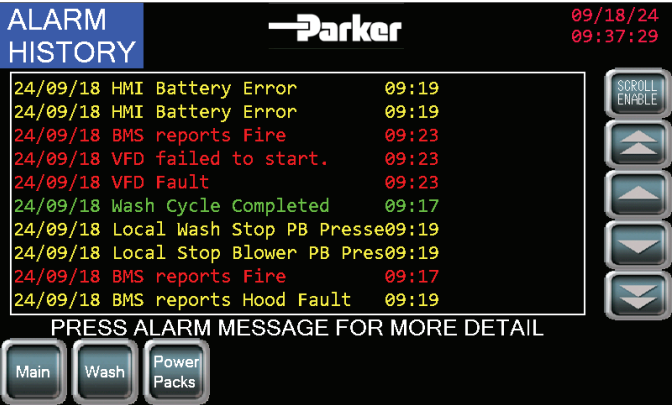


FIGURE 27. Alarm History Screen

5.2 Alarm Reset vs. Alarm Silence

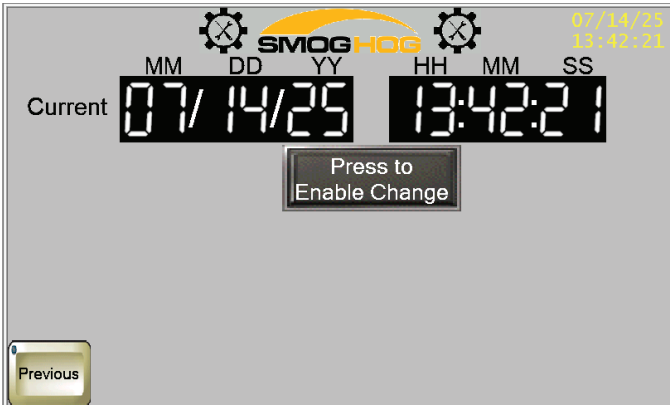
The Alarm Silence button will acknowledge a warning. This will turn off the banners and resets the system to react on the next warning/alarm event. However, if the trigger condition is not resolved, the fault will remain listed on the Active Alarm screen.

The Alarm Reset button will only reset any active warning/alarm after the trigger condition has been remedied. If the Alarm Reset button is pressed but the trigger condition is not resolved, the warning/alarm banner will remain on and the fault message continue to appear on the Active Alarm screen.

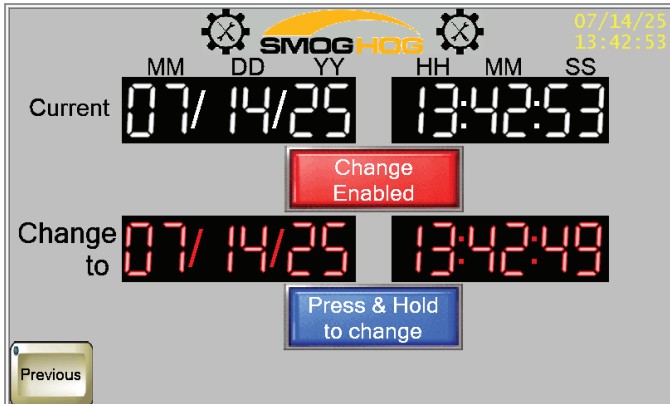
6. SETTING HMI DATE & TIME

6.1 How to navigate

1. From the main maint screen, press the Set/Change Time & Date button.
2. The Set/Change screen will open.



3. Press the Enable Change button.



Note:

- a. Button changes to red and reads Change Enabled.
- b. Change To fields appear for date and time.

4. Press on the number in red that you want to change.

Note:

- a. Numeric keyboard pops up.



5. Enter value.
6. Numeric keyboard disappears.
7. Repeat steps 4 and 5 until the date and time have been changed as desired.
8. Press and hold the blue change button for 3 seconds for change to take affect.

NOTE:

After change is made, the Change Enable button returns to it's previous state and the date and time entry fields disappear.

Hit the Previous button in the lower left to return to the main maint screen.

IF at any time before pressing the blue change button, the user changes his/her mind, press the Change Enabled button to disable it.

Previous button will also reset the Change Enabled button.

7. DRAWINGS

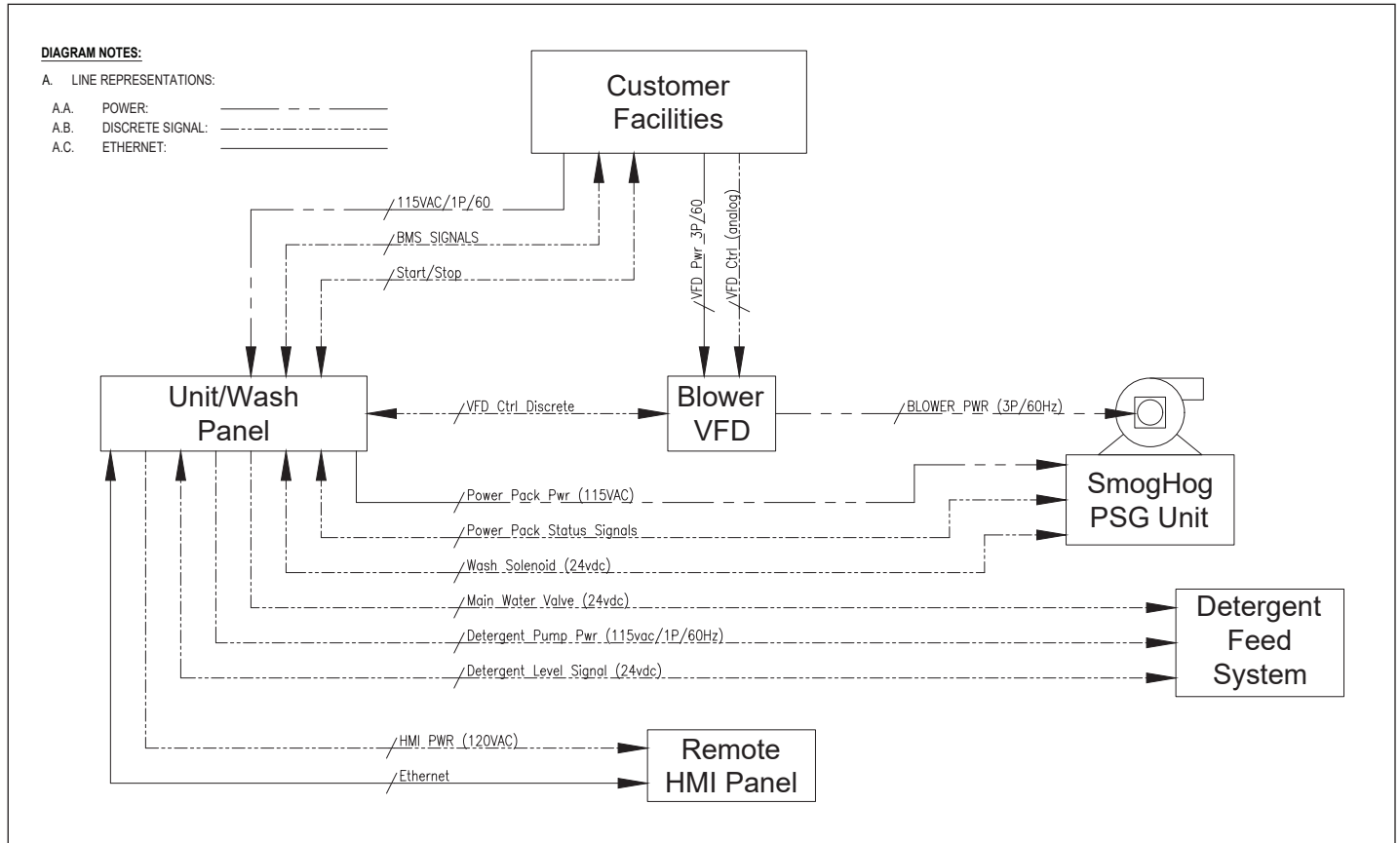


Figure 9. General Electrical Interconnect







Parker Hannifin Corporation
**Industrial Gas Filtration
and Generation Division**
4087 Walden Avenue
Lancaster, NY 14086
phone 800 343 4048
www.parker.com

PH_IJU_SMOGHOG Controller_User Manual
44-10703 Rev: -

Your Local Authorized Parker Distributor

© 2024 Parker Hannifin Corporation

