STREIVOR™ AIR SYSTEMS

Self-Cleaning Water Wash Hoods

Installation and Operations Manual

Standard Features:

- 360° Rotating Manifold with Nozzles
- Collection Trough Pitched to Waste Drain
- Plumbing Control Station
- PLC Controls
- Programmable Wash & Purge Cycles
- Grease Extractor and Fan Status Monitoring
- 3-Gallon Stainless Steel Detergent Tank
- Programmable Detergent Pump
- Backflow Prevention System
- Water Hammer Arrestor
- **Optional:** Fogging System

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Acronyms

BMS	Building Management System
CKV	Commercial Kitchen Ventilation
DCKV	Demand Control Kitchen Ventilation
DCP	DemandAire Control Panel
FSS	Fire Suppression System
HMI	Human Machine Interface
IHF	Internal Hood Fan
MUA	Make Up Air
PCS	Plumbing Control Station
PDE	Pump Drive Enclosure
PLC	Programmable Logic Controller
PTC	Programmable Time Clock
RTD	Resistance Temperature Detector
VFD	Variable Frequency Drive
WJ	Auto Wash Junction Box

General Information

System Overview

Streivor's Self-Cleaning Water Wash Hoods provide a self-cleaning solution for Type I Commercial Kitchen Hoods. Pressurized hot water and detergent is delivered through a 360° Rotating Manifold that has strategically placed nozzles equally spaced along the length of the manifold. The pressurized water nozzles are engineered to have an overlapping spray pattern that ensures 100% coverage and cleaning of the hood exhaust plenum. The 360° rotating nozzles wash an area up to eight times greater than a fixed nozzle, thus significantly decreasing the number of nozzles, water, energy and detergent required to completely wash the hood exhaust plenum and grease extractors. Grease and other contaminants washed from the hood exhaust plenum and extractors drain into a stainless steel pitched trough. The pitched trough channels all of the water, detergent, grease and contaminants to a 1 1/2" NPT drain. The drain is connected to the facility's waste water and grease trap systems.

Streivor's Self-Cleaning Water Wash Hood reduces or eliminates the need to manually clean the hood exhaust plenum and grease extractors. It also reduces duct cleaning & maintenance intervals saving additional time and money while providing a safer work environment for the kitchen staff.

Streivor's Auto Wash Controls are capable of integrating up to 6 hoods into one control. The hood controls can be programmed to automatically wash in sequence day or night 24/7/365 or can be manually activated at the Human Machine Interface (HMI) touch screen. Important settings such as scheduled wash cycle start times, frequency of wash cycles, duration of wash and rinse cycles, detergent flow rates, and more can be viewed and/or adjusted for each individual hood from the HMI. Operational and safety alarms such as missed or cancelled wash cycles, grease extractors not in position, low detergent flow rate, etc. are displayed on the HMI in real time and provide information on how to resolve each alarm.

Optional: Fogging System

Ventilating commercial kitchens that employ heavy-duty and extra heavy-duty cooking appliances creates several additional building, fire and safety challenges. High temperature plumes and/or the sparks and creosol that are generated when using solid fuel cooking appliances create havoc on the ventilation fans and secondary pollution control devices, often melting and/or deteriorating the components of the rooftop equipment. High temperatures can lead to failure of gaskets, filters, motors or even worse result in fires in the ducts and/or rooftop equipment.

Streivor's Fogging Systems employ pressurized water through misting nozzles that are installed in the exhaust collar(s) of the hood. As the high temperature plume passes through the hood exhaust collar, the misting nozzles spray a water fog into the plume that reduces the plume temperature.The amount of fogging can be increased or decreased to meet the exhaust plume's volume and temperature and/or requirements of the rooftop equipment. Fogging systems also provide added safety and fire protection when used over extra heavy-duty solid fuel cooking appliances by cooling and arresting embers and/or sparks that pass through the hood grease extractors and are entrained in the exhaust plume.

Streivor's Fogging System can be the ideal solution for reducing exhaust plume temperatures in Type I duct systems. Fogging can be added to any Streivor Self-Cleaning Hood System or can also be provided as a stand-alone system.

General Information

Self-Cleaning Hood Subsystems

Streivor's Self-Cleaning Hood Systems consist of three major subsystems: a Hood, a Plumbing Control Station and a DemandAire Control Panel.

Hood

A Hood is engineered to capture, contain, and exhaust the plume that is created from cooking appliances during the cooking process. Streivor's Self-Cleaning Water Wash Hood is also designed to house the grease Extractors, Rotating Manifold with nozzles, which creates rotating overlapping curtains of water, and a stainless steel collection trough that is pitched to a drain. The Hood captures the plume created by cooking appliances under it. The Extractors remove grease and other particulates entrained in the exhaust plume. The Rotating Manifold facilitates the delivery of pressurized hot water and detergent to the nozzles. The nozzles have linear spray patterns that form curtains of water that wash and sterilize the hood and Extractors.

During the Wash Cycle, the nozzles rotate in communication with the manifold and create pressurized waves of hot water and detergent that scrub away the grease particulates in or on the Extractors and the Hood Exhaust Plenum. When the Hood's Wash Cycle ends, the Hood's Sterilization Cycle begins.

During the Sterilization Cycle, the nozzles rotate in communication with the Rotating Manifold and create pressurized waves of hot water that sterilize the Extractors and Hood Exhaust Plenum. The grease collection trough collects all of the fluids and grease particulates. The trough is pitched to a drain. The drain is to be connected to the building grease collection system.

Plumbing Control Station

The Pluming Control Station (PCS) is housed in a stainless steel cabinet. The PCS includes all of the plumbing devices required to receive the building's hot water supply, to regulate pressure and volume, to store and inject detergent, and to deliver fluids on demand to the Hood's Rotating Manifold Nozzles. The PCS includes components such as: Pressure and Temperature Gauge, Wye Strainer, Backflow Preventer, Check Valve, Water Hammer Arrestor, Detergent Tank, Detergent Pump and Manual Ball Valve. The stainless steel PCS cabinet includes a collection trough to collect any possible water spillage from the backflow preventer. The collection trough is pitched to a drain and is to be connected to the building waste water system. The PCS is preferably installed on the side of the hood but can also be remotely located on a wall.

DemandAire Control Panel

The DemandAire Control Panel (DCP) is housed in a stainless steel Type I Enclosure. The DCP includes all of the electrical devices required to receive incoming building power. The DCP will be programmed to automatically send out power and/or control signals to open and close valve(s), start and stop the detergent pump, start and stop the Rotating Manifold, and control or communicate with other devices such as the Human Machine Interface (HMI). The DCP contains components such as: a Programmable Logic Controller (PLC), Power Supply, Relays, and Terminal Blocks. The DCP is preferably installed on the side of the hood in a Hood Utility Cabinet. However, the DCP can also be remotely located on a wall or ceiling.

System Cycles

Streivor's Self-Cleaning Water Wash Hoods have two distinct System Cycles: Wash and Purge.

The Wash Cycle provides a fluid mixture of hot pressurized water and detergent to the Rotating Manifold Nozzles. The linear spray patterns of the nozzles create rotating waves that scrub away the grease particulates in the grease Extractors and Hood Exhaust Plenum area. The Wash Cycle time duration, time of day, and day of week scheduling is 100% programmable. The number of days per week the Wash Cycle is active and the duration of time that the Wash Cycle runs will be set to meet the demands of the cooking appliances and the cooking processes below each hood.

General Information

Wash Cycle Sequence of Operation

The Wash Cycle consists of two independent cycles: the Detergent Cycle and the Sterilization Cycle.

When the Wash Cycle is activated, the Detergent Cycle begins and the DemandAire Control Panel (DCP) energizes the:

1. Hood Manifold Motor which starts rotating the manifold and nozzles
2. Hood Fluid Inlet Valve located on top of the hood which allows fluid to flow from Plumbing Control Station (PCS) to the Rotating Manifold
3. Detergent Pump located in the PCS which begins to inject detergent into the hot water wash supply pipe

The Wash Cycle will run for the time duration that was programmed by the commissioning agent. When the Wash Cycle ends the Sterilization Cycle begins.

When the Sterilization Cycle is activated, the DCP de-energizes the Detergent Pump, which ends the injection of detergent into the hot water wash supply pipe.

When the Sterilization Cycle ends, the DCP de-energizes the:

1. Hood Fluid Inlet Valve which shunts the flow of hot water from the PCS to the Rotating Manifold
2. Hood Manifold Motor which shunts the rotation of the manifold and nozzles

The Sterilization Cycle will run for the time duration that was programed by the commissioning agent.

Purge Cycle Sequence of Operation

The Purge Cycle provides hot water to the Rotating Manifold and rotates the manifold approximately three revolutions. For each hood, the Purge Cycle should be activated every day that the Wash Cycle is not activated. The Purge Cycle has a factory preset time duration. The Purge Cycle ensures that all stagnant water is removed from the Rotating Manifold and other system pipe fittings. The Purge Cycle also removes any grease particulates that may have accumulated on the nozzle orifices.

When the Purge Cycle is activated, the DemandAire Control Panel (DCP) energizes the:

1. Hood Manifold Motor which starts rotating the manifold and nozzles
2. Hood Fluid Inlet Valve located on top of the hood which allows fluid to flow from Plumbing Control Station (PCS) to the Rotating Manifold

When the Purge Cycle ends, the DCP de-energizes the:

1. Hood Fluid Inlet Valve which shunts the flow of hot water from the PCS to the Rotating Manifold
2. Hood Manifold Motor which shunts the rotation of the manifold and nozzles

The Purge Cycle will run for the time duration that was preset at the factory.

Notes:

- Each Streivor Self-Cleaning Water Wash Hood requires plumbing and electrical connections to and from the Plumbing Control Station and the DemandAire Control Panel
- Plumbing Control Stations and DemandAire Control Panels can operate up to six individual hoods per control
- Auto Wash Controls operate each Self-Cleaning Water Wash Hood and each System Cycle independently
- Auto Wash Controls operate only one Self-Cleaning Water Wash Hood at a time
- Auto Wash Controls operate only one System Cycle at a time
- System Cycles (Wash and Purge) are 100% customizable and offer 24/7/365 start/stop programming (Refer to the *Operations* section of this manual for operating and programming instructions)

General Information

Extractor Positioning Switches

Streivor's Self-Cleaning Water Wash Hoods include Extractor Positioning Switches for each Grease Extractor. The Extractor Positioning Switches ensure that all of the Grease Extractors are in the correct position in the hood exhaust plenum before and during a wash/purge cycle. This prevents water from spraying outside of the hood exhaust plenum and onto the floor or cooking appliances if the extractors are not in position for any reason. If the extractors are not in the correct position during a wash/purge cycle, a Cycle Missed Alarm will occur and the wash/purge cycle for that hood will be skipped. In addition, if an extractor is not in the correct position while the hood is exhausting, an Extractor Position Alarm will occur (refer to the *Alarms* section for more information).

The Extractor Positioning Switches are located behind the Switch Housing Cover.

Figure 1: Extractor Positioning Switch Housing Cover

If necessary, an Extractor Positioning Switch can be accessed for replacement. Power must be turned off to the DemandAire Control Panel (DCP) when accessing the Extractor Positioning Switch(es).

WARNING: Do not turn off power to the DemandAire Control Panel if cooking appliances are in use or generating heat below the hood(s) as the kitchen hood exhaust fan will turn off and excessive heat in the hood(s) may cause the fire suppression system to activate.

General Information

After power has been turned off to the DCP, remove the screws on the front of the Switch Housing Cover and remove the Switch Housing Cover. Each Extractor Positioning Switch is mounted to a Switch Bracket which can be accessed through the openings shown below.

Figure 2: Extractor Positioning Switch Access Opening with Switch Housing Cover Removed

The Switch Bracket can be removed to allow access to the Extractor Positioning Switch.

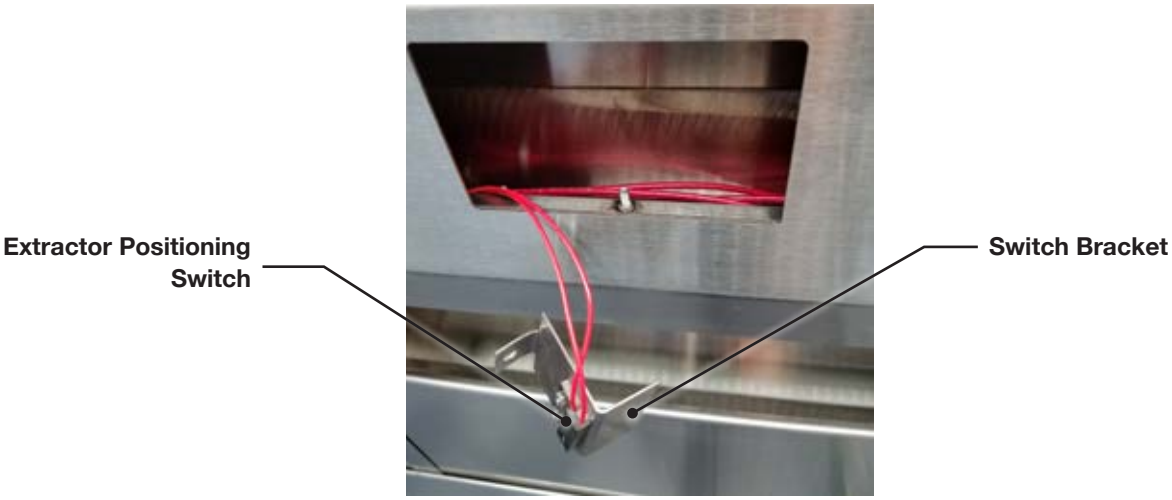


Figure 3: Extractor Positioning Switch

For every Extractor Positioning Switch mounted in the hood as shown above, an Extractor Positioning Switch Actuator is located in the top of each Grease Extractor. The Extractor Positioning Switch Actuator is a magnetic device which can be accessed by removing the Actuator Cover from the rear upper section of the Grease Extractor as shown below.

Figure 4: Extractor Positioning Switch Actuator

General Information

Extractor Positioning

To properly install and position the Grease Extractors in the hood exhaust plenum, it is important to first identify the three types of Self-Cleaning Water Wash Hood Grease Extractors: Right Extractor, Middle Extractor(s), and Left Extractor.

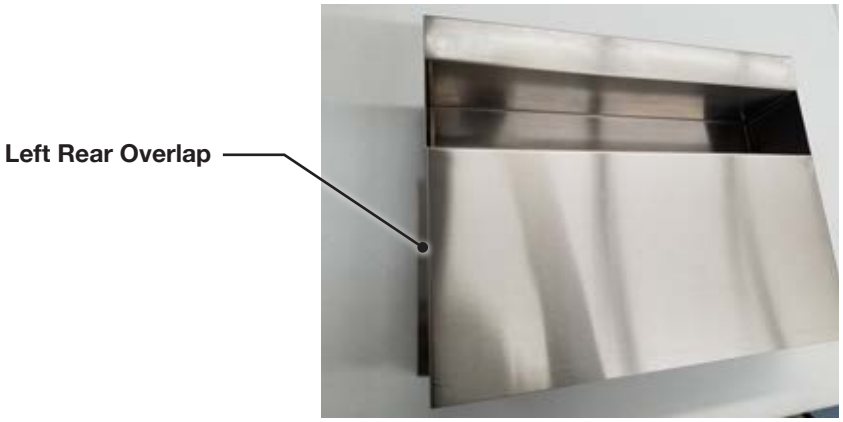


Figure 5: Right Grease Extractor

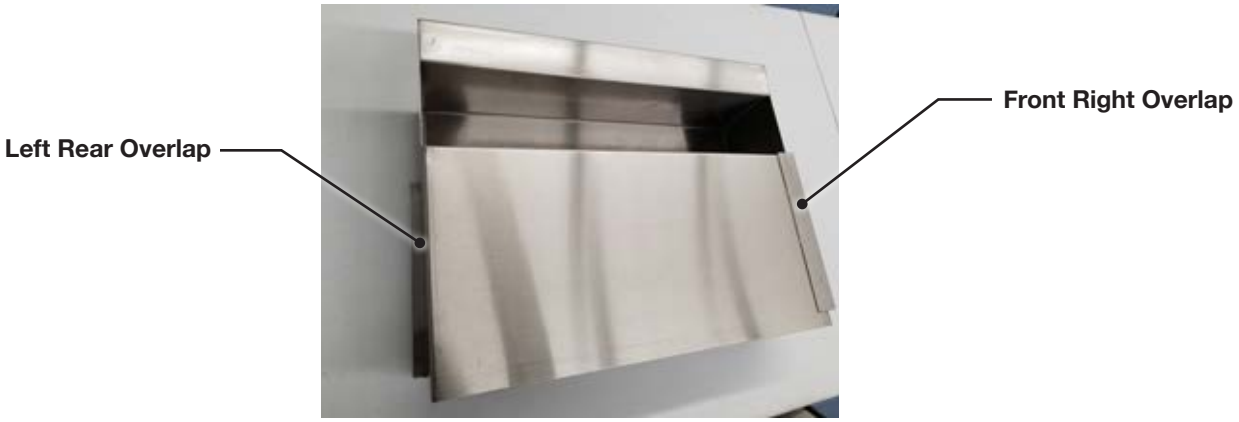


Figure 6: Middle Grease Extractor(s)

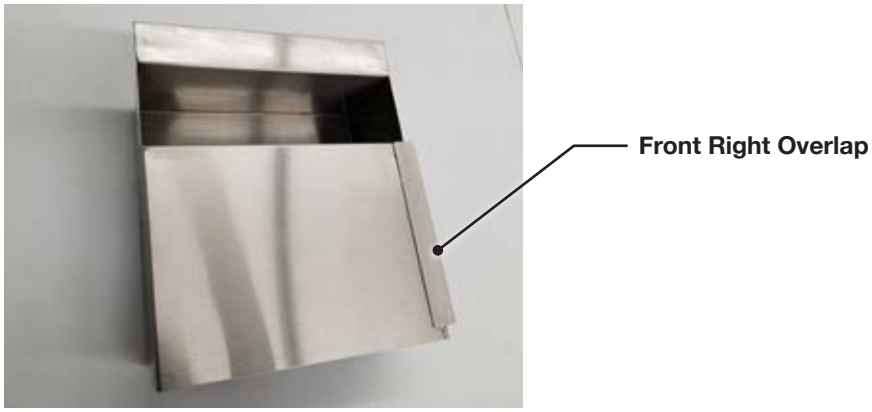


Figure 7: Left Grease Extractor

General Information

The Right Grease Extractor must be installed first and slid as far to the right as possible behind the Right Extractor Blank. To install the Grease Extractors, push the top of the Grease Extractor into the upper filter track and then push the bottom of the Grease Extractor towards the rear of the hood. The Grease Extractor will rest on the lower filter track once installed.

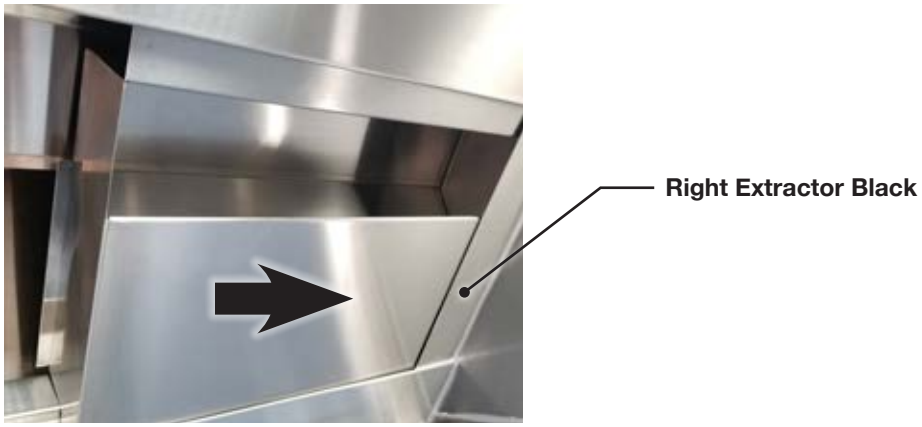


Figure 8: Install Right Grease Extractor

Figure 9: Install Middle Grease Extractor(s)

Each Middle Grease Extractor can then be installed as shown above.

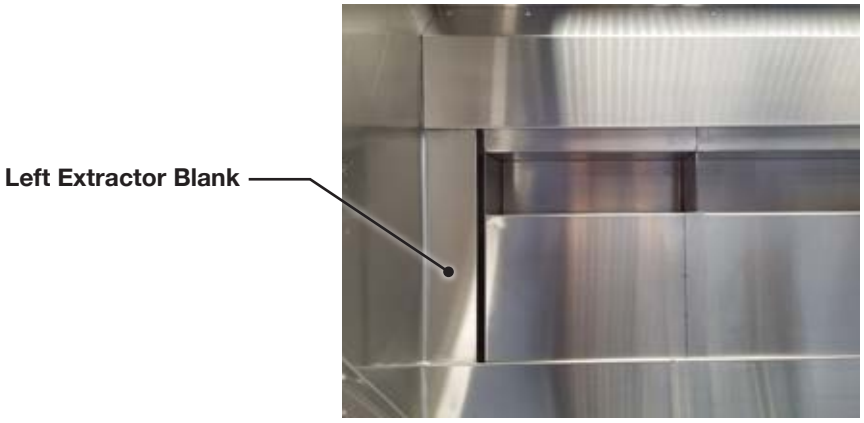


Figure 10: Install Left Grease Extractor

Install the Left Grease Extractor last.

General Information

Once all of the Grease Extractors are installed in the hood exhaust plenum, slide the Left Grease Extractor as far to the left behind the Left Extractor Blank as possible until it rests against the integrated stop. Slide the Middle and Right Grease Extractors to the left to eliminate any gaps in between the Grease Extractors.

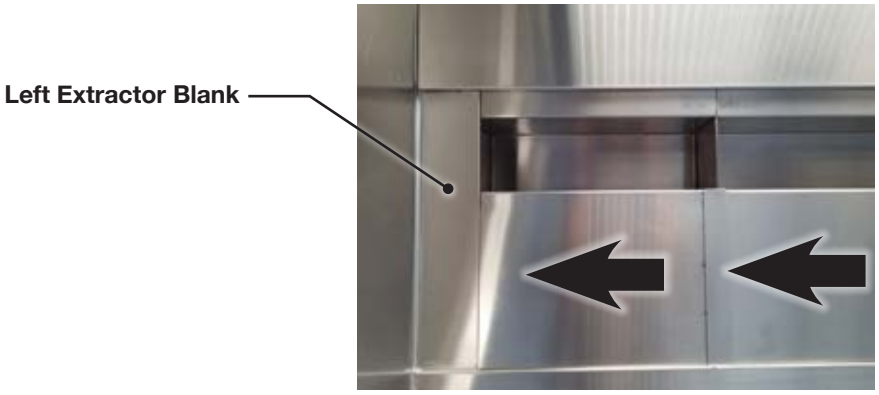


Figure11: Slide All Extractors into Left Extractor Bannk

After all Grease Extractors are properly positioned, the Left Extractor Blank should overlap the front of the Left Grease Extractor by approximately 3/4" and the Right Extractor Blank should overlap the front of the Right Grease Extractor by approximately 3/4".

Refer to the System Status Screen on the HMI Touch Screen for Extractor Positioning Status for each hood to verify that the Grease Extractors are properly positioned to allow wash/purge cycles to operate. Refer to the *Operations* section of this manual for more information regarding the System Status Screen.

Figure12: All Grease Extractors Installed

General Information

Self-Cleaning Hood System

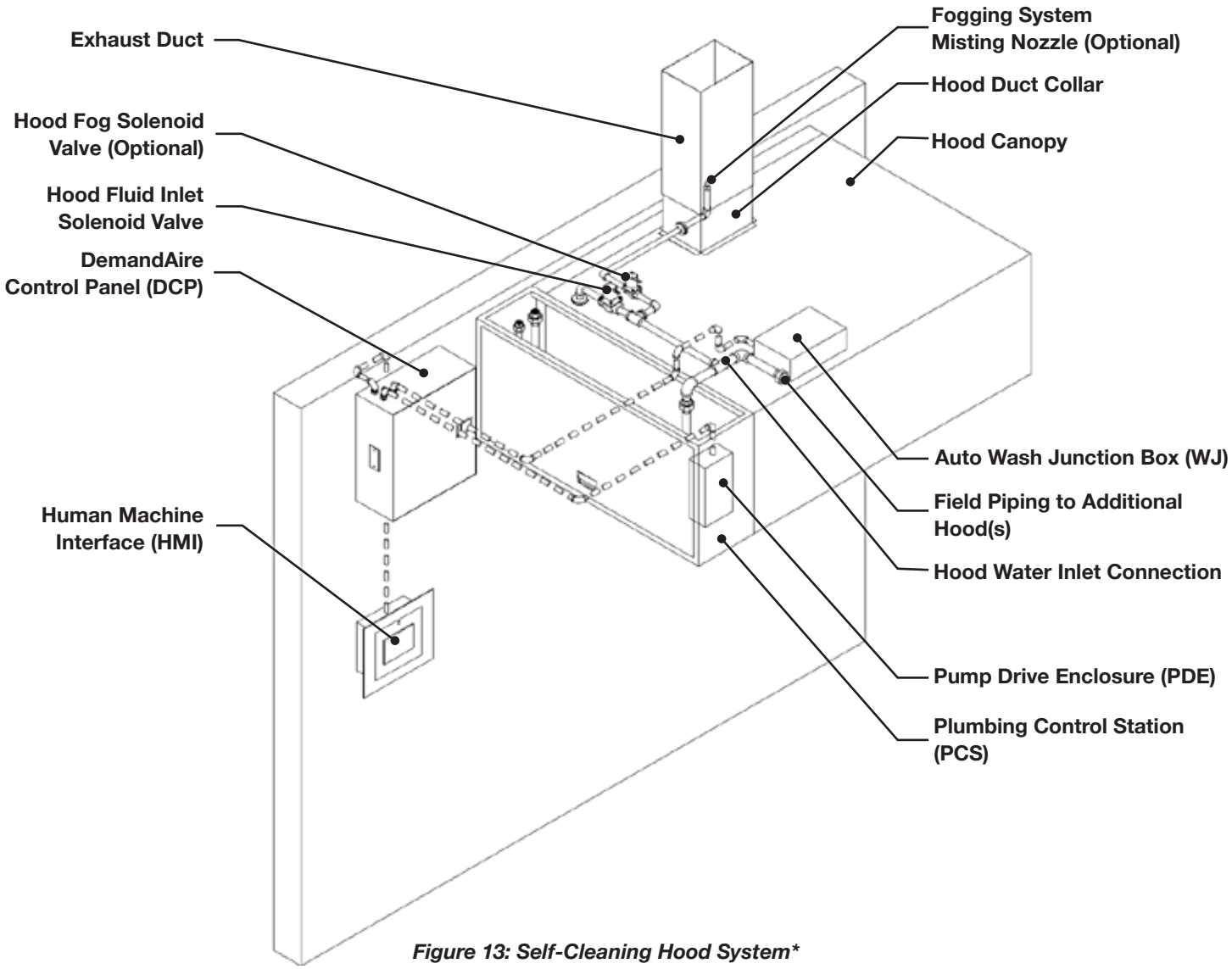


*Figure 13: Self-Cleaning Hood System**

*(See Streivor Self-Cleaning Hood System Drawings for actual sizes and Locations.)

General Information

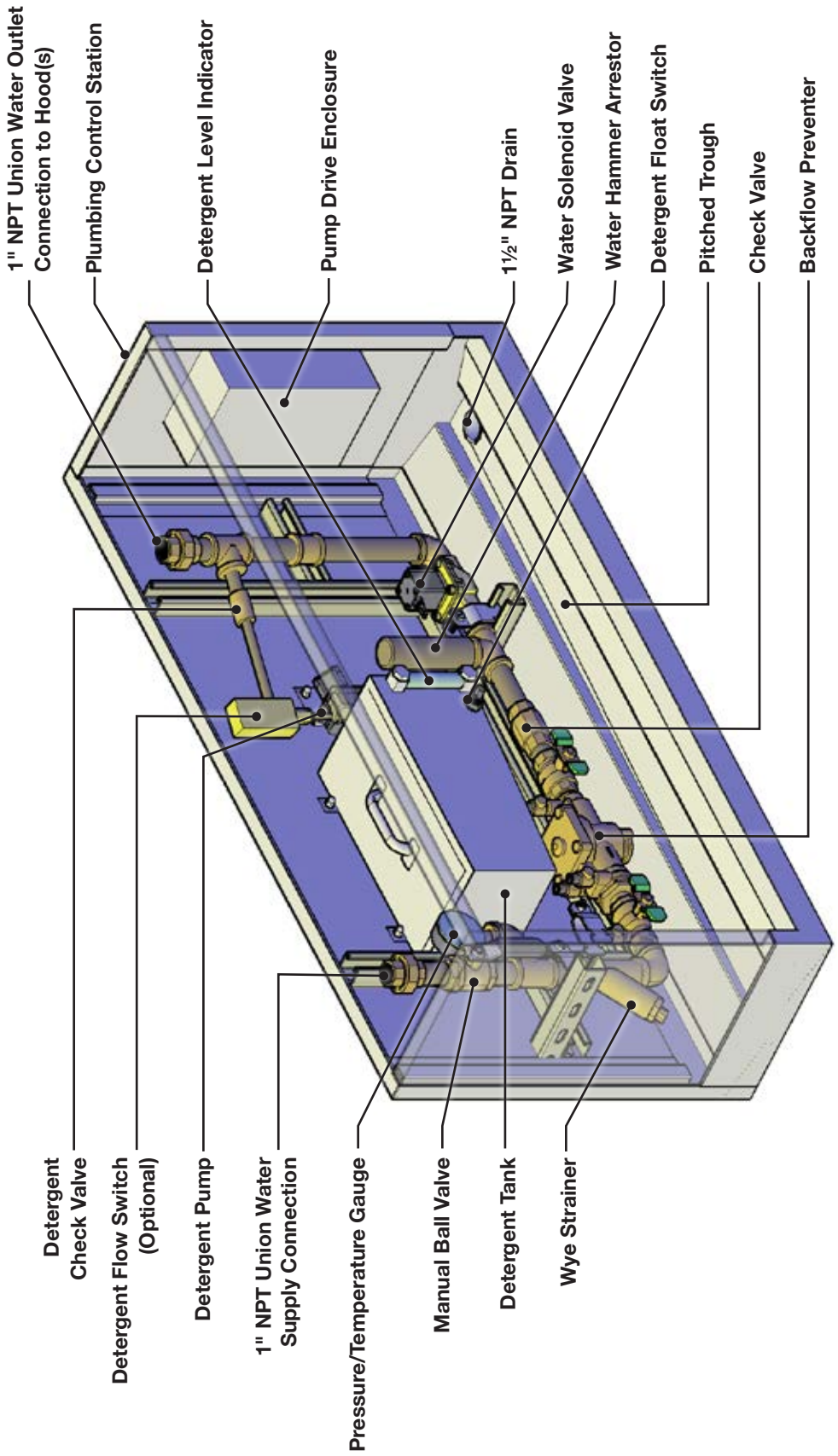


Figure 14: Plumbing Control Station with Optional: (Hot Water Fogging System)

General Information

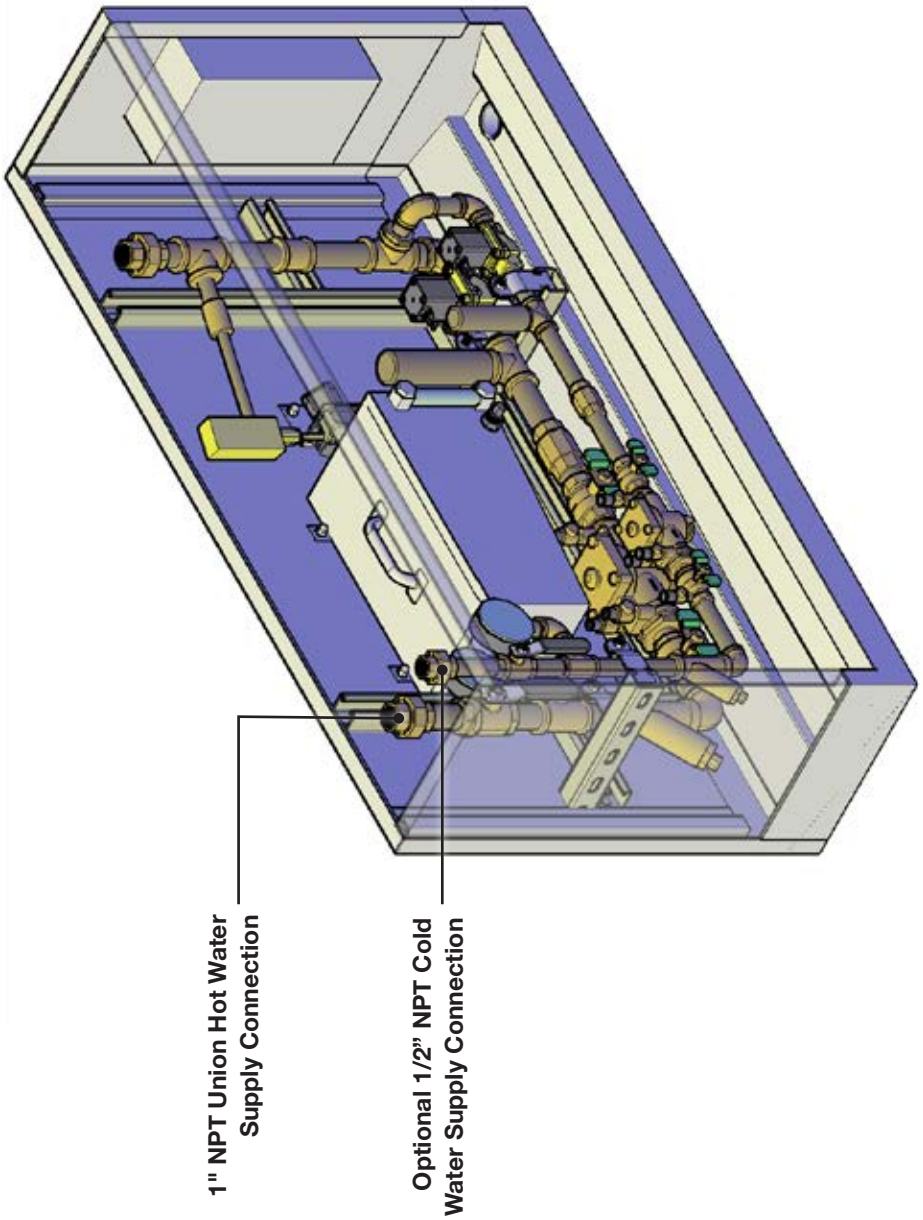


Figure 15: Plumbing Control Station with Optional: (Cold Water Fogging System)

General Information

Hood Manifold Motor and Rotating Manifold

Streivor's Self-Cleaning Water Wash Hoods include a Hood Manifold Motor housed in a UL-Listed stainless steel access enclosure that drives the Rotating Manifold. These components are located in the hood exhaust plenum and can be accessed from below the hood after removing the Grease Extractors.

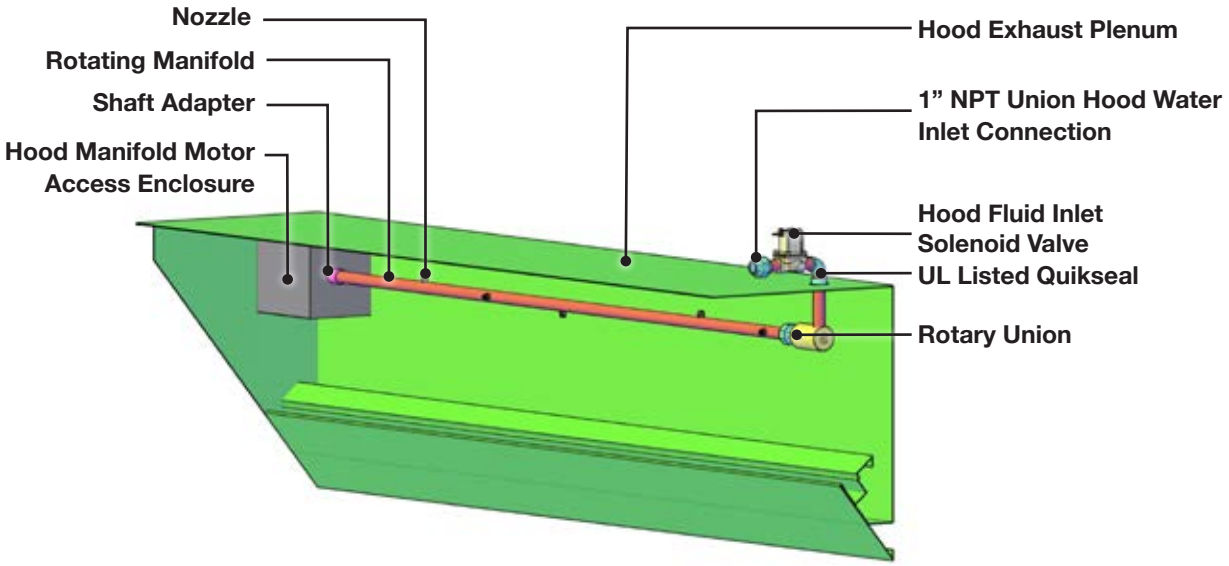


Figure 16: Self-Cleaning Water Wash Hood Exhaust Plenum with Rotating Manifold

To access the Hood Manifold Motor, remove the access enclosure cover as shown below. The Hood Manifold Motor and motor bracket can both be removed from the access enclosure if necessary for replacement or adjustment. Replace the access enclosure cover prior to reinstalling the Grease Extractors.

Figure 17: Hood Manifold Motor Access Enclosure

General Information

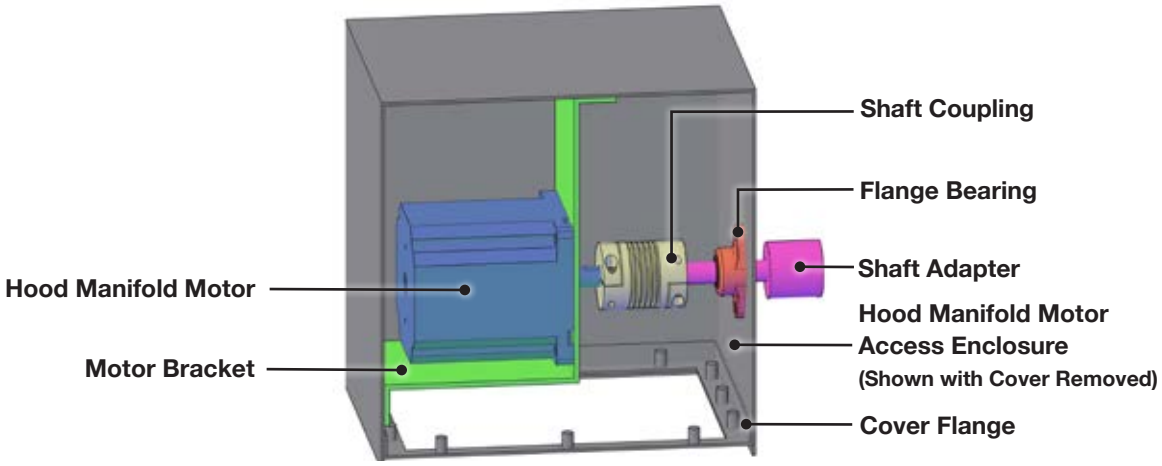


Figure 18: Hood Manifold Motor Access Enclosure Components

The stainless steel Rotating Manifold is manufactured to house a nozzle every 11 1/2 inches. Openings for the nozzles are pre-drilled and threaded. Verify that there is a nozzle in every nozzle opening.

The nozzles have linear spray patterns. The linear spray pattern should be positioned so that they are parallel to the manifold. As the nozzles rotate during a wash or purge cycle, the fluids exiting the nozzles should overlap. This will ensure that all of the interior surfaces of the exhaust plenum are thoroughly in contact with the fluids and washed. Verify that nozzles are securely tightened after any nozzle adjustments are made.

Nozzles are offset 90° along the center of the length of the pipe. This offset keeps the fluids from adjacent nozzles from interfering with the spray pattern of other nozzles.

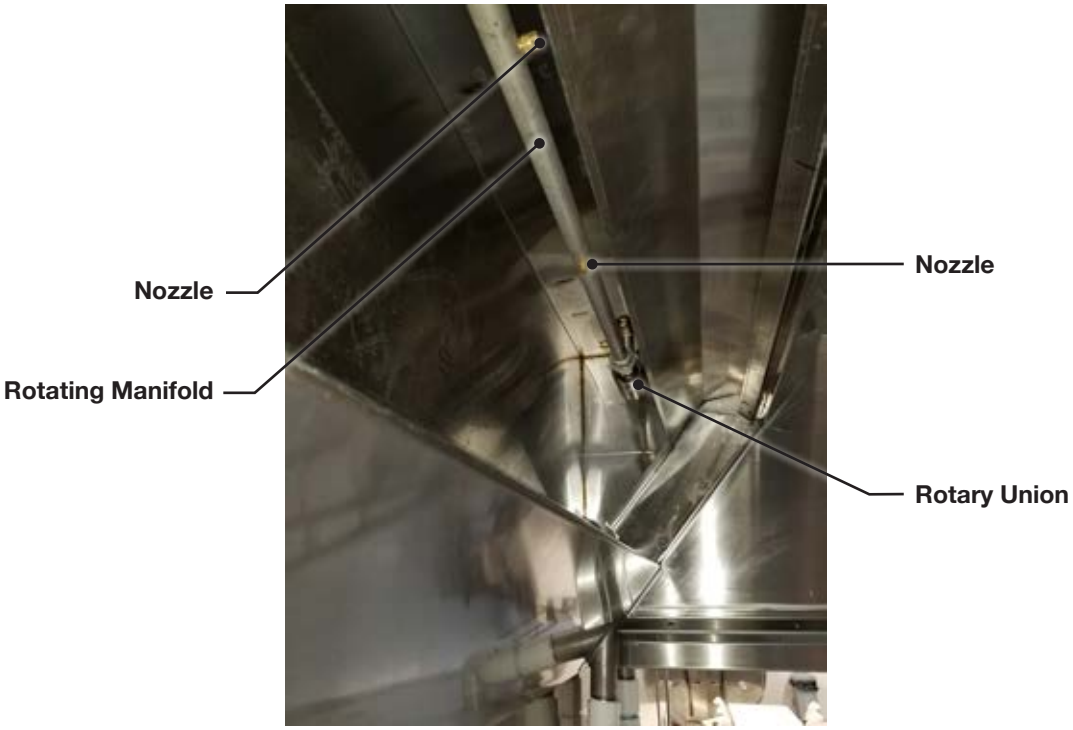


Figure 19: Rotating Manifold

General Information

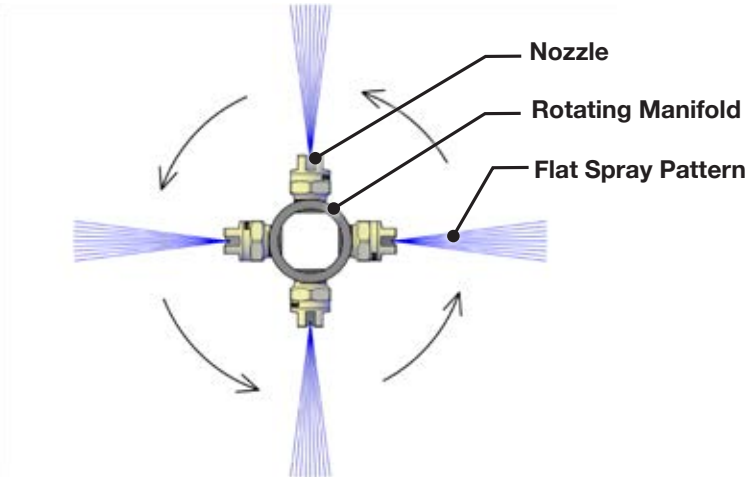


Figure 20A: Rotating Manifold (End View)

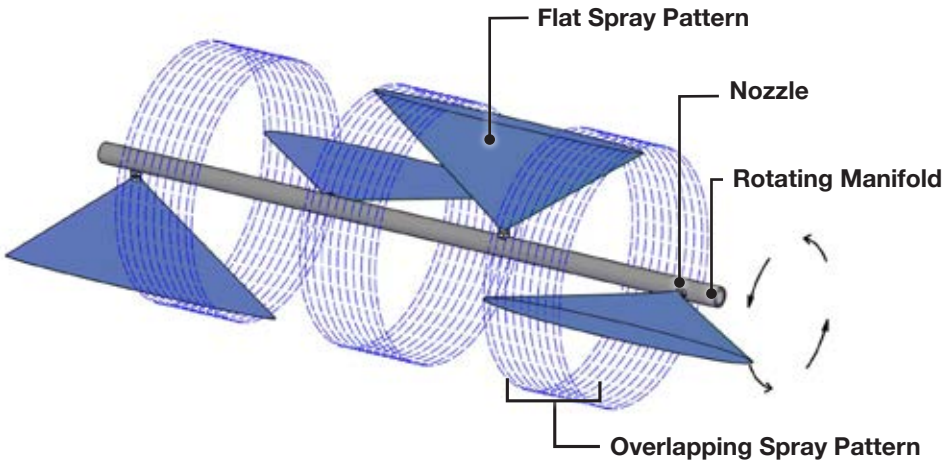


Figure 20B: Rotating Manifold Overlapping Spray Pattern

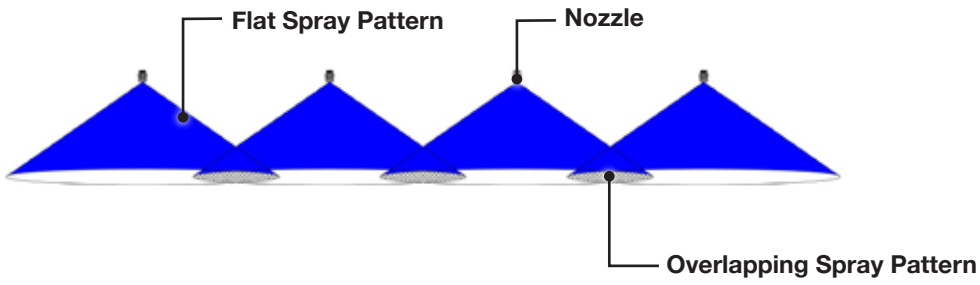


Figure 20C: Overlapping Spray Pattern

Installation Procedures

Plumbing Connections for Plumbing Control Stations

All field piping shall be provided and installed by qualified contractors in accordance with all prevailing codes and standards.

Each Plumbing Control Stations (PCS) requires a hot water supply connection of 40 – 80 PSI at 140ºF - 180ºF.

Optional: Cold Water Fogging Systems require a cold water supply connection of 40 – 80 PSI.

Water supply lines should be thoroughly flushed before connecting to the PCS. Each PCS includes a drain which needs to be connected to the building waste water and/or grease trap system. The drain line needs to be terminated using an approved air gap method. Each PCS includes a water outlet connection which needs to be connected to the hood water inlet connection on each hood as indicated on the Self-Cleaning Hood System Drawings.

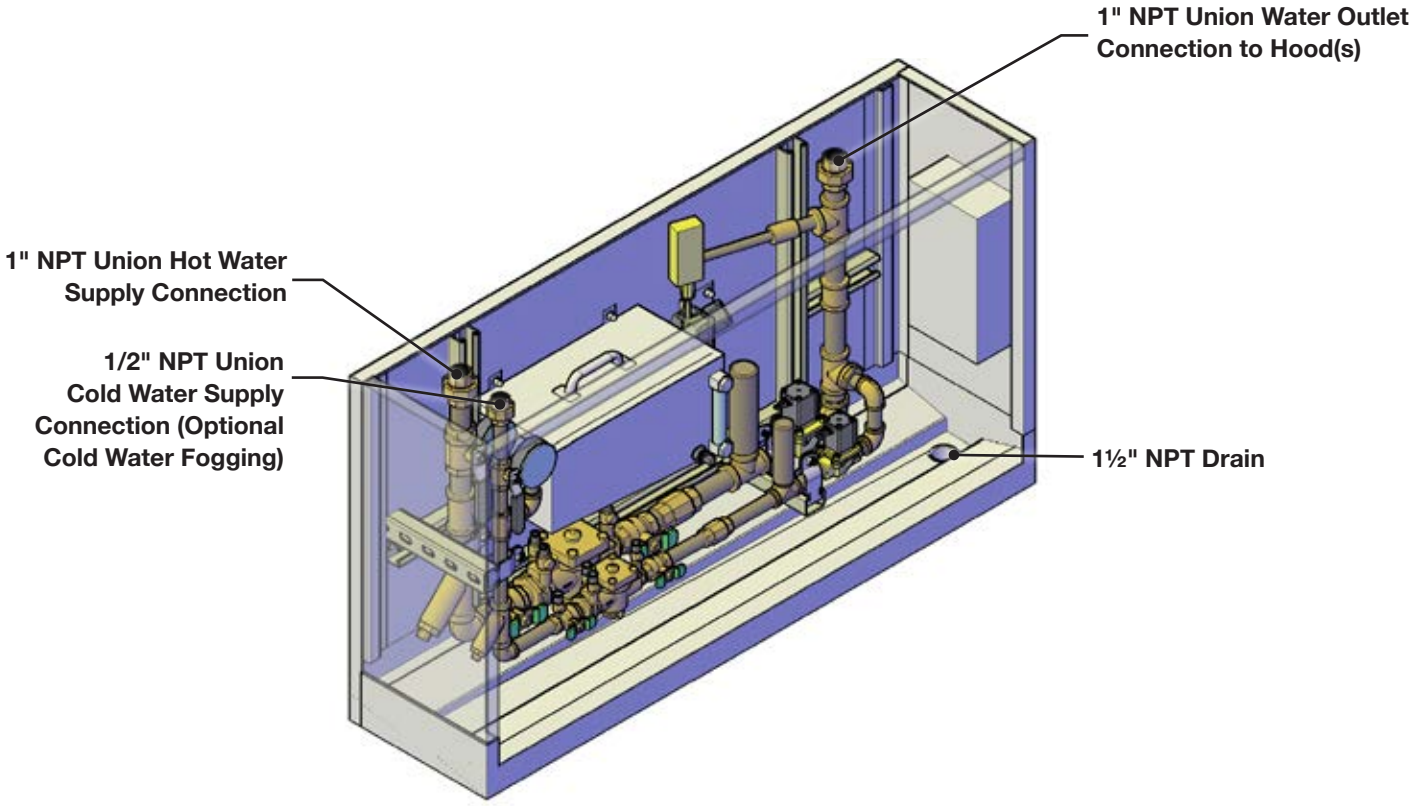


Figure 21: Plumbing Connections for Plumbing Control Station

Installation Procedures

Plumbing Connections for Self-Cleaning Water Wash Hoods

All field piping shall be provided and installed by qualified contractors in accordance with all prevailing codes and standards.

Each Self-Cleaning Water Wash Hood includes a hood water inlet connection on top of the hood near the front which needs to be connected to the water outlet connection from the PCS. The operating pressure at the hood water inlet connection must be at least 20 PSI. The hood water inlet connection may be located on either the left or right side of the hood.

Each Self-Cleaning Water Wash Hood includes a hood waste drain at the rear of the hood which needs to be connected to the building waste water and grease trap system. The hood waste drain may be located on either the left or right side of the hood. The waste drain line needs to be terminated using an approved air gap method in accordance with all prevailing codes and standards.

Refer to Streivor's Self-Cleaning Hood System Drawings and Hood Drawings for specific connection locations, flow rate requirements, and pipe sizes.

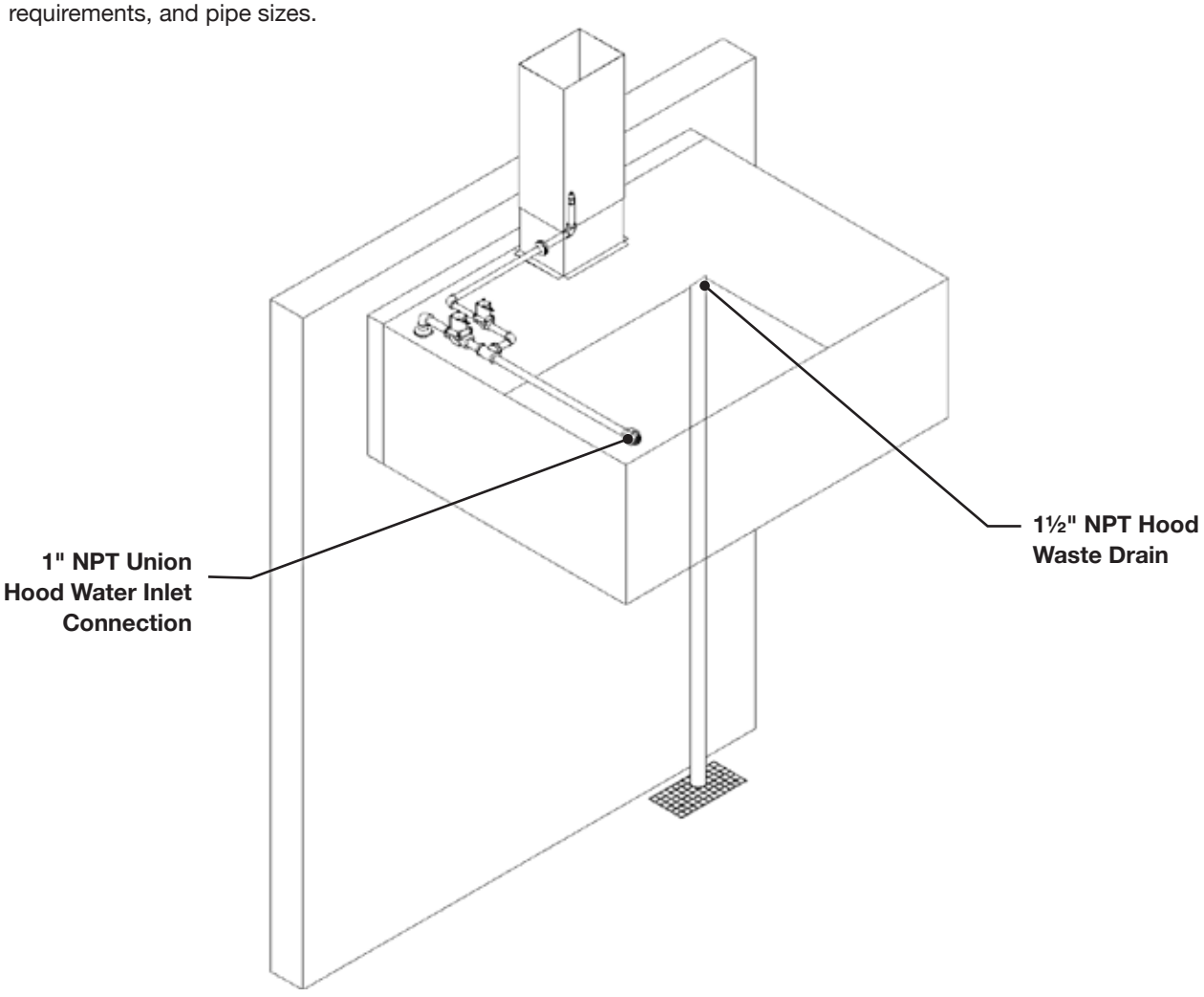


Figure 22: Plumbing Connections for Self-Cleaning Water Wash Hoods (Shown with Optional Fogging System)

Installation Procedures

Electical

Refer to Streivor's DemandAire Drawings for electrical installation details, specific requirements, and locations of equipment requiring electrical connections. All work should be performed by qualified contractors in accordance with all applicable prevailing codes and standards.

Electrical Pre-Installation Precautions

WARNING

PRIOR TO MAKING ANY ELECTRICAL CONNECTIONS TO THE CONTROL PANEL, READ AND UNDERSTAND THIS ENTIRE INSTALLATION AND OPERATIONS MANUAL. ALL WORK ON THE CONTROL PANEL SHOULD BE PERFORMED BY QUALIFIED CONTRACTORS IN ACCORDANCE WITH ALL APPLICABLE PREVAILING CODES AND STANDARDS.

THE CONTROL PANEL HAS MULTIPLE ELECTRICAL CONNECTIONS. VERIFY THAT ALL POWER HAS BEEN DISCONNECTED TO THE CONTROL PANEL PRIOR TO WORKING ON OR NEAR THE CONTROL PANEL. LOCK OUT / TAG OUT ALL OF THE DISCONNECT SWITCHES OR CIRCUIT BREAKERS TO PREVENT ACCIDENTAL POWER UP.

ALL ELECTRICAL WIRING AND CONNECTIONS TO THE CONTROL PANEL SHALL BE IN ACCORDANCE WITH THE PREVAILING CODES, THE NATIONAL ELECTRICAL CODES, AND ANSI/NFPA70.

VERIFY THAT THE SERIAL NUMBER ON THE WIRING DIAGRAM PROVIDED WITH THE CONTROL PANEL MATCHES THE SERIAL NUMBER OF THE CONTROL PANEL BEFORE USING THE WIRING DIAGRAM FOR REFERENCE.

VERIFY THAT THE VOLTAGE AND WIRE AMPERAGE CAPACITY AND WIRE INSULATION IS IN ACCORDANCE WITH THE CONTROL PANEL NAMEPLATE.

Refer to the *DemandAire Installation and Operations Manual* for DemandAire Control Panel installation procedures.

Installation Procedures

Pump Drive Enclosure (PDE) Wiring

a. Verify that all supply power to the DemandAire Control Panel (DCP) is locked out and tagged out.
b. Connect all applicable low voltage connections for the hot water solenoid valve, cold water solenoid valve, pump drive power, pump drive step signal, detergent float switch and/or detergent flow switch from the DCP to the terminal blocks in the PDE per Streivor's DemandAire Drawings (*Figure 23*).
c. The wires should be torqued to 0.6 - 0.8 N•m at the terminal blocks.

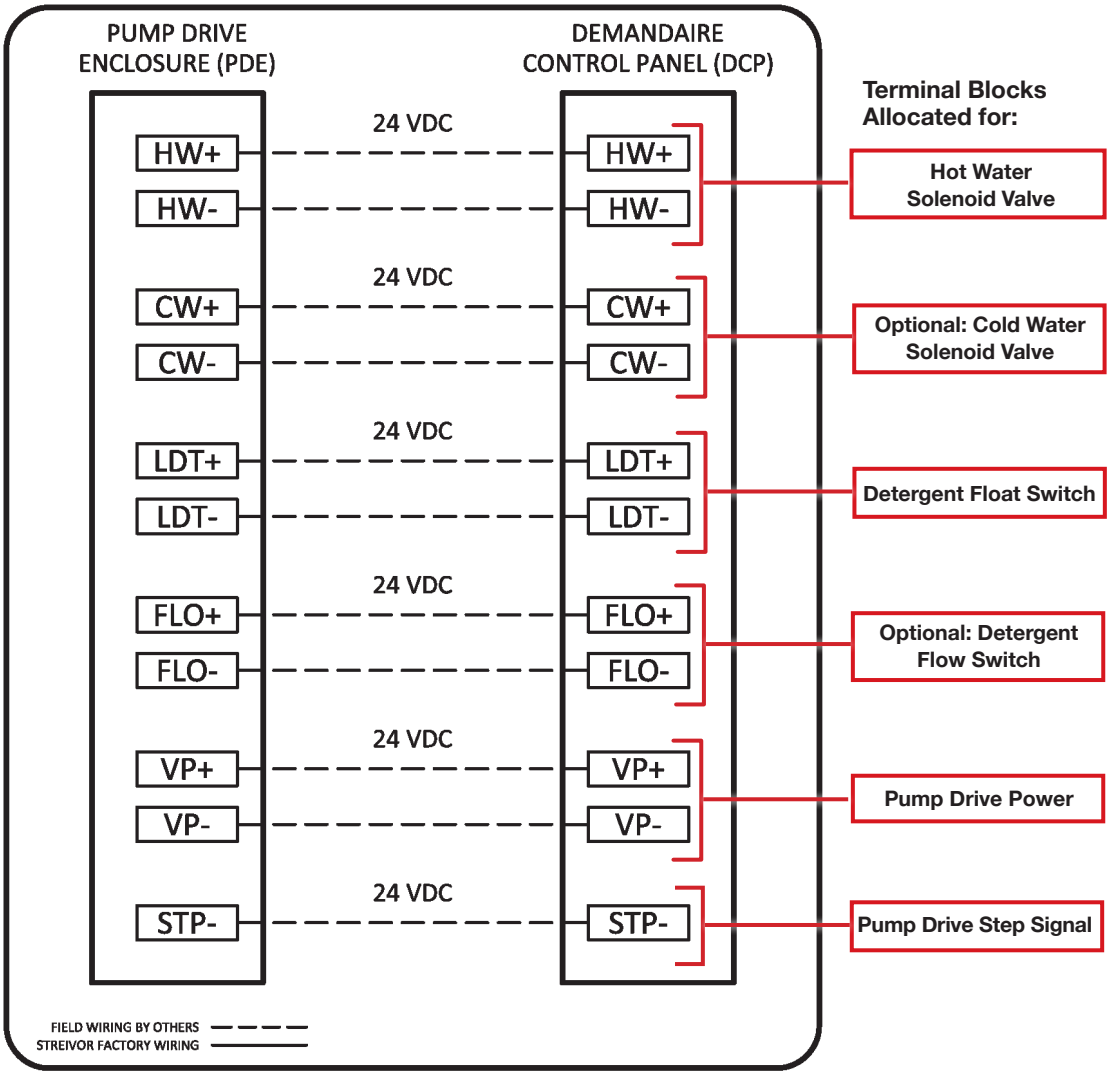


Figure 23: Pump Drive Enclosure (PDE) Wiring

Installation Procedures

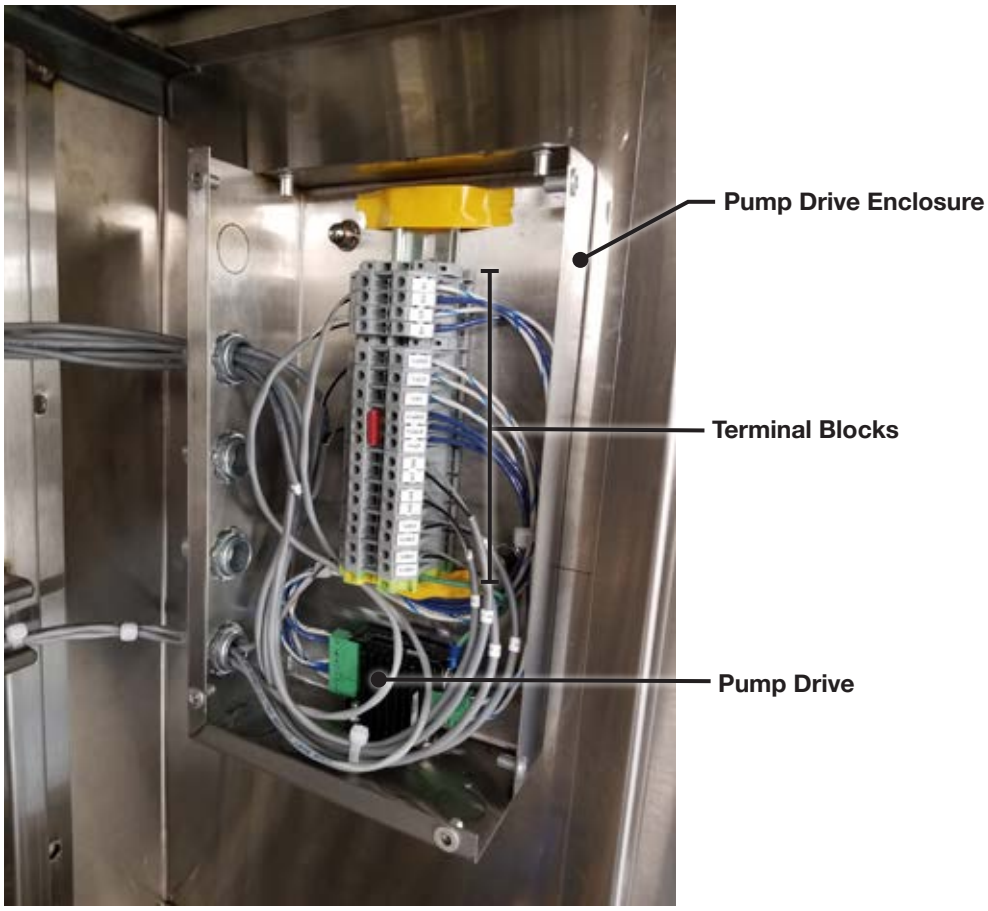


Figure 24: Pump Drive Enclosure (Shown with Cover Removed)

Installation Procedures

Auto Wash Junction Box (WJ) Wiring

a. Verify that all supply power to the DCP is locked out and tagged out.
b. Locate the Auto Wash Junction Box (WJ) on top of the hood and remove the cover.
c. Connect all applicable low voltage connections for hood fluid inlet solenoid valve, hood fog solenoid valve, extractor positioning switches, hood manifold motor drive power, hood manifold motor drive fault, and hood manifold motor drive step signal from the DCP to the terminal blocks in each WJ per Streivor's DemandAire Drawings (*Figure 25*).
d. The wires should be torqued to 0.6 - 0.8 N•m at the terminal blocks.

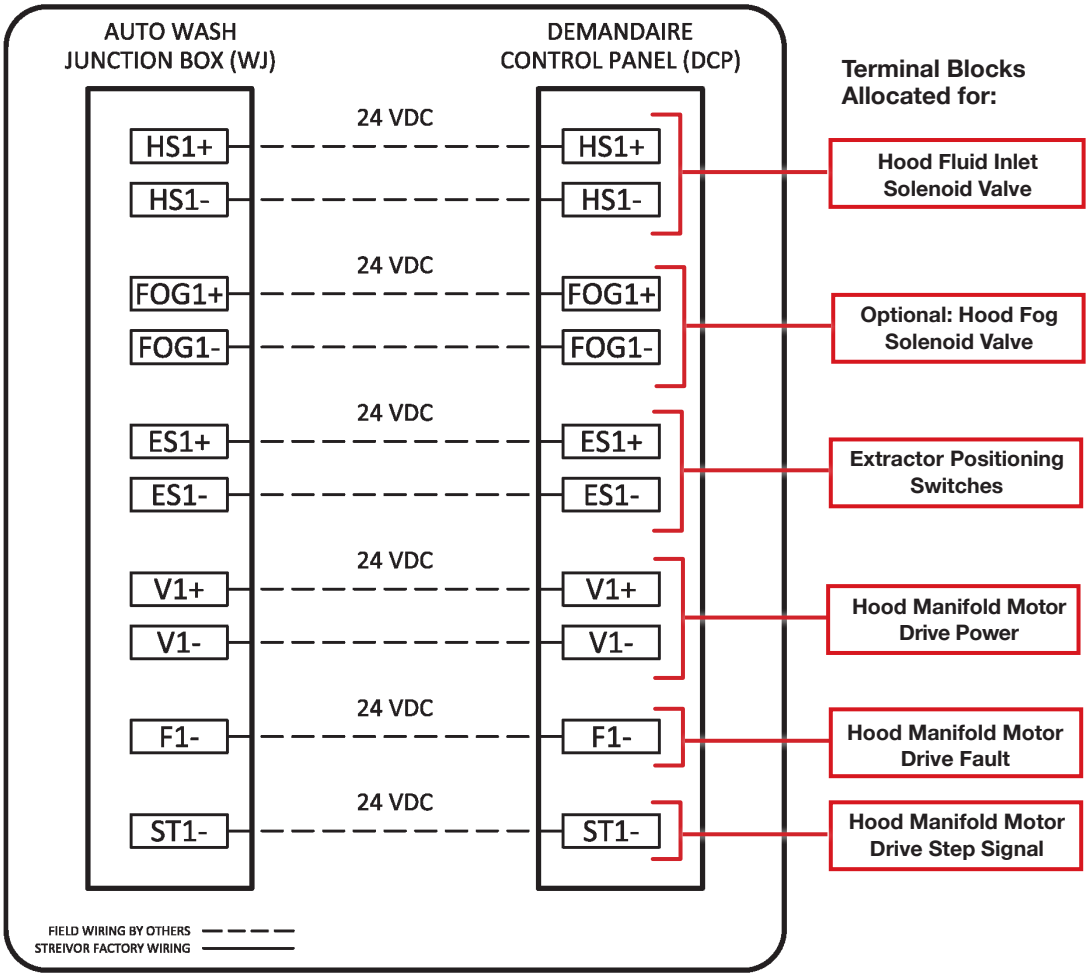


Figure 25: Auto Wash Junction Box (WJ) Wiring

Installation Procedures

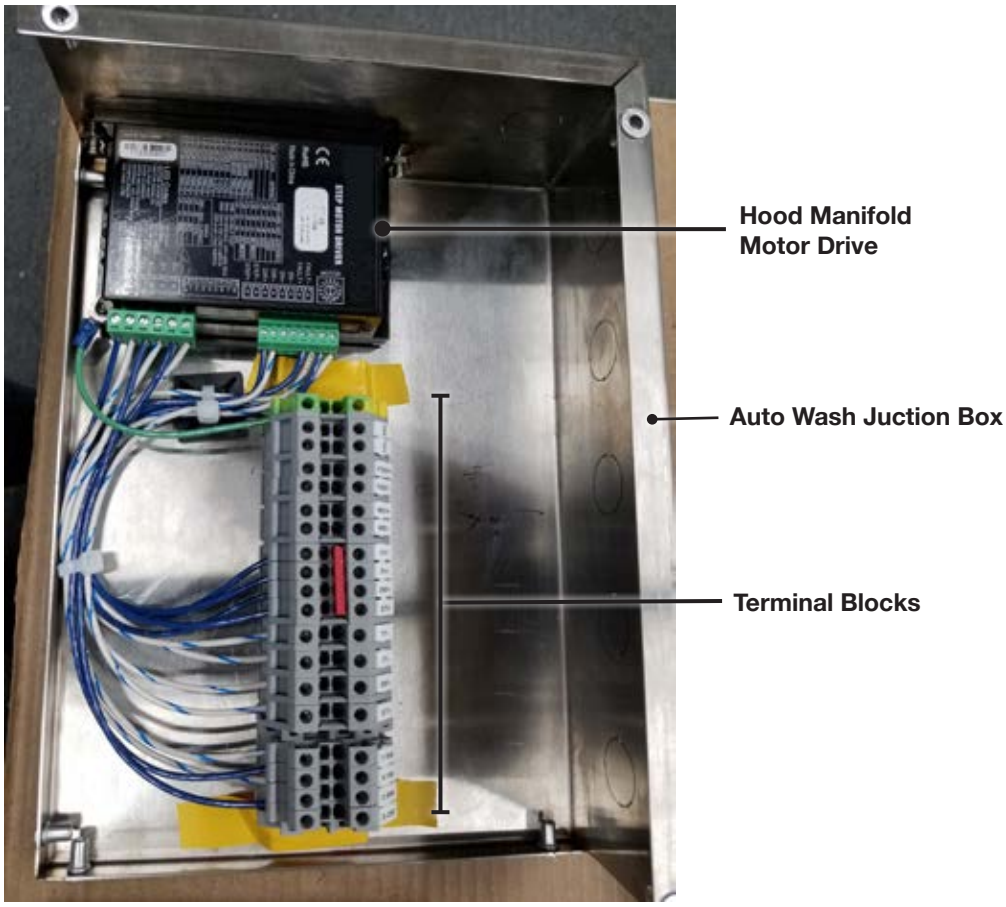


Figure 26: Auto Wash Junction Box (Shown with Cover Removed)

Operation Procedures

Start Up

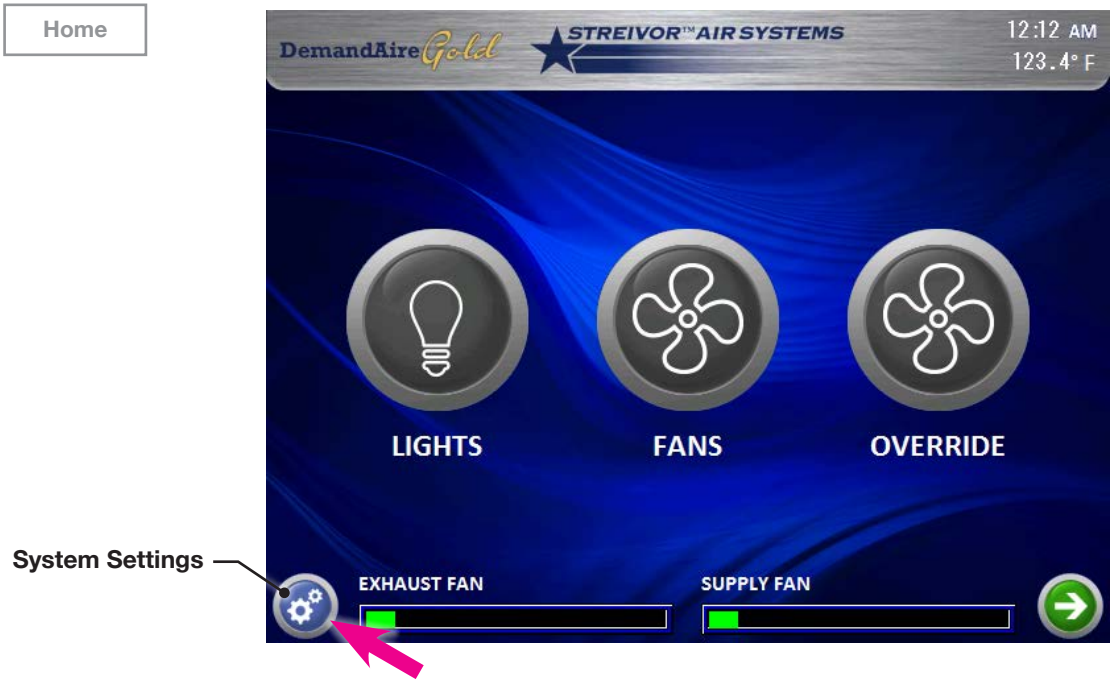
Refer to the *DemandAire Installation and Operations Manual* for installation and start up instructions for the DemandAire Control Panel (DCP)

Human Machine Interface (HMI) Touch Screen Control

The HMI touch screen should be installed in a location where it is readily accessible as it contains all of the switches required to operate both the DemandAire and Self-Cleaning Hood Systems. The HMI also serves as an interface where programming changes are made to the System Settings. System information such as fan status, current temperatures in each hood, wash/purge cycle status, and alarm status can be viewed on the HMI as well. Refer to the *DemandAire Installation and Operations Manual* for more information regarding controls and System Settings for the DemandAire System.

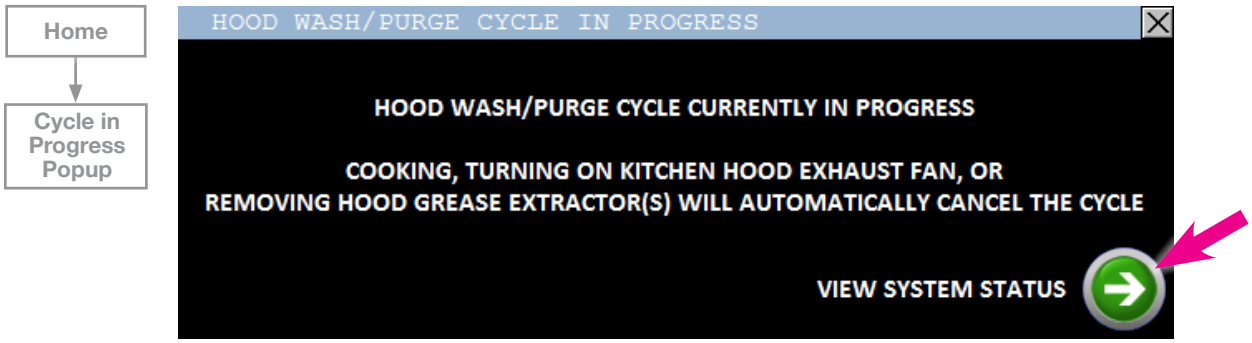
Home Screen

This is the default screen for the HMI which provides switches required for normal operation of the DemandAire System. The *System Settings* button will allow access to all settings for both the DemandAire System and the Self-Cleaning Hood System.



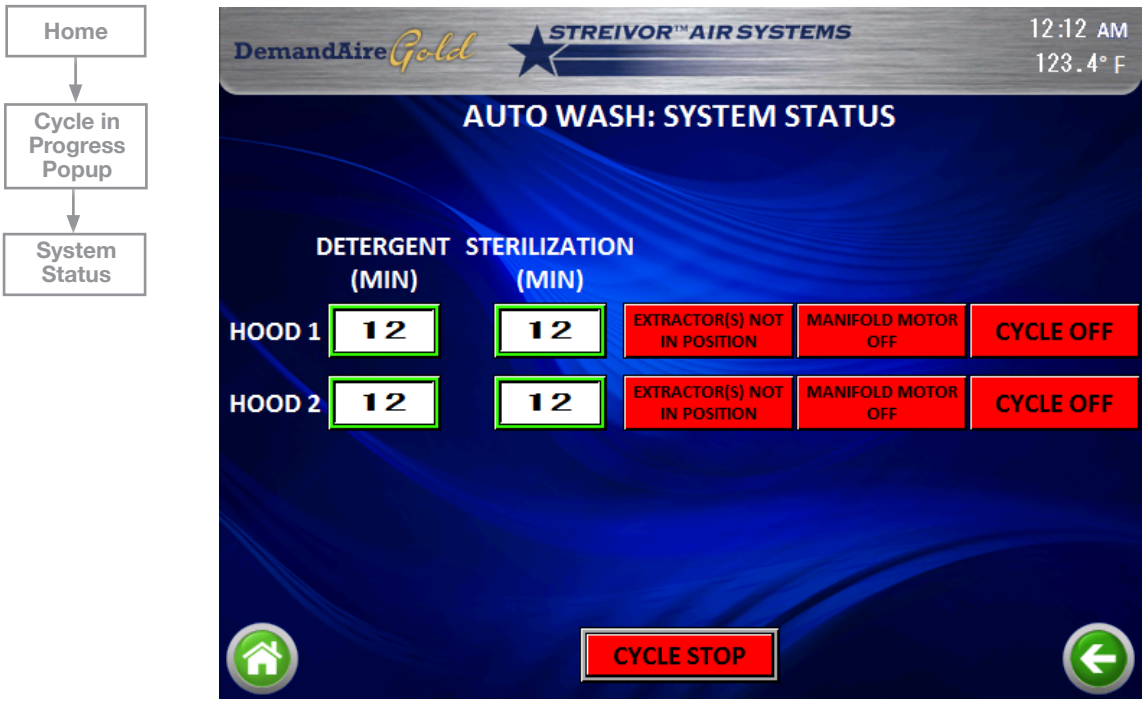
Operation Procedures

If a Hood Wash or Purge Cycle is currently in progress, the below popup screen will appear on the Home Screen. Pressing the *View System Status* button will enter the System Status Screen for the Self-Cleaning Hood System.



System Status Screen

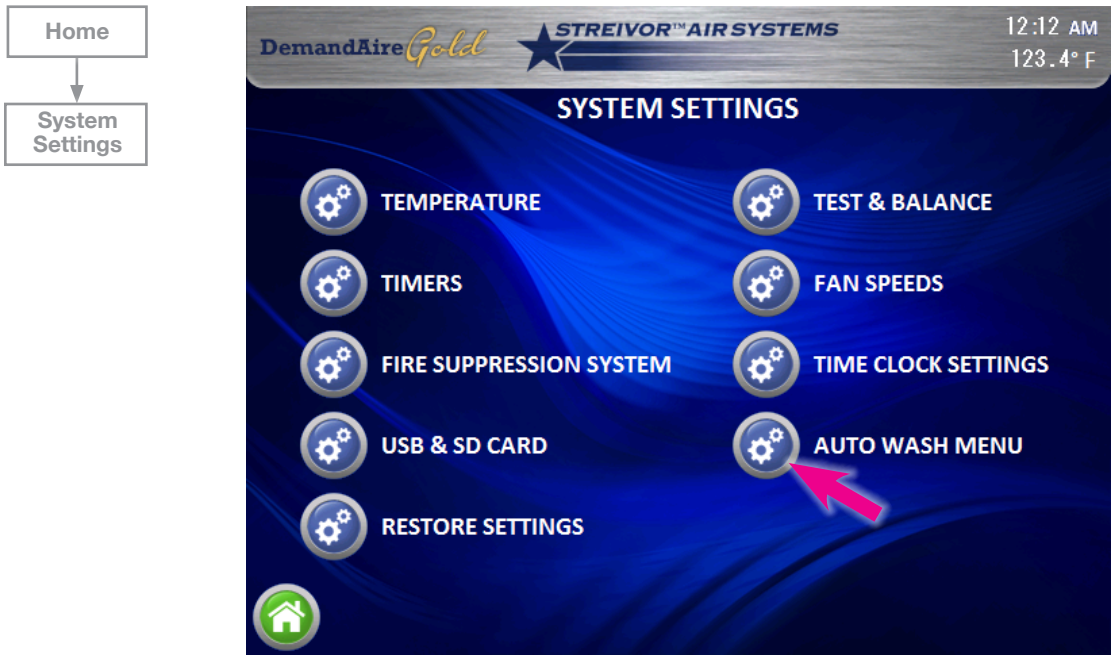
Displays the detergent injection time remaining, sterilization time remaining, extractor position status, hood manifold motor status, and wash/purge status for each hood. The wash/purge cycle can be stopped at any time by pressing the *Cycle Stop* button. This screen can also be accessed directly from the Auto Wash Menu.



Operation Procedures

System Settings Screen

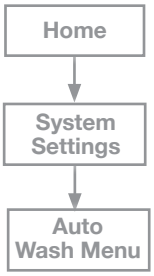
Displays access to all system settings. Pressing the button next to the Auto Wash Menu will enter the Auto Wash Menu.



Operation Procedures

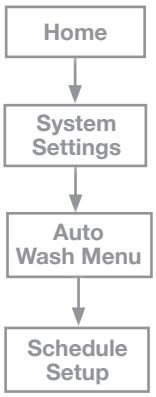
Auto Wash Menu Screen

Displays access to scheduling, settings and manual controls for the Self-Cleaning Hood System.



Schedule Setup Screen

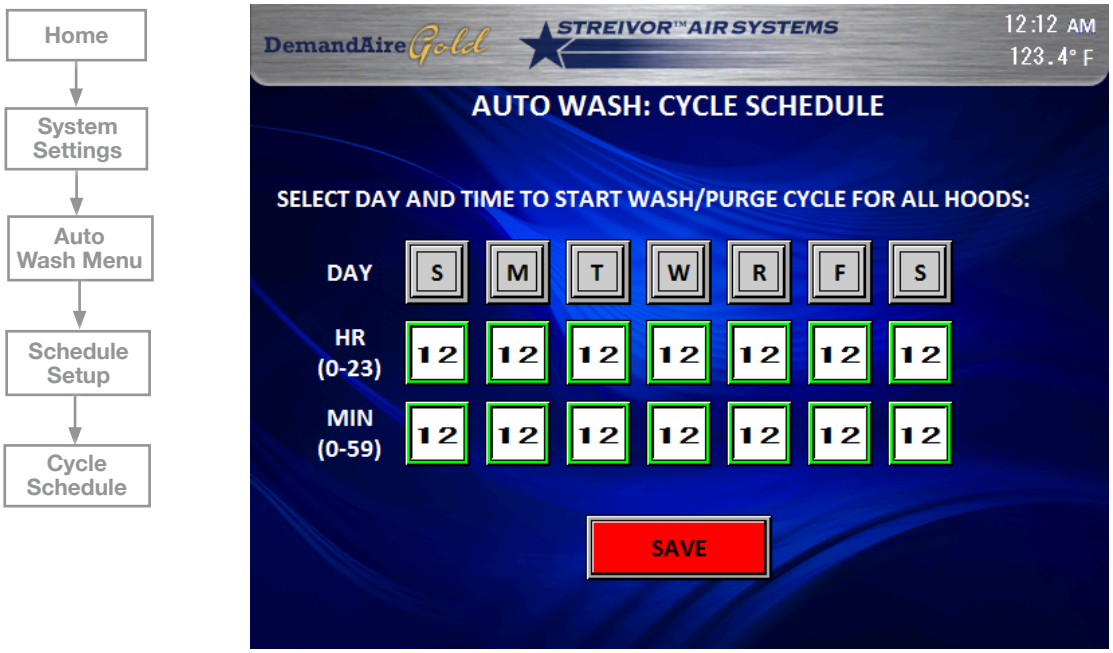
Displays access to the Cycle Schedule and Wash/Purge Schedule. Both schedules must be configured, starting with the cycle schedule.



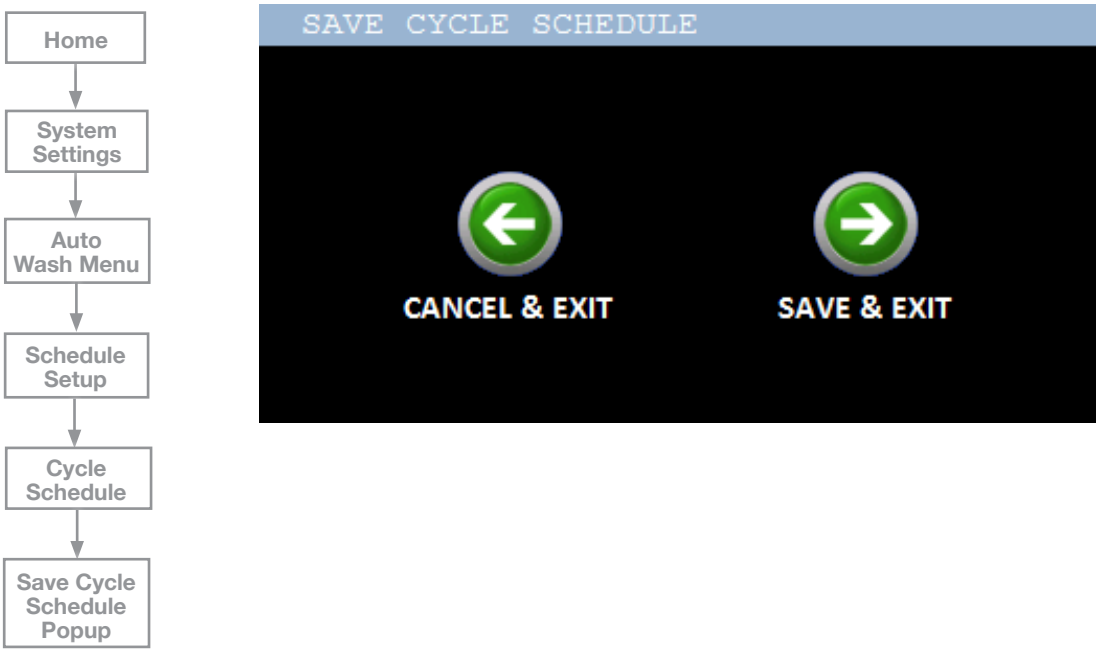
Operation Procedures

Cycle Schedule Screen

Pressing the day button(s) will toggle the desired day(s) of the week for all hoods to experience a wash/purge cycle automatically. For each day selected, specify the time of day for the wash/purge cycle sequence for all hoods to start. The hoods will wash/purge in sequence, starting with Hood 1.



Pressing the *Save* button allows access to accept or decline changes made to the Cycle Schedule and return to the Schedule Setup Screen.

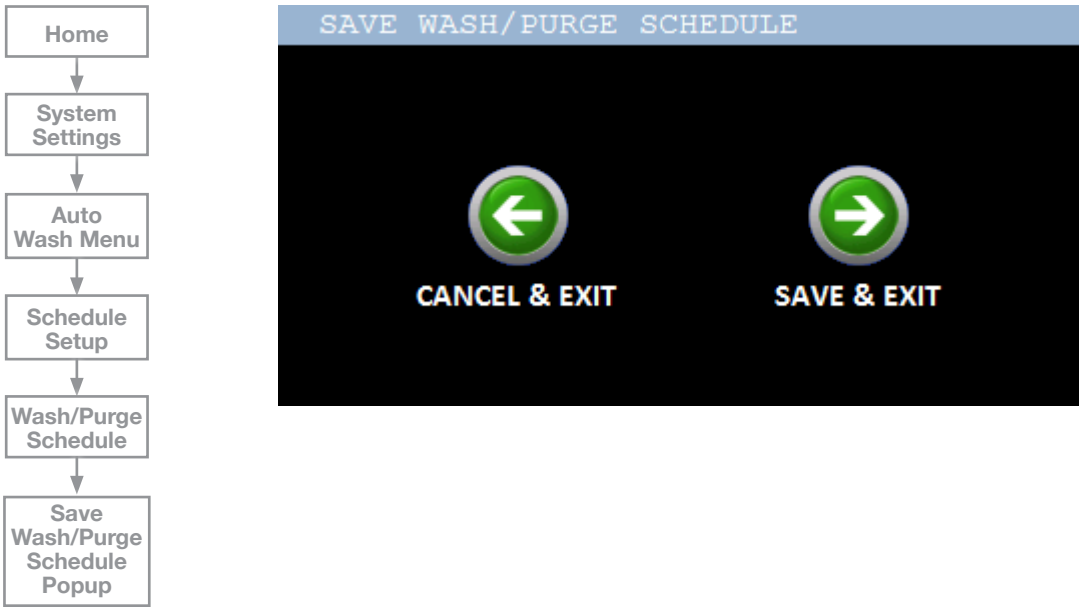


Operation Procedures

Wash/Purge Schedule

All hoods will wash/purge in sequence on the days and times configured by the Cycle Schedule. Using the Wash/Purge Schedule, individual hoods can then be configured to wash on specific days of the week by toggling the day of week button for each hood. The day of the week buttons will be green if toggled to wash and orange if toggled to purge. The default Wash/Purge Schedule screen shown below is configured to purge all hoods every day enabled by the Cycle Schedule. The Cycle Schedule and Wash/Purge Schedule will initially be configured by a Streivor Technician during commissioning, but each schedule can be modified at any time.

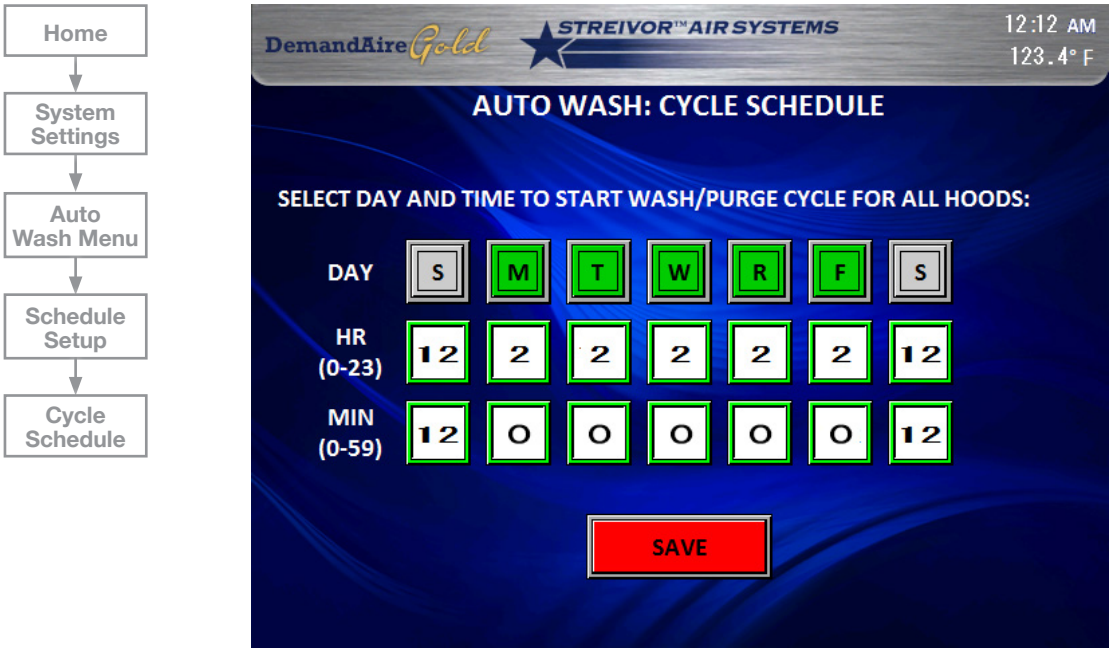
Pressing the *Save* button will allow access to accept or decline changes made to the Wash/Purge Schedule.



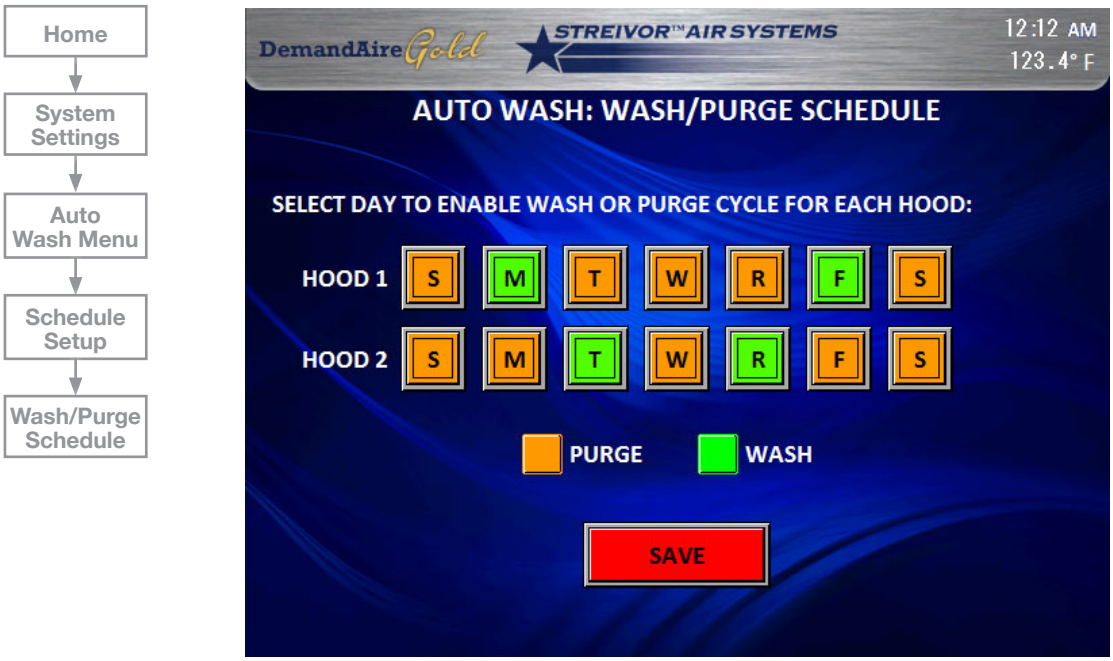
Operation Procedures

Example: Schedule Setup

To schedule the Self-Cleaning Hood System to automatically start a wash/purge cycle for all hoods every Monday through Friday at 2 am each night, configure the Cycle Schedule screen as shown below and save the settings. Note that since Saturday and Sunday were not selected, no hoods will wash or purge on these days.



Configure the Wash/Purge Schedule screen below to schedule Hood 1 to experience a wash cycle on Mondays and Fridays. Hood 2 will experience a wash cycle only on Tuesdays and Thursdays. If either hood is not scheduled to wash on a day enabled by the Cycle Schedule, such as on Wednesdays, the hood(s) will experience a purge cycle instead. Save the settings to confirm the schedule.

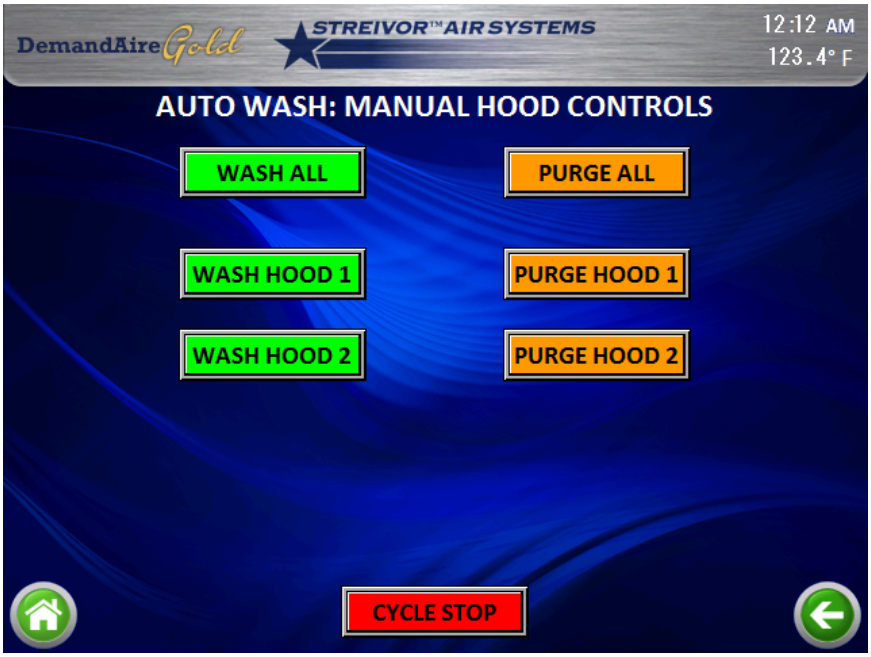


Operation Procedures

Manual Hood Controls

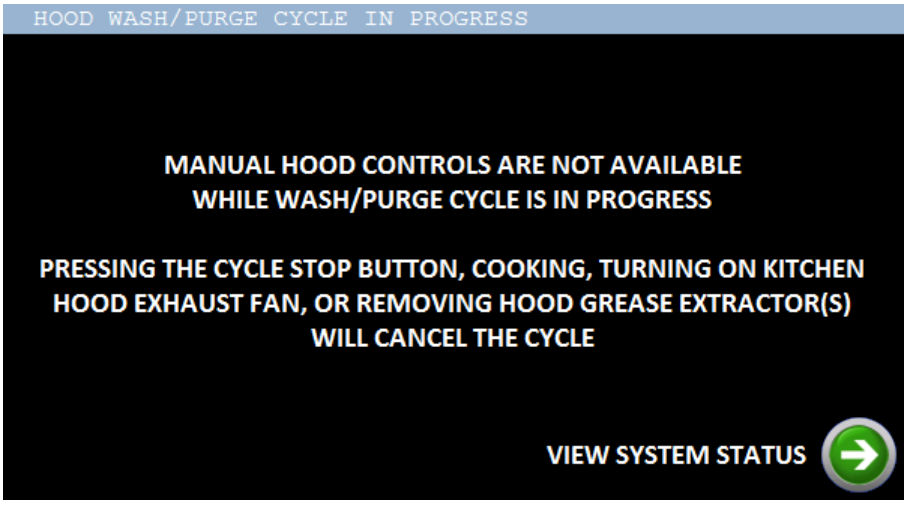
Displays manual buttons which may be used to wash/purge all hoods or individual hoods. An active cycle can be stopped at any time by pressing the *Cycle Stop* button.

Home → System Settings → Auto Wash Menu → Manual Hood Controls



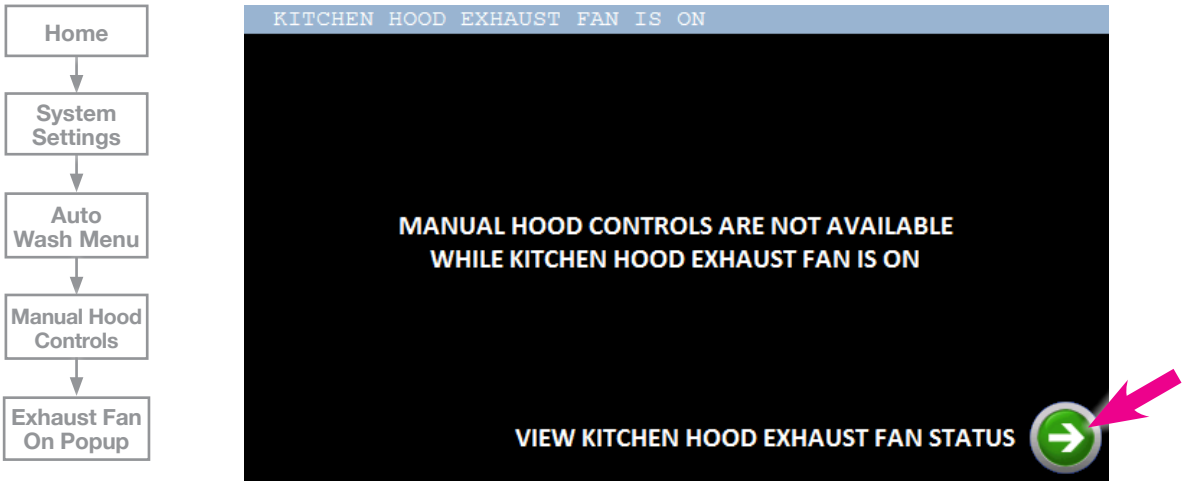
Only one hood can experience a wash/purge cycle at a time. If a wash/purge cycle is currently in progress, the below popup will appear on the Manual Hood Controls screen.

Home → System Settings → Auto Wash Menu → Manual Hood Controls → Cycle in Progress Popup

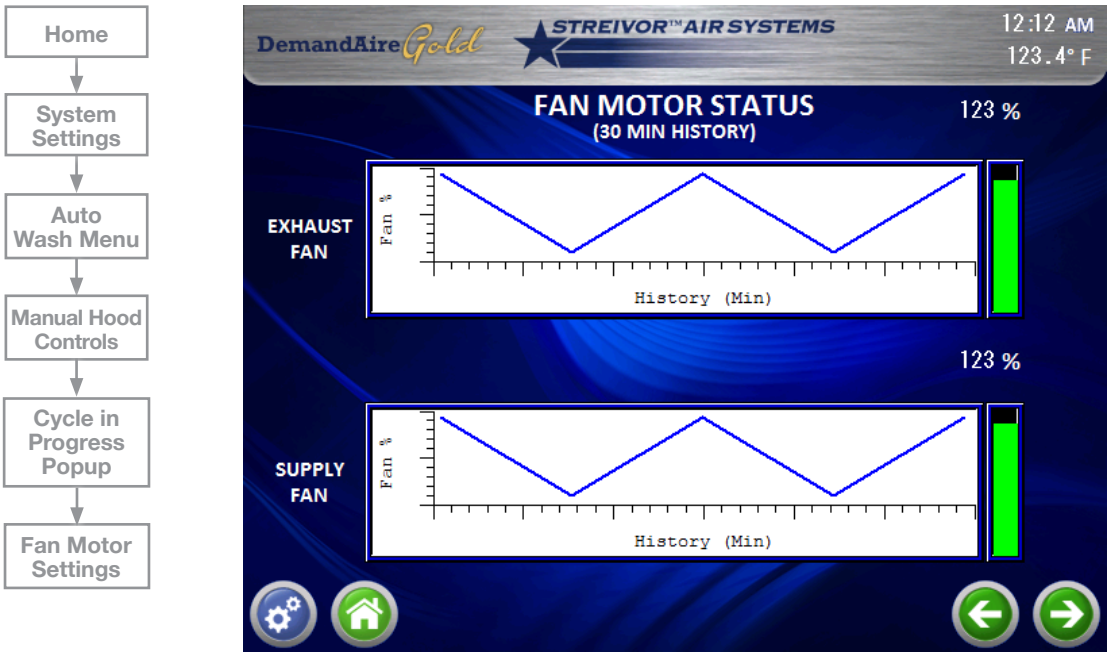


Operation Procedures

If the Kitchen Hood Exhaust Fan is on for any reason, the below popup will appear on the Manual Hood Controls Screen.



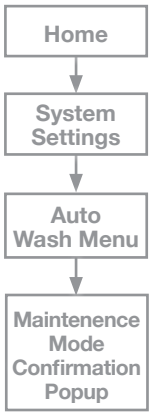
Pressing the *View Kitchen Hood Exhaust Fan Status* button will display the Fan Motor Status Screen below which displays the past 30 minutes of fan operation history as well as the current operating speed of the fan.

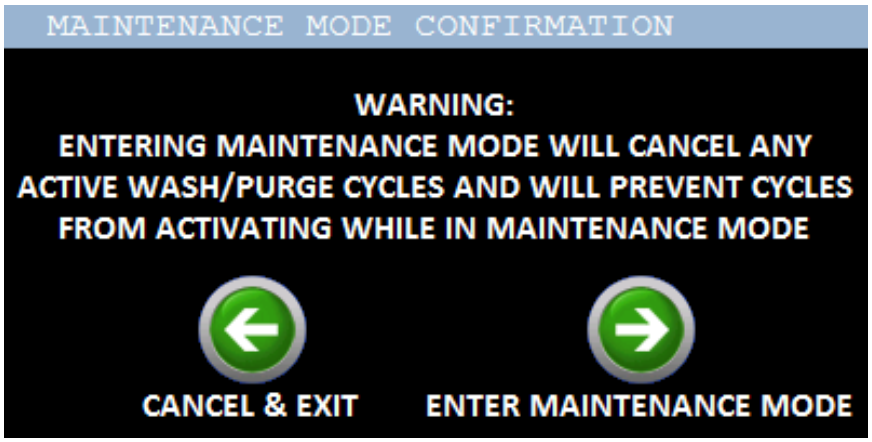


Operation Procedures

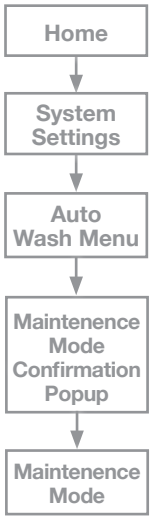
Maintenance Mode

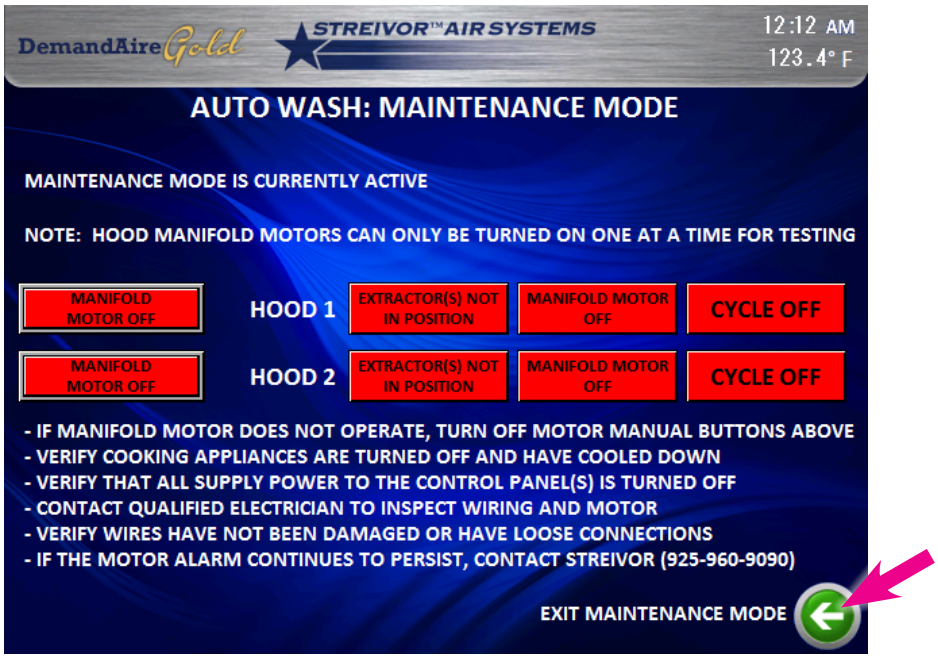
Maintenance Mode allows for advanced troubleshooting of the Hood Manifold Motors and/or Grease Extractor Positioning Switches. Attempting to enter Maintenance Mode will prompt the below confirmation popup.





Entering Maintenance Mode will display the below screen where the Extractor Position Status, Hood Manifold Motor Status, Wash/Purge Status, and manual toggle buttons to test the Hood Manifold Motors can be accessed. Pressing the *Exit Maintance Mode* button will exit Maintenance Mode, turn off Hood Manifold Motors, and return to the Auto Wash Menu Screen.

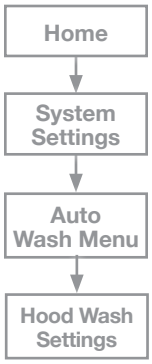


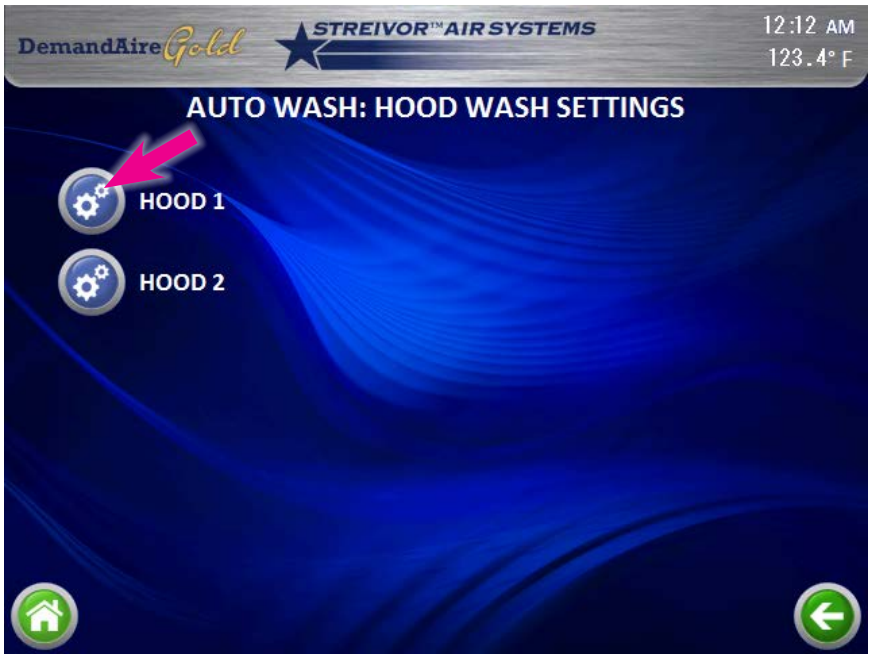


Operation Procedures

Hood Wash Settings

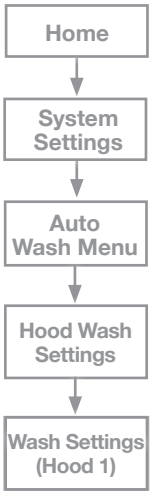
Displays access to Wash Settings for each hood.





Wash Settings (Hood 1)

As an example, pressing the settings button for Hood 1 from the Hood Wash Settings screen will allow access to the below screen where the detergent injection and sterilization times can be configured. The amount of detergent used to wash the hood will be calculated automatically by specifying the approximate length of the hood and the duty rating of the cooking appliance below the hood. These settings can be modified at any time in response to changes in cooking loads or cooking appliances to improve the performance of the Self-Cleaning Hood System.

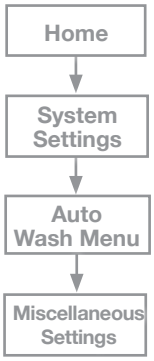


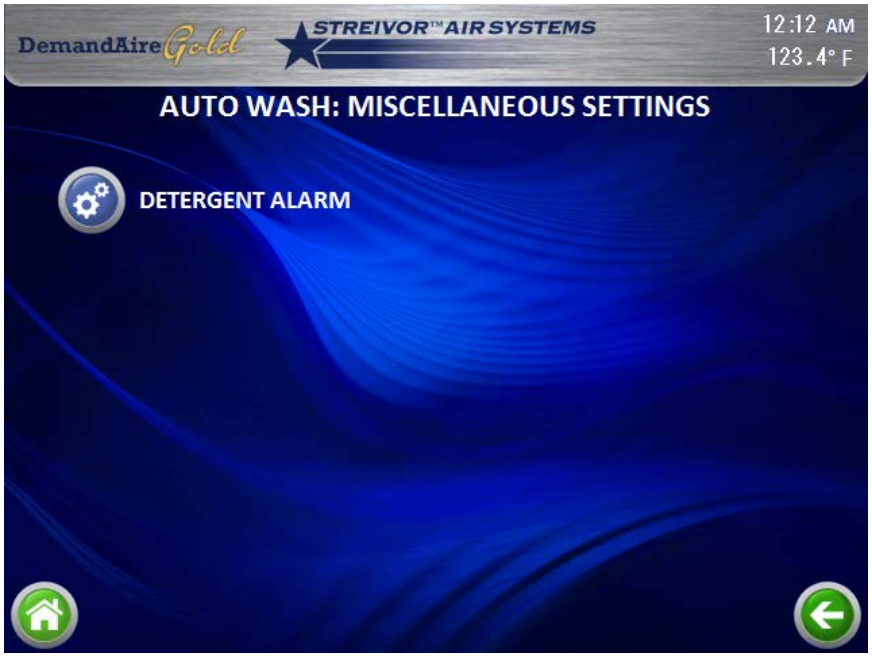
Operation Procedures

Pressing the *Save* button will allow access to accept or decline changes made to the Wash Settings for Hood 1.

Miscellaneous Settings

Displays access to any miscellaneous settings.

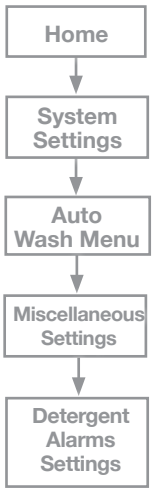


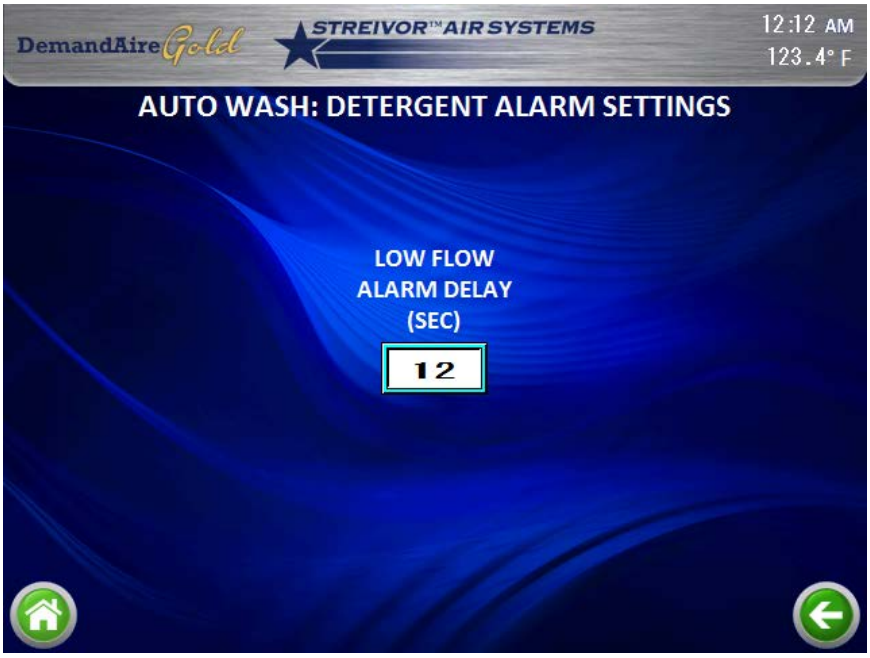


Operation Procedures

Miscellaneous Settings: Detergent Alarm Settings

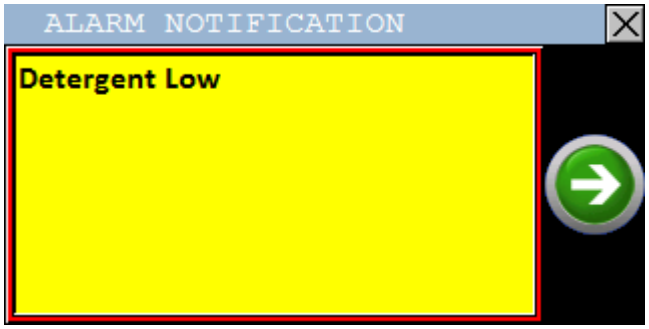
Displays Low Flow Alarm Delay setting for the Detergent Flow Switch (optional). This setting represents the delay before the Low Detergent Flow Alarm occurs to provide ample time for detergent to flow once the detergent pump is turned on. Setting the delay time too low may result in a false alarm.





Alarms

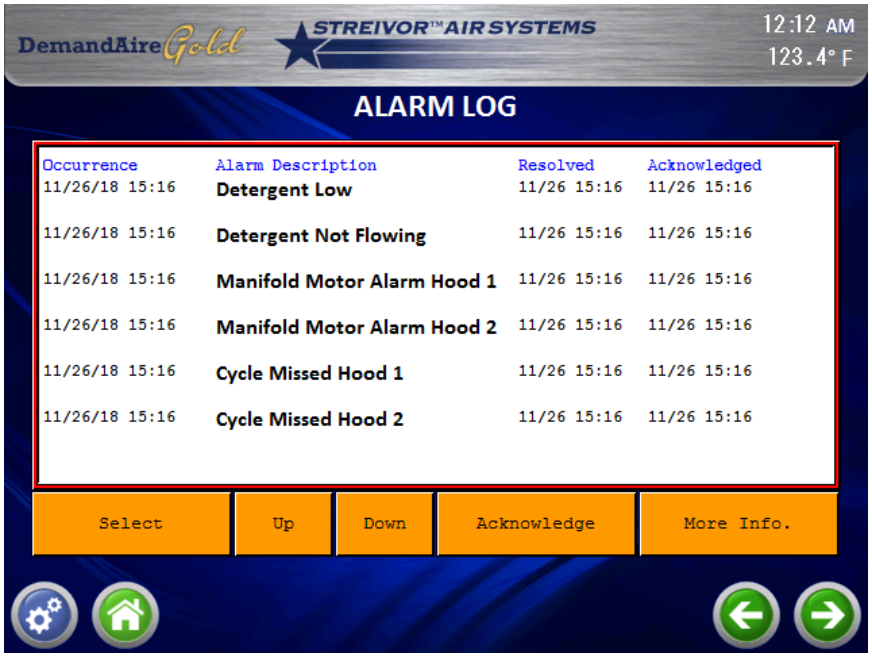
The DemandAire System provides audible and/or visual indicators on the HMI touch screen in the event of an alarm condition. In addition to the alarms covered in the *DemandAire Installation and Operations Manual*, Self-Cleaning Hood System Alarms may include Cycle Missed Alarm, Cycle Cancelled Alarm, Extractor Position Alarm, Hood Manifold Motor Alarm, Low Detergent Alarm, Low Detergent Flow Alarm and Fire Suppression System Alarm. In the event of an alarm condition, the Alarm Notification window will pop up listing the current alarm(s). Press the green arrow button on the Alarm Notification window to view the Alarm Log Screen.



Operation Procedures

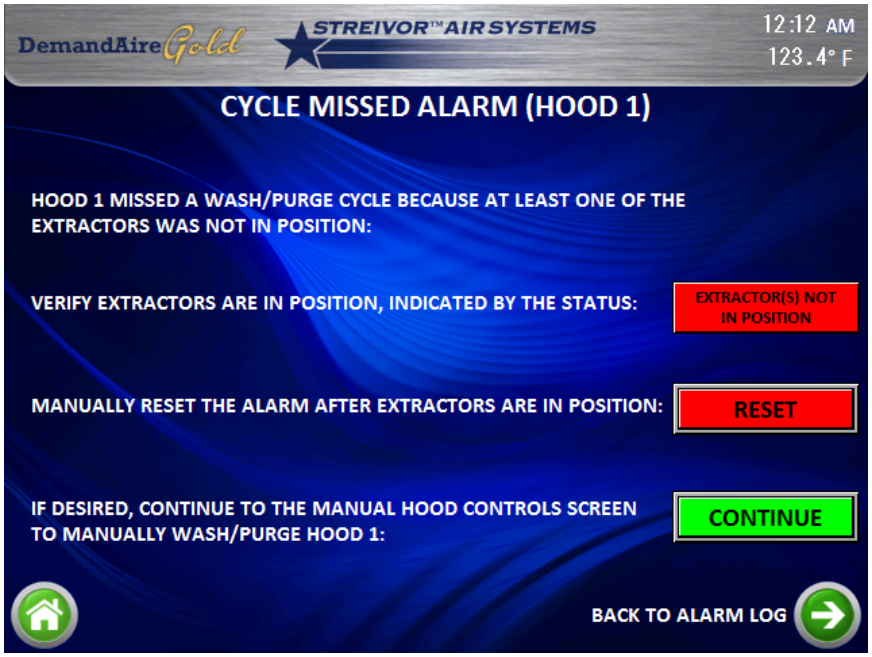
Alarm Log Screen

In the event of an alarm condition, each alarm can be selected using the *Select* button on the Alarm Log Screen. In the event of an alarm, select the unresolved alarm and press the *Acknowledge* button to confirm that the alarm has been acknowledged. Press the *More Info.* button to provide more detail on the specific alarm and further instructions regarding how to resolve the alarm.



Cycle Missed Alarm

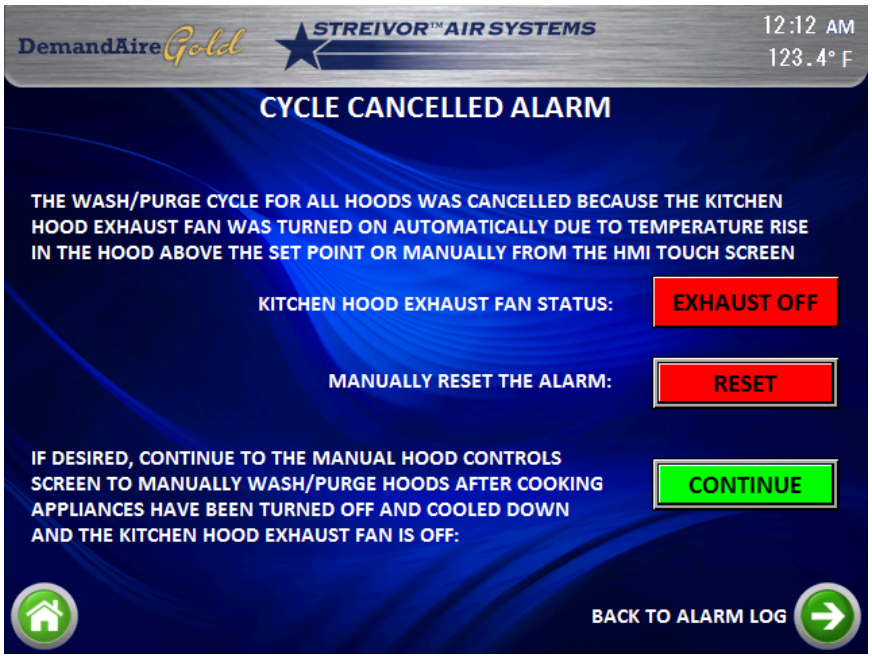
In the event of a Cycle Missed Alarm, the Alarm Notification window will display which specific hood(s) missed a wash/purge cycle. From the Alarm Log Screen, press the *More Info.* button to review additional information regarding the alarm. To resolve the alarm, press the *Reset* button on the Cycle Missed Alarm screen below.



Operation Procedures

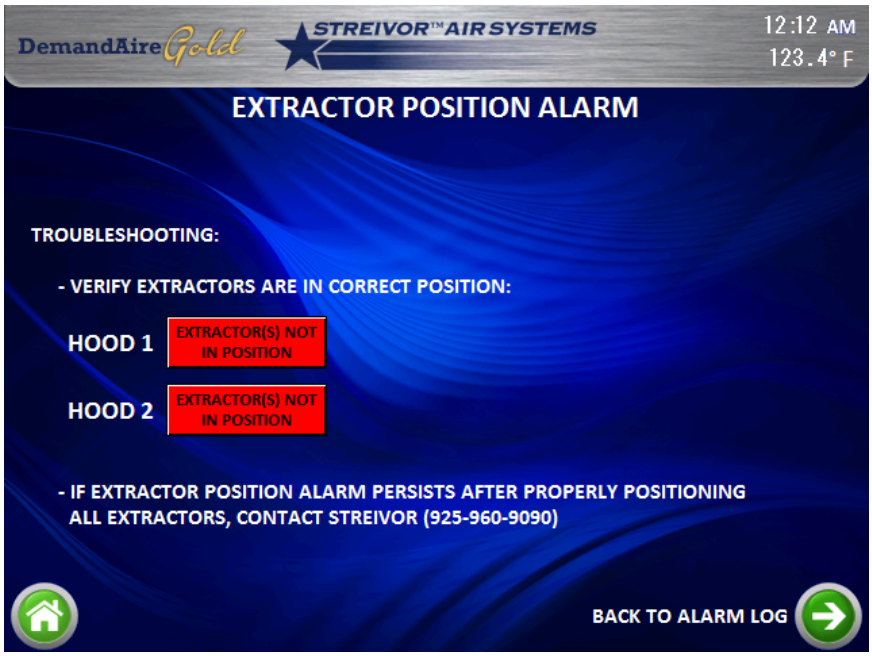
Cycle Cancelled Alarm

The Alarm Notification window will appear in the event of a Cycle Cancelled Alarm. From the Alarm Log Screen, press the *More Info.* button to review additional information regarding the alarm. To resolve the alarm, press the *Reset* button on the Cycle Cancelled Alarm screen below.



Extractor Position Alarm

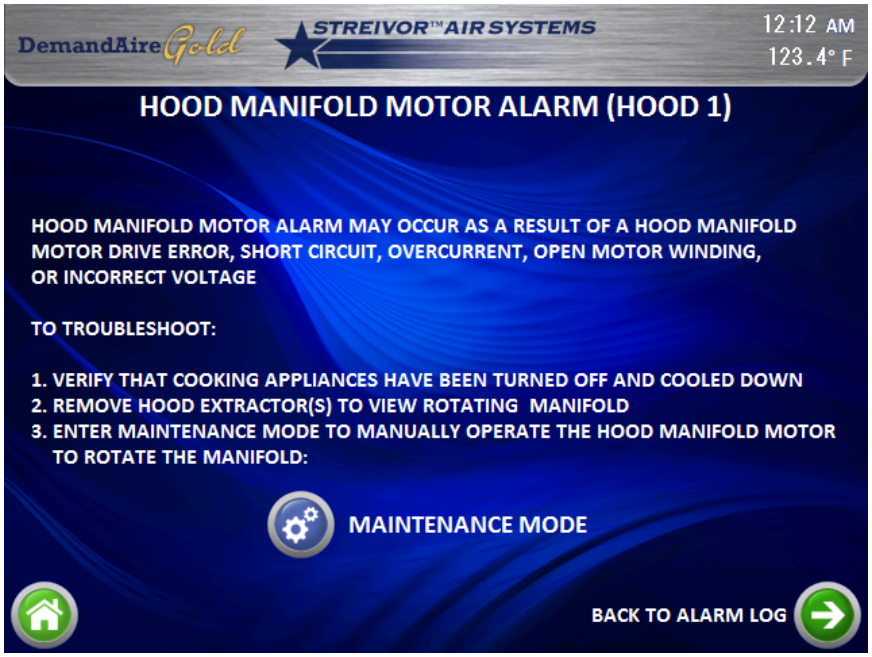
In the event of an Extractor Position Alarm, the Alarm Notification window will display which specific hood(s) have extractor(s) out of position. From the Alarm Log Screen, press the *More Info.* button to review additional information regarding the alarm. To resolve the alarm, properly position the extractors as described in the *Extractor Positioning* section of this manual.



Operation Procedures

Hood Manifold Motor Alarm

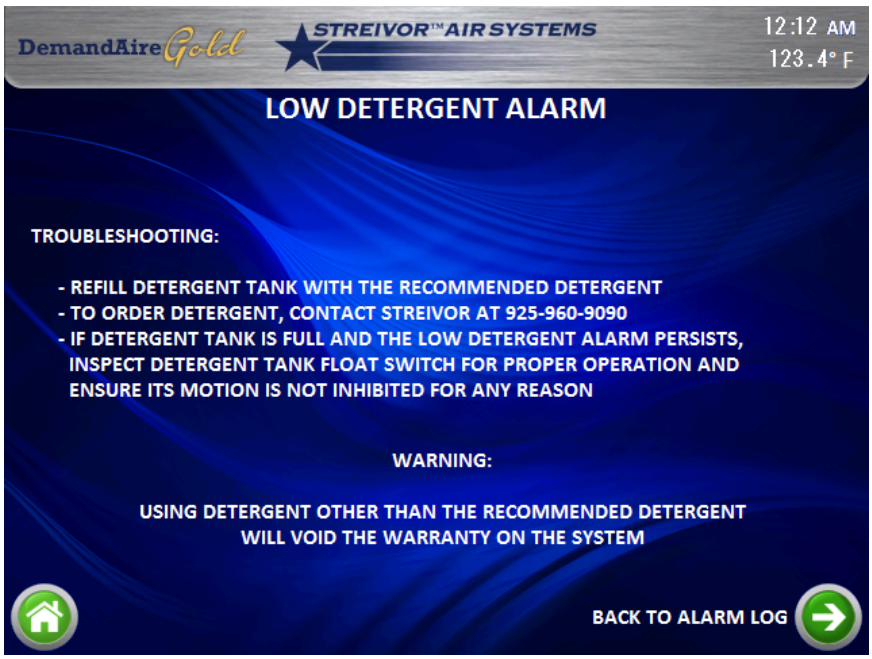
In the event of a Hood Manifold Motor Alarm, the Alarm Notification window will display which specific hood is experiencing an issue with its Hood Manifold Motor. From the Alarm Log Screen, press the *More Info.* button to review additional information regarding the alarm. The Hood Manifold Motors can be turned on manually for testing and troubleshooting purposes from the Maintenance Mode Screen without activating the wash/purge cycle.



Low Detergent Alarm

The Alarm Notification window will appear in the event of a Low Detergent Alarm. From the Alarm Log Screen, press the *More Info.* button to review additional information regarding the alarm. To resolve the alarm, refill the detergent tank with the recommended detergent. The float switch inside the detergent tank will reset the alarm automatically once the tank is filled.

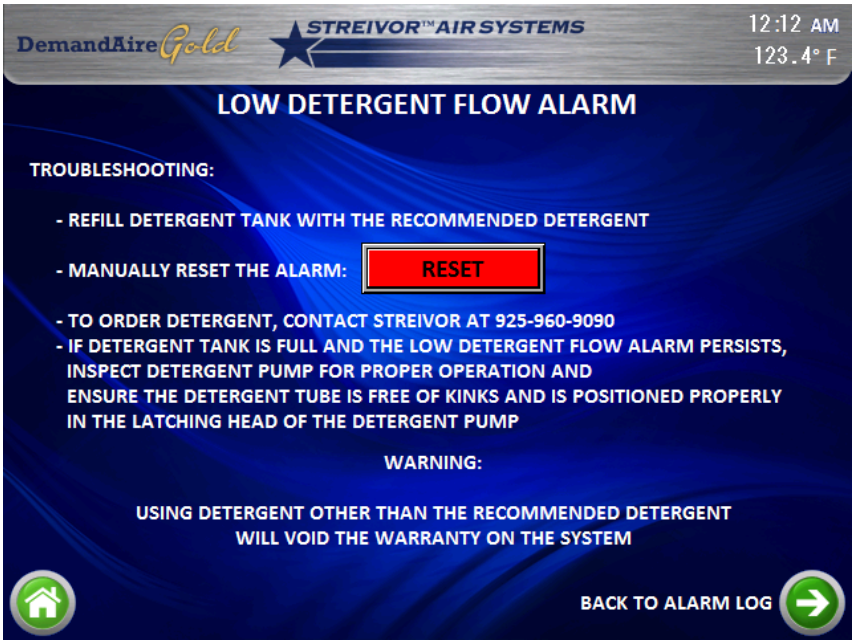
WARNING: Using detergent other than the recommended detergent will void the warranty on the system!



Operation Procedures

Low Detergent Flow Alarm

The Alarm Notification window will appear in the event of a Low Detergent Flow Alarm (if the optional detergent flow switch was included). From the Alarm Log Screen, press the *More Info.* button to review additional information regarding the alarm. To resolve the alarm, press the *Reset* button on the screen below.



Fire Suppression System Alarm

The Alarm Notification window will appear in the event of a Fire Suppression System Alarm. From the Alarm Log Screen, press the *More Info.* button to review additional information regarding the alarm. Refer to the *DemandAire Installation and Operations Manual* for more information regarding how to reset the electric gas valve(s), if electric gas valve(s) were included.

Note: Water will flow through the Rotating Manifold nozzles for up to 10 minutes following a fire suppression system actuation.

Preventative Maintenance

Following a preventative maintenance program will increase the life of the Self-Cleaning Hood System and will help to ensure it is operating as efficiently as possible.

Daily

- Each Self-Cleaning Water Wash Hood should undergo a daily wash cycle for best results, especially hoods exhausting heavy and extra heavy-duty cooking appliances such as charbroilers, woks, and solid-fuel grills
- Manually clean the exterior of the hood as needed (Refer to Streivor's *Hood Installation, Operation, and Maintenance Manual*)

Weekly

- During the first week of operation, clean all wye strainers, nozzle orifices, and backflow preventers as foreign debris from construction in the water lines after start-up may clog and damage components of the Self-Cleaning Hood System if not cleaned thoroughly
- Fill the detergent tank as needed with the recommended detergent

Monthly

- Run a test wash cycle on each hood, verify the hood is being washed with detergent and hot water and verify that the temperature and pressure gauge in the Plumbing Control Station (PCS) reads no less than 40 PSI and 140°F while the hood is being washed
- Check detergent fittings for tightness

Every 6 Months

- Clean the detergent tank and refill it with the recommended detergent
- Clean the wye strainers in the PCS
- Clean the backflow preventer relief valve, first check valve, and second check valve if necessary (refer to the *Plumbing Control Station Component Maintenance* section of this manual)

Plumbing Control Station Component Maintenance

Backflow Preventer

A backflow preventer is installed in the PCS on each water line. The backflow preventer includes two check valves and a relief valve which act to prevent potential backflow of contaminated water into the water supply line. During initial startup, after the upstream ball valve in the PCS is turned on, turn on the first ball valve of the backflow preventer slowly to prevent water hammer and possible damage to the backflow preventer. After the backflow preventer is filled with water, open the second ball valve on the backflow preventer slowly. This procedure should be repeated any time the water supply is turned off to the backflow preventer and then turned on again, such as when turning off the upstream ball valve in the PCS.

After initial installation, a discharge from the relief valve opening may occur due to inadequate initial flushing of pipe lines to eliminate dirt and pipe compounds. If flushing will not clear, remove the first check valve and clean thoroughly.

Note: Periodic relief valve discharge may occur due to fluctuating supply pressure during a static or no flow condition.

Relief valve will discharge water when, during no-flow periods, (1) the first check valve is fouled or (2) the inlet pressure to the device drops sufficiently due to upstream pressure fluctuations to affect the required operating differential between the inlet pressure and reduced pressure zone. Otherwise such relief (spitting) can occur when the second check valve is fouled during emergency backflow or resulting from a water hammer condition.

It is important that the backflow preventer be inspected periodically for any discharge from the relief valve which will provide a visual indication of need for cleaning or repair of check valves. Also testing for proper operation of the device should be made periodically in compliance with local codes, but at least once a year or more often, depending upon system conditions.

Contact Streivor for more information regarding service of the backflow preventer, including removal and cleaning the check valves and relief valves.

Figure 27: Backflow Preventer(s)

Plumbing Control Station Component Maintenance

Wye Strainer

A wye strainer is installed in the Plumbing Control Station (PCS) on each hot and cold water line. The wye strainer filters foreign debris and particulates in the water line to protect the operation of downstream components such as valves and nozzles. The wye strainer may become clogged with foreign debris over time, especially after initial startup. A clogged wye strainer may negatively impact the performance of the Self-Cleaning Hood System and must be cleaned as needed.

To clean the wye strainer, first shut off the ball valve upstream of the wye strainer as well as both ball valves on the backflow preventer downstream of the wye strainer. The threaded plug on the wye strainer can be removed to drain the system and then the mesh strainer portion can be removed for cleaning. Water will drain into the bottom of the PCS down a pitched trough toward the cabinet drain. Replace the clean mesh strainer and threaded plug. Turn on the upstream ball valve slowly. Then turn on the first ball valve of the backflow preventer slowly to prevent water hammer and possible damage to the backflow preventer. After the backflow preventer is filled with water, open the second ball valve on the backflow preventer slowly to resume normal operation.

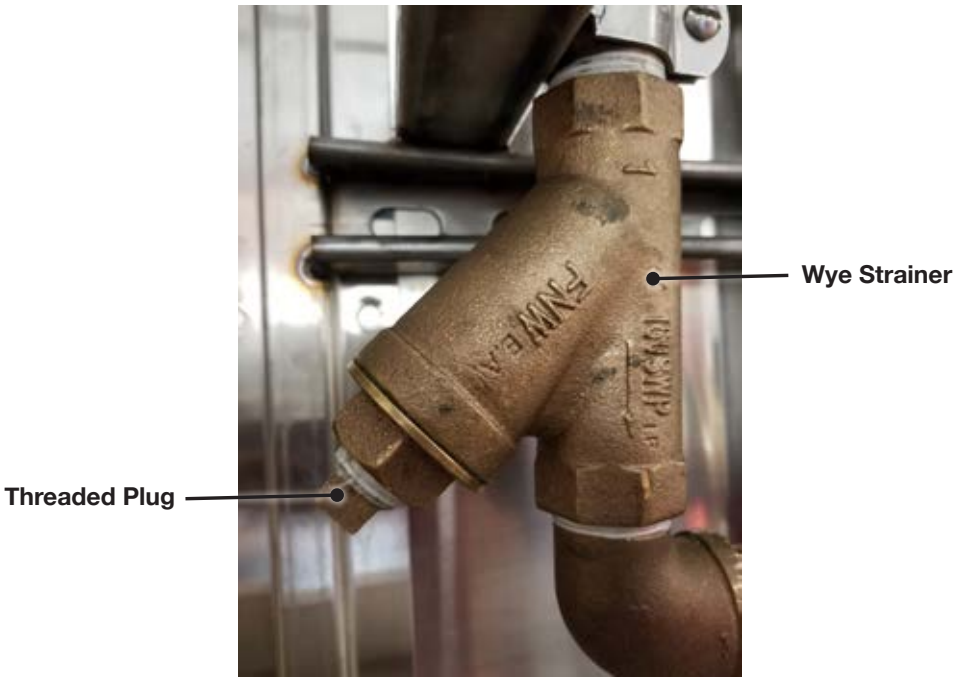


Figure 28: Wye Strainer

Plumbing Control Station Component Maintenance

Detergent Injection System

The Detergent Injection System is composed primarily of the detergent tank, detergent float switch, level indicator, detergent pump, and optional flow switch.

Figure 29: Detergent Injection System

A float switch in the detergent tank will automatically alarm on the HMI touch screen when the detergent level is low. The detergent float switch should be inspected periodically to ensure its motion is not inhibited inside of the detergent tank. The float switch should rest in the horizontal position when the detergent level is below the float switch and it will rest in an upward floating position when the detergent tank is filled with detergent above the float switch.

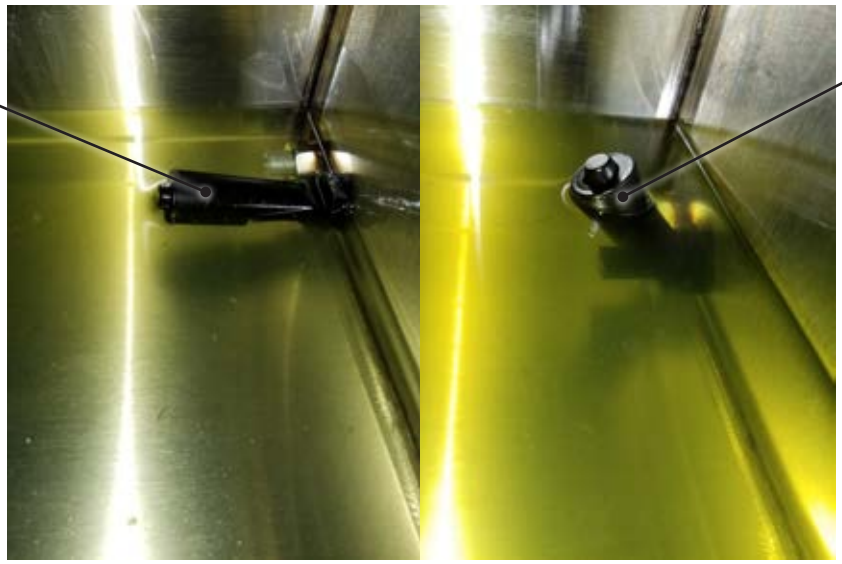


Figure 30: Detergent Float Switch

Plumbing Control Station Component Maintenance

Self-Cleaning Hood Systems which also include an optional flow switch on the detergent line will automatically alarm when there is low detergent flow. Low detergent flow may be caused by low detergent levels, detergent pump failure, or by foreign debris constricting the detergent injection line. Refer to the *Alarms* section in this manual for more information regarding the detergent alarms.

To refill the detergent tank with the recommended detergent, remove the two screws holding the detergent tank lid, remove the lid, and slowly pour detergent into the tank to avoid splashing. Fill no more than within 1/2" of the top of the tank and replace the lid to keep foreign debris from entering the tank.

WARNING: Using detergent other than the recommended detergent will void the warranty on the system!

The detergent pump is a peristaltic pump which does not require any special maintenance or priming. The pump is driven by a stepper motor, which allows the detergent flow rate to be easily modified from the HMI touch screen for each individual hood. This allows the Self-Cleaning Hood system to consume less detergent when washing smaller hoods or hoods exhausting light duty appliances which may require less frequent cleaning.

The detergent pump includes a latching head which closes down around the detergent tubing from the detergent tank. When the detergent pump is turned on, it forces detergent into the tubing and injects it into the water line leaving the Plumbing Control Station to each hood being washed. The clamped portion of the detergent tubing should be inspection periodically for wear and leaks. If the tubing shows visible signs of severe wear, replace the tubing. There should be no bends or kinks in the tubing that may inhibit the flow of detergent.

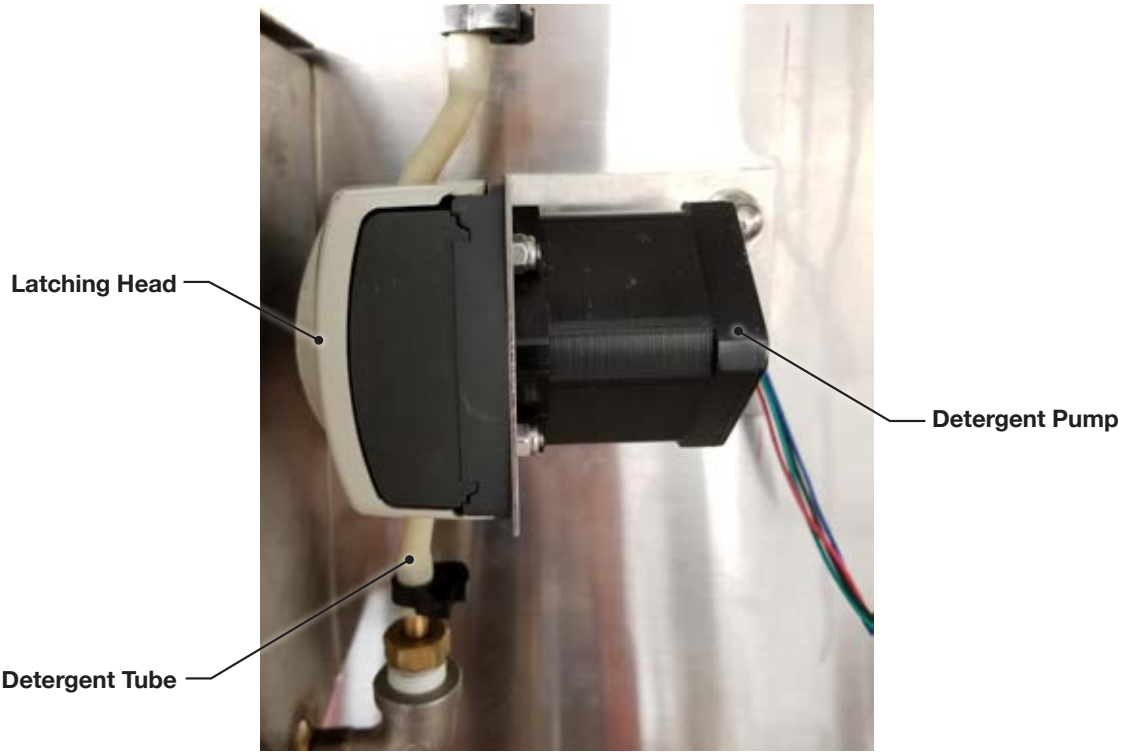


Figure 31: Detergent Pump

Warranty

Streivor, Inc., (Seller), warrants this equipment to be free from defects in materials and workmanship, under normal use and service, for the period of 12 months from the date of shipment.

This warranty shall not apply if:

1. The equipment is not installed by a qualified installer per the Seller's installation instructions (copy of which is shipped with the product).
2. The equipment is not installed in accordance with federal, state and local codes and regulations by a qualified installer.
3. The equipment is misused or neglected.
4. The equipment is not operated within its published capacity.
5. The equipment is modified internally.
6. Detergent other than the recommended detergent is used.

The Seller shall not be liable for incident and consequential losses and damages potentially attributed to malfunctioning equipment.

Should any part of the equipment prove to be defective in material or workmanship within the 12 months warranty period, upon examination by the Seller, such part will be repaired or replaced by Seller at no charge. The Buyer shall pay all labor costs incurred in connection with such repair or replacement.

Equipment shall not be returned without Seller's prior authorization and all returned equipment shall be shipped by the Buyer, F.O.B. Seller's factory, freight prepaid.

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