Self Cleaning Hood with Optional CORE Protection Fire System

Installation, Operation, and Maintenance Manual

RECEIVING AND INSPECTION

Upon receiving unit, check for any interior and exterior damage, and if found, report it immediately to the carrier. Also check that all accessory items are accounted for and are damage free.

WARNING!!

Installation of this module should only be performed by a qualified professional who has read and understands these instructions and is familiar with proper safety precautions. Improper installation poses serious risk of injury due to electric shock and other potential hazards. Read this manual thoroughly before installing or servicing this equipment. ALWAYS disconnect power prior to working on module.

Save these instructions. This document is the property of the owner of this equipment and is required for future maintenance. Leave this document with the owner when installation or service is complete.

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WARRANTY

This equipment is warranted to be free from defects in materials and workmanship, under normal use and service, for a period of 12 months from date of shipment. This warranty shall not apply if:

1. The equipment is not installed by a qualified installer per the MANUFACTURER'S installation instructions shipped with the product,
2. The equipment is not installed in accordance with federal, state and local codes and regulations,
3. The equipment is misused or neglected,
4. The equipment is not operated within its published capacity,
5. The invoice is not paid within the terms of the sales agreement.

The MANUFACTURER shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 12-month warranty period, upon examination by the MANUFACTURER, such part will be repaired or replaced by MANUFACTURER at no charge. The BUYER shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without MANUFACTURER'S prior authorization and all returned equipment shall be shipped by the BUYER, freight prepaid to a destination determined by the MANUFACTURER.

INSTALLATION

It is imperative that this unit is installed and operated with the designed airflow and electrical supply in accordance with this manual. If there are any questions about any items, please call the service department at **1-866-784-6900** for warranty and technical support issues.

Mechanical

WARNING: APPLY THE APPROPRIATE WATER PRESSURE AND TEMPERATURE TO ALL FITTINGS TO PREVENT LEAKAGE AND COMPONENT FAILURE

Plumbing Connections

Several field plumbing connections are required for proper Self Cleaning hood operation. It is recommended that all plumbing connections be sealed with Teflon tape or pipe dope. Use care not to contaminate the interior surfaces of the water lines when plumbing the unit, as small particulate can clog the orifices of the spray nozzles.

System Nomenclature

System	Water Connection
W1	1 Hot Water
W2	1 Cold Water
W3	1 Hot, 1 Cold Water
W1 with CORE	1 Hot, 1 Dedicated Water

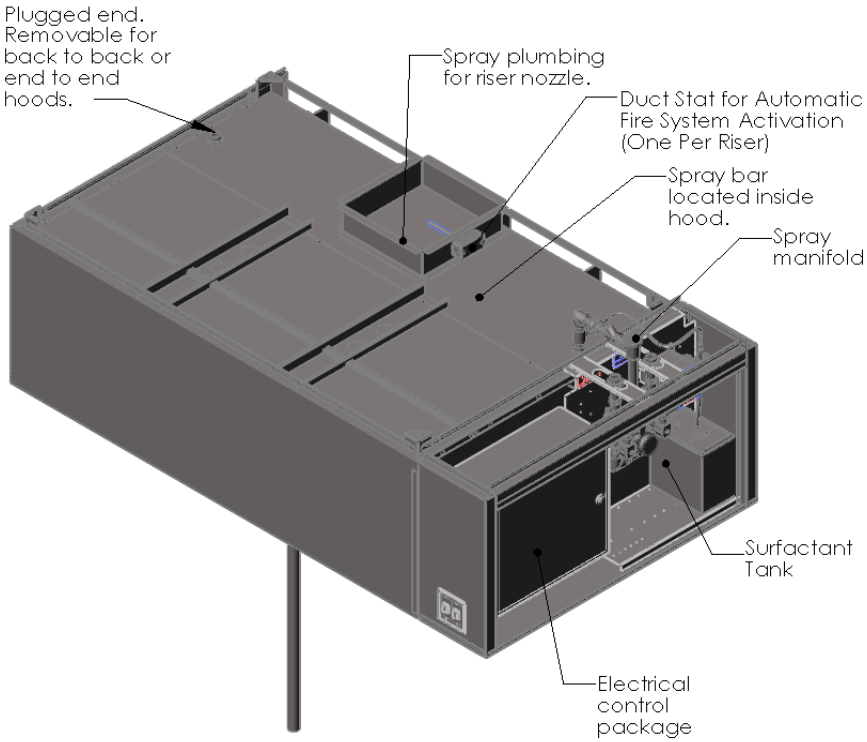
1. All incoming plumbing connections are connected via ¾" quickseals at the top of the utility cabinet. See Figures 1 and 2 for details.
2. Self Cleaning hoods with the **W1** option (Hot Water Wash) require a hot water connection at 140°F to 170°F and 30 to 50 psi. If the pressure is greater then 50 psi, a water regulator must be connected. Typical water flow rate is 0.7 GPM per foot of hood. The spray lasts for a factory setting of 3 minutes every time the fans are switched off.
3. Self Cleaning hoods with the **W2** option (Constant Cold Water) require an unheated water connection at 20 to 40 psi. If the pressure is greater then 40 psi, a water regulator must be connected. Typical water flow rate is 0.7 GPM per foot of hood. The spray runs constantly while the fans are turned on.
4. Self Cleaning hoods with the **W3** option (Hot Water Wash and Constant Cold Water) require a hot water connection at 140°F to 170°F and 30 to 50 psi. and an unheated water connection at 20 to 40 psi. If the pressure is greater then the max rating, a water regulator must be connected. Typical water flow rate is 0.7 GPM per foot of hood for hot and cold water. The cold spray runs constantly while the fans are turned on and the hot water lasts for a factory setting of 3 minutes every time the fans are switched off.
5. If the **CORE Protection** fire system option is ordered with the W1 configuration, a dedicated water supply must be connected to the CORE connection. This requires an unheated water connection at 30 to 50 psi. Water pressure may not drop below 30 PSI while the hood is spraying. Pressure may not rise above 50 PSI when the hood is not spraying. If the pressure is greater then 50 psi, a water regulator must be connected. Typical water flow rate is 0.7 GPM per foot of hood. The water connection must be ¾" pipe and must be dedicated to the hood. This must be connected to a water supply line immediately downstream from the building main shut-off valve. This main valve must be continuously supervised. See **Table 1** for hood length and pressure requirements.
6. If multiple hoods are arranged in an end-to-end or back-to-back arrangement, plumbing connecting the hoods must be piped in the field. The plugged end of the spray bar is used to do this. Remove the plugs on the main hood and the adjacent hood and simply pipe the two together. The highest part of the connecting pipe must not exceed the height of the vacuum breaker in the main utility cabinet. See **Figure 1A** for illustration.
7. There is also a non-pressurized 1-1/2 inch drain connection that must be piped. This allows water to drain from the hood grease trough. It must be connected to the building grease trap. 30 inch tall hoods will have 2 drains and hoods 10 feet and longer will also have 2 drains. See Figure 3 for details.

8. Once all supply and drain lines are connected, remove one of the nozzles and flush the lines.

IMPORTANT!!

CORE Protection water connection requires a dedicated supply line. This must be connected immediately downstream from the building main shut-off valve. The main shut-off valve must be supervised. A minimum water pressure of 30 psi (while the hood is spraying) must be achieved at the hood.

Self Cleaning with CORE Protection Fire System Overview



Note:
Filters must be installed for proper system operation. Filters can be removed once the system is off.

The Fully Integrated Self Cleaning System has the following options.

1. **Hot Water Fully Integrated Self Cleaning System (W1).**
The hot water fully integrated self cleaning system uses the basic manifold with the addition of a detergent pump and timers to control the system. When the fan power switch is turned off, the system sprays and injects surfactant into the plenum for cleaning. The length of the wash cycle and surfactant injection are adjustable. It is recommended that the wash time be 3 minutes and surfactant injection is 1 second every 1 minute.
Water Pressure = 30 to 50 PSI
Water Temp = 140° to 170° F

2. **Cold Water Fully Integrated Self Cleaning System (W2). (Optional)**
The cold water fully integrated self cleaning system uses the basic manifold without a surfactant pump or timers. When the fan switch is turned on, the system begins to spray cold water into the plenum. The spray stops once the fans are turned off. Water pressure regulator is supplied by others.
Water Pressure = 20 to 40 PSI

3. **Hot And Cold Fully Integrated Self Cleaning System (W3). (Optional)**
The hot and cold fully integrated self cleaning system uses both systems above with one change. It has two water inlets versus the previous systems one. This system combines the functionality of the above systems.

4. **CORE PROTECTION (Optional)**
Primary Water Sprinkler Fire Protection for Commercial Kitchen Hoods. Duct and Plenum Fire System protection is provided by this option per UL300. Appliance protection by others. Duct mounted sensor electrically activates the water spray system to extinguish duct and plenum fires. The appliance protection system is also electrically activated by the same duct sensor.
Water Pressure = 30 to 50 PSI**

**Water pressure may not drop below 30 PSI while water is spraying. Pressure may not raise above 50 PSI when water is not spraying.

Figure 1

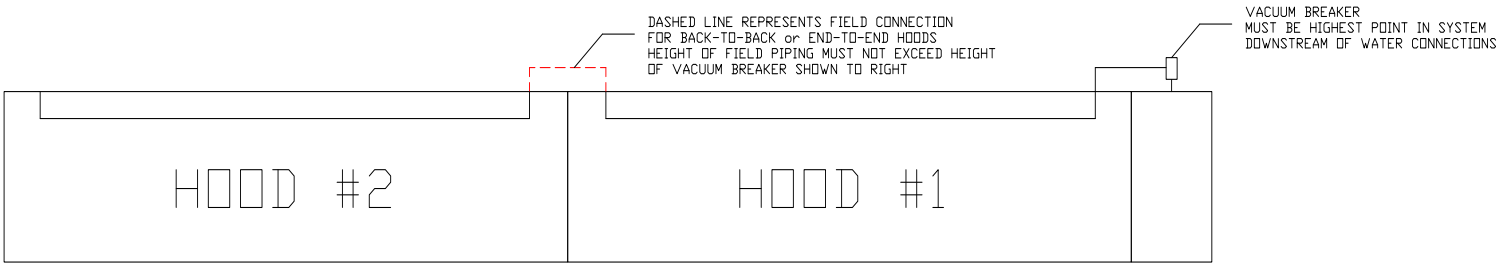


Figure 1A

Minimum Pressure Requirements for Lengths of Hood

Length of Hood (Ft)	Minimum Inlet Water Pressure (PSI)
0	30
4	30
8	30
12	30
16	30
20	33
24	34
28	35
32	36
36	37
40	38
44	39
48	40
52	41
56	42
60	43
64	45
68	46
72	47
76	49
80	50

Table 1

Note: Water pressure may not drop below 30 PSI while the hood is spraying. Pressure may not rise above 50 PSI when the hood is not spraying. If the pressure is greater then 50 psi, a water regulator must be connected.

Self Cleaning Hood Top and Bottom View

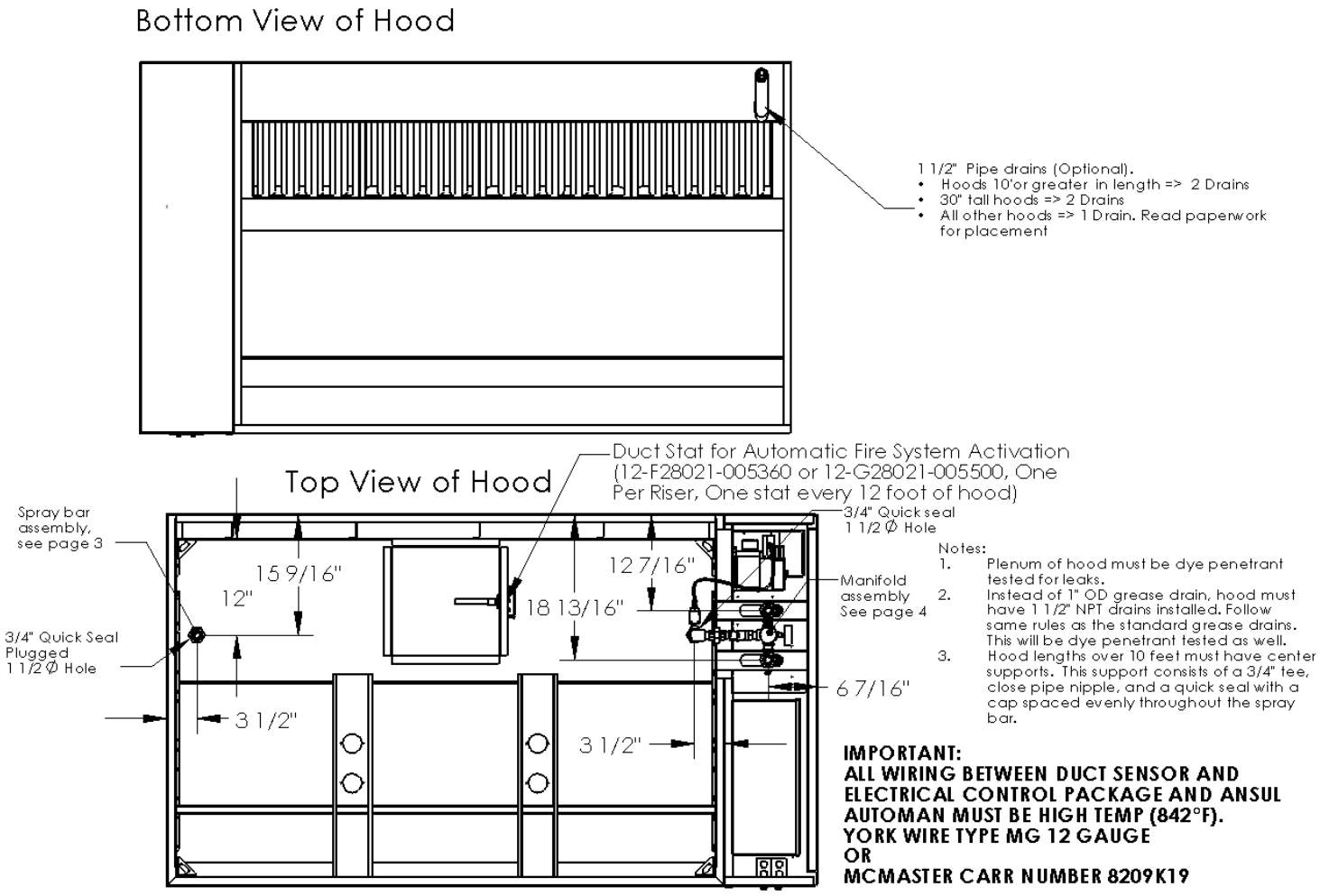


Figure 2

Drain Assembly

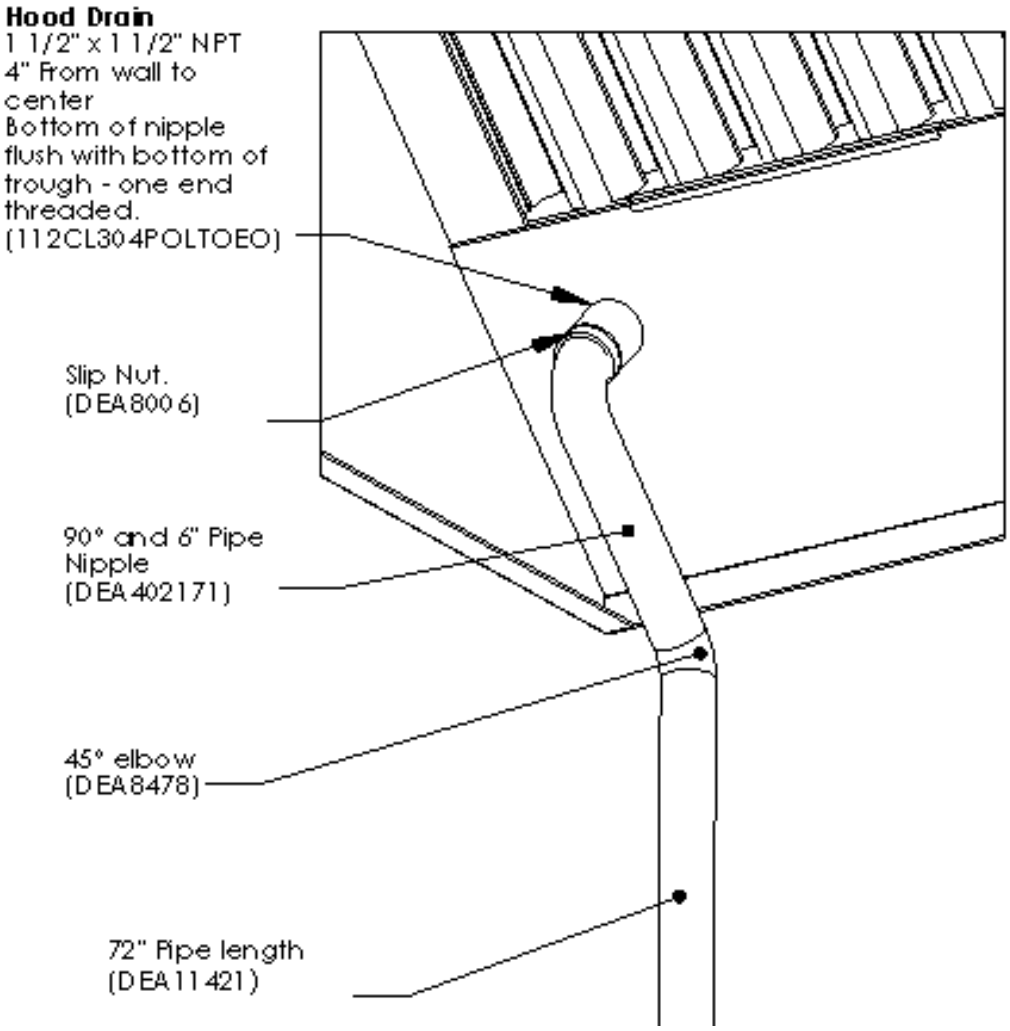


Figure 3

Electrical

Before connecting power to the control, read and understand the entire section of this document. As-built wiring diagrams are furnished with each control by the factory, and are attached either to the door of the unit or provided with the paperwork packet.

Electrical wiring and connections should be done in accordance with local ordinances and the National Electric Code, ANSI/NFPA70. Be sure the voltage and phase of the power supply and the wire amperage capacity is in accordance with the unit nameplate.

WARNING!!

Disconnect power before installing or servicing control. High voltage electrical input is needed for this equipment. This work should be performed by a qualified electrician.

Copper Wire Ampacity

Wire Size AWG	Maximum Amps
14	15
12	20
10	30
8	50
6	65
4	85

1. Always **disconnect power** before working on or near this equipment. Lock and tag the disconnect switch or breaker to prevent accidental power up.
2. **There are multiple electrical connections** required for this control. **120VAC** should be wired to terminals **H1** and **N1**. If the hood is equipped with a separate light circuit, 120VAC should power it per the as-built schematic. Fan wiring connections should be made per the schematic. H1 and N1 should not be connected to a shunt trip breaker.
3. Make certain that the power source is compatible with the requirements of your equipment. The system wiring schematic identifies the **proper phase and voltage** of the equipment.
4. Before connecting control to power source, verify power line wiring is de-energized.
5. Secure the power cable to prevent contact with sharp objects.
6. Do not kink power cable and never allow the cable to come in contact with oil, grease, hot surfaces or chemicals.
7. If the control is a **wall-mount system**, duct mounted temperature sensor will need to be wired. The temperature sensor should be wired to terminal blocks as indicated on the wiring schematic. The hood lights wiring will also need to be wired to terminals “B” and “W”. The fire system micro-switch will need to be wired to terminals “C1” and “NC1”. Verify connections on wiring schematic.
8. Before powering up the system, make sure that the interior of the control is free of loose debris or shipping materials.
9. **If 3 phase motors are spinning in the incorrect direction, switch any two wires on the output of the motor starter. Rewire single phase motors per the motor schematic to change direction.**
10. If any of the original internal wire supplied with the system must be replaced, it must be replaced with type THHN wire or equivalent.
11. All field supplied wire for the optional CORE Protection fire system solenoid or Firestat must be high temp wire rated for 842°F minimum.
12. If equipped with CORE Protection, the battery must be switched on after wiring is complete. Remove the metal battery faceplate cover and push the “on” button. Battery lights should illuminate. Replace the faceplate once complete.
13. All appliances under the hood must shut down in the event of a power loss. This can be done by connecting the reset relay and shunt breakers to the control panel per the schematic.

IMPORTANT!!

CORE Protection battery backup produces output power even when main power is disconnected from system. When performing major electrical service to the control, the battery backup must be disabled and then restarted before commissioning.

OPERATION

Prior to starting up or operating the system, check all fasteners for tightness. Ensure that the wiring is installed properly and that all nozzles and panels are installed.

Self Cleaning Hood

The Self Cleaning hood is designed to use hot water to wash the hood plenum and immediate duct section every time the fan switch is switched from the “ON” position on the main control panel. When the switching action occurs, hot water sprays along the entire length of the hood and towards the back of the hood for a factory setting of 3 minutes. During this time, surfactant is injected into the water stream for a duration of 1 second for each minute of wash time. Once the wash cycle is complete, water stops spraying and the hood filters are to be removed and cleaned.

If the hood is ordered with a cold water mist option, cold water sprays continuously during the cooking process. Cold water stops spring when the fan switch is switch from the “ON” position.

Self Cleaning Hood Start Up

Special Tools Required

- AC Voltage Meter
- Standard Hand Tools

Start Up Procedure – Self Cleaning Hood

1. Check all nozzles to make sure they are installed and tight.
2. Install all hood filters per the filter installation configuration chart below. There are drip blanks secured to the filters to prevent water from exiting the hood between the filters.
3. Open all water valves to the hood.
4. Fill surfactant tank with surfactant. The “Add Surfactant” light should not be on. Prime the surfactant pump with the push-button on the face of the pump.
5. There are 2 timers that control the water wash spray and the surfactant injection. The wash timer is a fleeting off timer and is set to 3 minutes from the factory. The surfactant timer is an asynchronous timer that is factory set for 1 second of injection with a 1 minute off time. The injection occurs at the start of each minute. Both timer settings should be verified. (See page 18 for information on timers)
6. Turn the hood fan switch to the “ON” position. Fans should operate. If they do not, check wiring. If the hood has the cold water mist option, cold water should begin to spray.
7. To operate the wash cycle, simply turn the fan switch off. The wash cycle energizes automatically and will remain on for the duration of the wash timer setting.
8. Verify that surfactant is being injected properly into the water stream.
9. Verify the pressure and temperature of the water via the pressure/temperature gauge. See Figure 4 for a picture of the gauge.
10. Check all manifold pipe connections to ensure there are no water leaks.
11. Check all filters to make sure that no water is leaking back through the filters.
12. Verify that the hood grease trough is draining properly and there are no clogs in the drain.

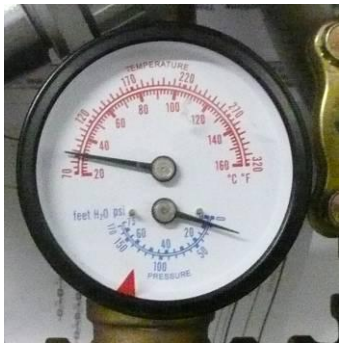


Figure 4

Filter Installation Configuration

The hood filters have drip blanks attached to them to prevent water leakage through the filters. The chart below shows the location of the drip blanks and the last filter to be installed into the hood. See Figure 5 below for details.

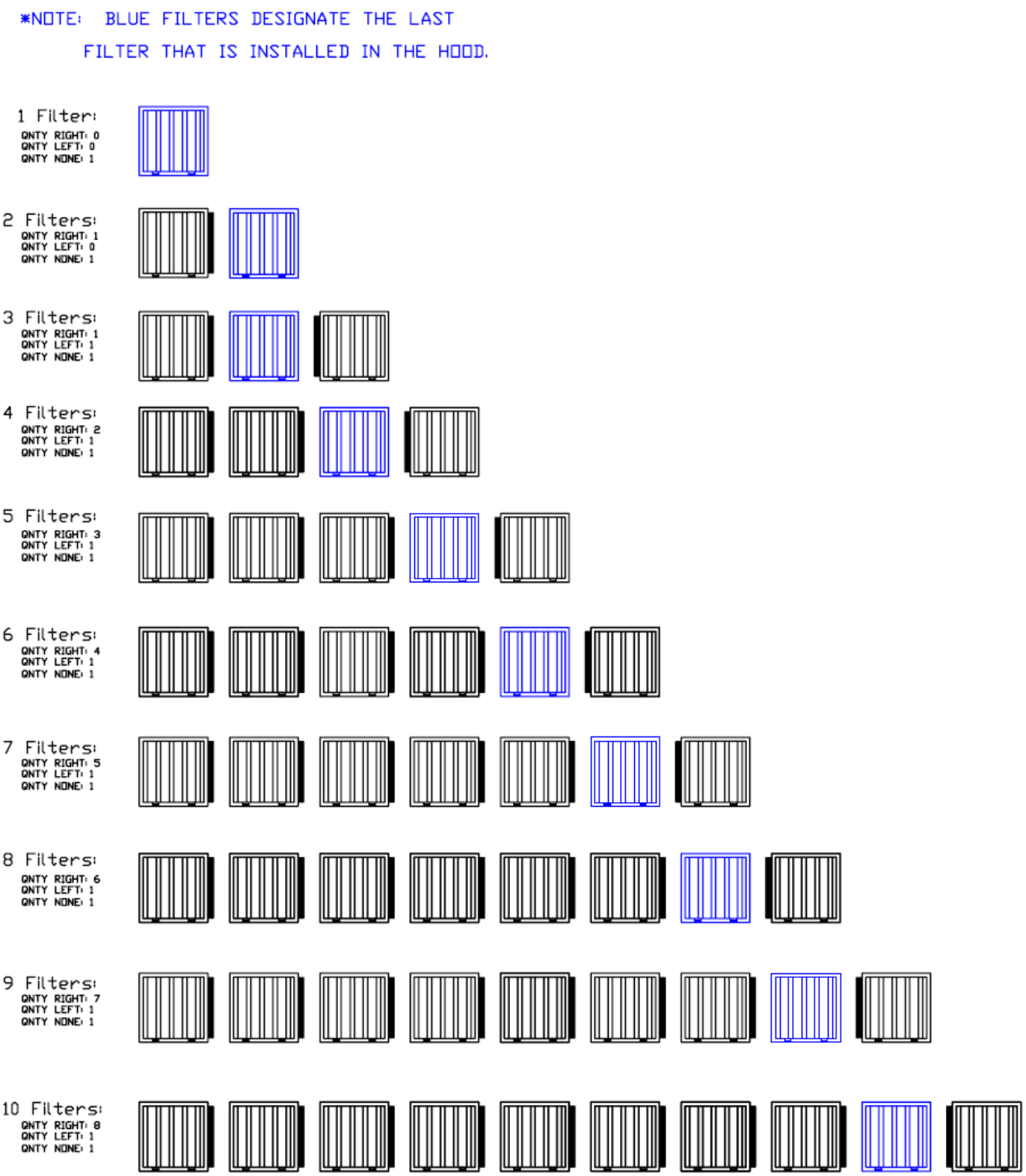


Figure 5

CORE Protection Fire System

The Self Cleaning hood is required to be installed to achieve CORE Protection. The daily basic operation of the CORE Protection system is identical to the Self Cleaning hood. In the event of a hood fire, CORE Protection is activated.

If the hood Firestat installed in the riser senses a temperature hotter then its internal setpoint or if the remote manual pull station is pulled, an electric signal is sent to the appliance protection fire system and the hood duct and plenum water system. An electric solenoid operated Automan activates the appliance surface protection system. An electric water solenoid is energized allowing the flow of water to the hood duct and plenum through the Self Cleaning hood spray bar. At the same time, surfactant is continually injected into the water stream to help suppress the fire.

Once the fire system is activated, a “Fire System Activated” light is illuminated on the hood control panel and an audible alarm sounds. All gas and electric appliances under the hood must be electrically interlocked to shut off. This is achieved via a gas valve relay and/or a shunt trip breaker. A timer is also energized upon fire system activation. The timer is factory set for 30 minutes and keeps the water spray system running for a minimum of 30 minutes. This is necessary to help extinguish all remaining duct fire potential.

The fire system is electrically operated and thus requires a battery backup system. In the event of a loss of electrical power, all gas and electric appliances under the hood must be electrically interlocked to shut off. This is achieved via a gas valve relay and/or a shunt trip breaker. The battery backup will automatically energize upon a loss of power. The battery backup will monitor the fire system circuit for up to two hours and be able to operate the fire system circuit for a minimum of 30 minutes. Once power is restored, the battery will automatically recharge. In the event of an extended power outage, the battery must be manually reset.

CORE Protection Reset Overview

There are multiple actions required to reset the fire system. First, the duct Firestat must be cooled to below its internal setpoint and the remote pull station must be reset using a standard allen wrench key. Once both of these devices have been reset, the timer will automatically stop the fire system once its time duration has ended. An alternative method to bypassing the timer is to press the fire system reset button on the face of the surfactant pump. This will de-energize the timer and reset the system. NOTE: The Firestat must be cool and the remote pull station must be reset for this button to work.

The appliance protection fire system must be recharged with liquid agent, a new canister must be installed and the fire system must be re-armed.

After a fire, full inspection by a certified professional must be conducted prior to restarting the fire system.

CORE Protection Fire System Option Start Up

Special Tools Required

- AC Voltage Meter
- Standard Hand Tools
- Fire System Cocking Tool
- Hand-held propane Torch

Start Up Procedure – CORE Protection Fire System

1. Perform the Self Cleaning hood start-up as outlined in the previous section.
2. The CORE Protection water connection must be ¾" pipe and must be dedicated to the hood. This must be connected to a water supply line immediately downstream from the building main shut-off valve or a water fire system. This main valve must be continuously supervised.
3. The fire system must be tested to ensure proper operation in the event of a fire.
4. Ensure there are lights illuminated on the face of the battery backup.
5. It is recommended to leave the appliance fire system tanks dry during this test and apply balloons to the fire system appliance drops to verify proper operation.
6. Arm the appliance fire system automan with the special cocking tool and load a high pressure canister into the automan.

Start Up Procedure – Firestat Activation

1. Remove a hood filter directly below the Firestat.
2. Use a portable propane torch to apply heat to the duct Firestat. Heat should activate the fire system and water should begin to spray. Air pressure should exit the appliance drops.
3. Replace the filter and allow the water to spray while reviewing the system.
4. Verify that the water pressure is 30 psi minimum and 50 psi maximum.
5. Verify that surfactant is constantly being injected into the water stream.
6. Verify that the appliance fire system automan has been fired and air is flowing from appliance drops.
7. Verify that fire system timer is keeping spray system running. Timer should be set for 30 minutes. (See page 19 for more information on timer)
8. Verify that all gas and electric cooking appliances have been disabled.
9. Verify that the "Fire System Activated" light illuminates on the control panel and that the audible alarm is sounding.
10. If all of the above is confirmed, reset the fire system by pressing the button on the surfactant pump.

Start Up Procedure – Remote Pull Station Activation

1. Once the CORE Protection fire system is reset, use the special cocking tool to arm the appliance fire system automan. There is no need to load the high pressure canister again because the appliance system is already verified.
2. Pull down on the remote pull station.
3. Verify that the water pressure is 30 psi minimum and 50 psi maximum.
4. Verify that surfactant is constantly being injected into the water stream.
5. Verify that the appliance fire system automan has been fired.
6. Reset the remote pull station. Turn the allen key clockwise, pull the cover forward and reset the handle. Close the cover.
7. Verify that fire system timer is keeping spray system running. Timer should be set for 30 minutes.

8. Verify that all gas and electric cooking appliances have been disabled.
9. Verify that the “Fire System Activated” light illuminates on the control panel and that the audible alarm is sounding.
10. If all of the above is confirmed, reset the fire system by pressing the button on the surfactant pump.

Start Up Procedure – Battery Back Up

1. Once the CORE Protection fire system is reset, use the special cocking tool to arm the appliance fire system automan. There is no need to load the high pressure canister again because the appliance system is already verified.
2. Remove 120VAC to the hood control panel by shutting down the circuit breaker to the panel. The battery backup should begin to beep.
3. Pull down on the remote pull station.
4. Verify that the water pressure is 30 psi minimum and 50 psi maximum.
5. Verify that surfactant is constantly being injected into the water stream.
6. Verify that the appliance fire system automan has been fired.
7. Reset the remote pull station. Turn the allen key clockwise, pull the cover forward and reset the handle. Close the cover.
8. Verify that fire system timer is keeping spray system running. Timer should be set for 30 minutes.
9. Verify that all gas and electric cooking appliances have been disabled.
10. If all of the above is confirmed, reset the fire system by pressing the button on the surfactant pump.
11. Reset the circuit breaker applying power to the hood panel. Battery backup should stop beeping.

Start Up Procedure – Final

1. Once the CORE Protection fire system is reset, use the special cocking tool to arm the appliance fire system automan. Follow the appliance fire system manufacturer’s instructions for complete details on resetting the system.
2. Fill the appliance fire system tanks with liquid agent and replace tank seals.
3. Install a new, un-punctured canister into the appliance fire system automan.
4. Verify that battery backup lights are illuminated.
5. Verify that remote pull station is reset.

Reset Procedure – CORE Protection Fire System

1. Fully inspect system to make sure fire is extinguished.
2. If fire is out, Firestat should be cool.
3. Reset remote manual pull station if tripped.
4. CORE system will automatically reset once fire system timer expires (Factory Set at 30 minutes). Alternatively, the reset button on the surfactant pump can be pressed to reset system.
5. Fill appliance fire system tanks with liquid agent.
6. Replace burst cap on appliance tank.
7. Arm appliance fire system automan using special cocking tool.
8. Replace high pressure canister on appliance fire system..

Start Up Checklists

Self Cleaning Hood Start Up Checklist

Action	Completed (Yes/No)	Result
Check All Nozzles for Tightness		
Open all Valves to Hood		
Fill Surfactant Tank		
Prime Surfactant Pump		
Set All Timers		
Check Fan Operation		
Operate Wash Cycle		
Verify Surfactant Pump Operation		
Verify Water Pressure		
Verify Water Temperature		
Check For Leaks in Manifold		
Check For Leaks through Filters		
Verify that Water is Draining Properly		

CORE Protection System Start Up Checklist

Action	Completed (Yes/No)	Result
Self Cleaning Startup Complete		
Main Water line ¾" or Larger		
Main Water Line from Dedicated Supply		
Battery Backup Lights are Illuminated		
Set CORE Protection Timer		
Test Firestat System Activation		
Test Remote Pull Station System Activation		
Verify Water Pressure (30 psi) min.		
Verify Constant Surfactant Injection		
Verify Appliance System Activates		
All Gas and Electric Appliances Shut Down		
Fire System Activated Light Illuminates		
Audible Alarm Sounds		
Verify CORE Timer Works Correctly		
Verify Reset Button Works Correctly		
System Activates on Battery Backup		
Verify Surfactant Tank is Full		
Appliance Protection Tanks Full		
Appliance System Armed		
Appliance Canister Installed		
Reset Remote Pull Station		

CORE Protection System Reset Checklist

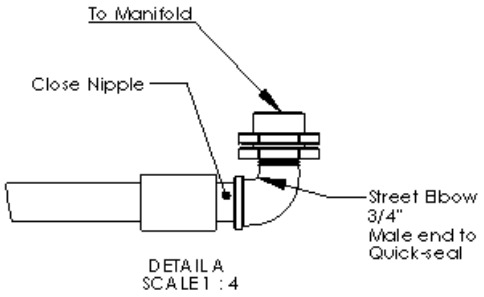
Action	Completed (Yes/No)	Result
Ensure Fire is Extinguished		
Reset Remote Pull Station (If Pulled)		
Press The CORE Reset Button		
Verify Surfactant Tank is Full		
Fill Appliance Protection Tanks		
Arm Appliance Drop System		
Install Appliance System Canister		

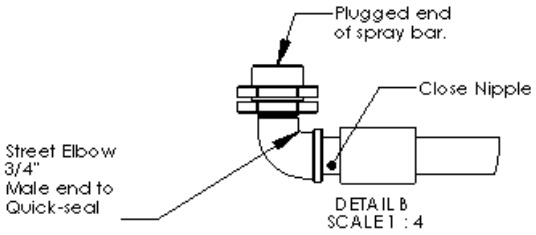
Component Description

The following section lists the major controls and components used in the Self Cleaning hood and the CORE Protection fire system.

Self Cleaning Spray Bar

The Self Cleaning hood contains a spray bar that extends the entire length of the hood immediately behind the filters in the hood. The bar is ¾" brass fittings with nozzles that spray directly toward the back of the hood. The same spray bar is used in hot water wash, cold water mist and CORE Protection fire systems. Water enters the spray bar vie a ¾" quickseal. The other end of the spray bar is plugged. If hoods are installed back-to-back or end-to-end, the plugged end of the spray bar can be un-plugged and connected to the next spray bar. See Figure 6 below for details.





Notes:

1. All fittings and pipe will be Brass.
2. Sections of pipe and tees can be pre-assembled for use. The majority of the length will use these parts.
3. Ends will be made using a Street elbow inside a quick-seal. See Detail A and B.
4. The Variable length section of pipe will be used to complete the spray assembly.
5. On hoods 10' and longer, a tee will be installed at the center of the spray bar for support. This will be a 3/4" Tee with a plugged quick-seal. If this interferes with riser, move supports to both sides of riser.
6. Riser plumbing will be 1/4" NPT Brass. The placement of the tee is dependant on the riser location. The nozzle needs be centered, both vertically and horizontally, within the riser. Riser nozzle must follow table to right.
7. When riser nozzle is located directly under center of riser on spray bar, main TEE must point upwards with a branch for plenum nozzle.

Nozzles for Hot Water Wash (W1) or CORE Protection			
Description	Part Number	Macola	Flow Rate
Riser Nozzle	1/4TT+TP1530+CP1325	2593	2.6 GPM @ 30 PSI
Spray Bar Nozzle	1/4TT+TH-4.3W and 4193A-5-50-SS	2591 and 2592	.70 GPM @ 30 PSI
Nozzles for Cold Water Mist (W2) and Hot Water Wash with Cold Water Mist (W3)			
Description	Part Number	Macola	Flow Rate
Riser Nozzle	1/4TT+TH-4.3W and 4193A-5-50-SS	2591 and 2592	.70 GPM @ 30 PSI
Spray Bar Nozzle	1/4TT+TH-4.3W and 4193A-5-50-SS	2591 and 2592	.70 GPM @ 30 PSI

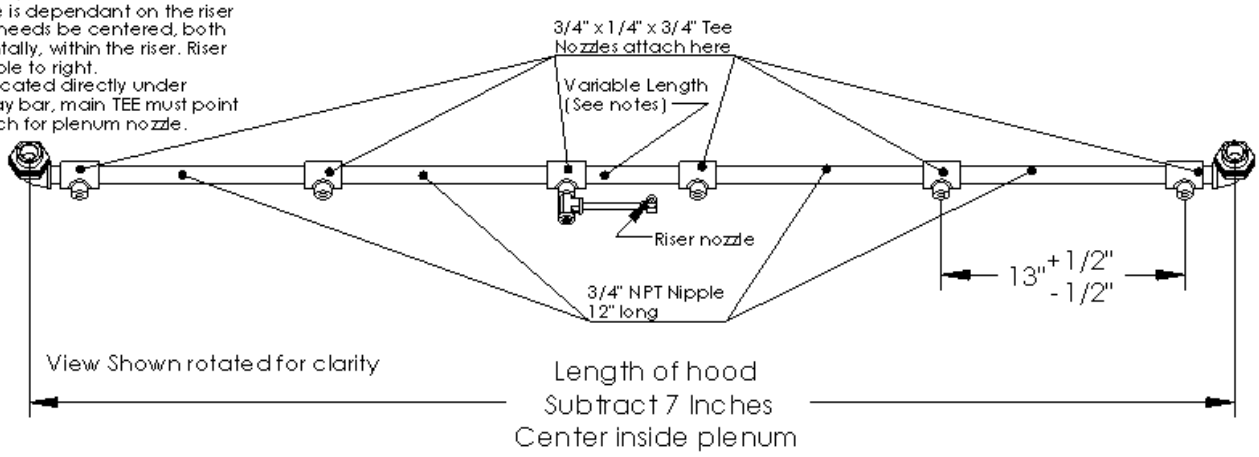


Figure 6

Water Manifolds

There are several versions of manifold configurations. The Self Cleaning with hot water wash (W1) has one hot water connection. The cold water mist (W2) has one cold water connection. The hot water wash with cold water mist (W3) has one hot water and one cold water connection. The Self Cleaning with CORE Protection fire system has one hot water connection and one dedicated water source connection for CORE. Figures 7-10 show self cleaning hood and CORE Protection manifold component details.

Self Cleaning Manifold

Notes:

1. All fittings and pipe will be Brass. Except for drain components.
2. All wiring must be located inside liquid tight conduit.

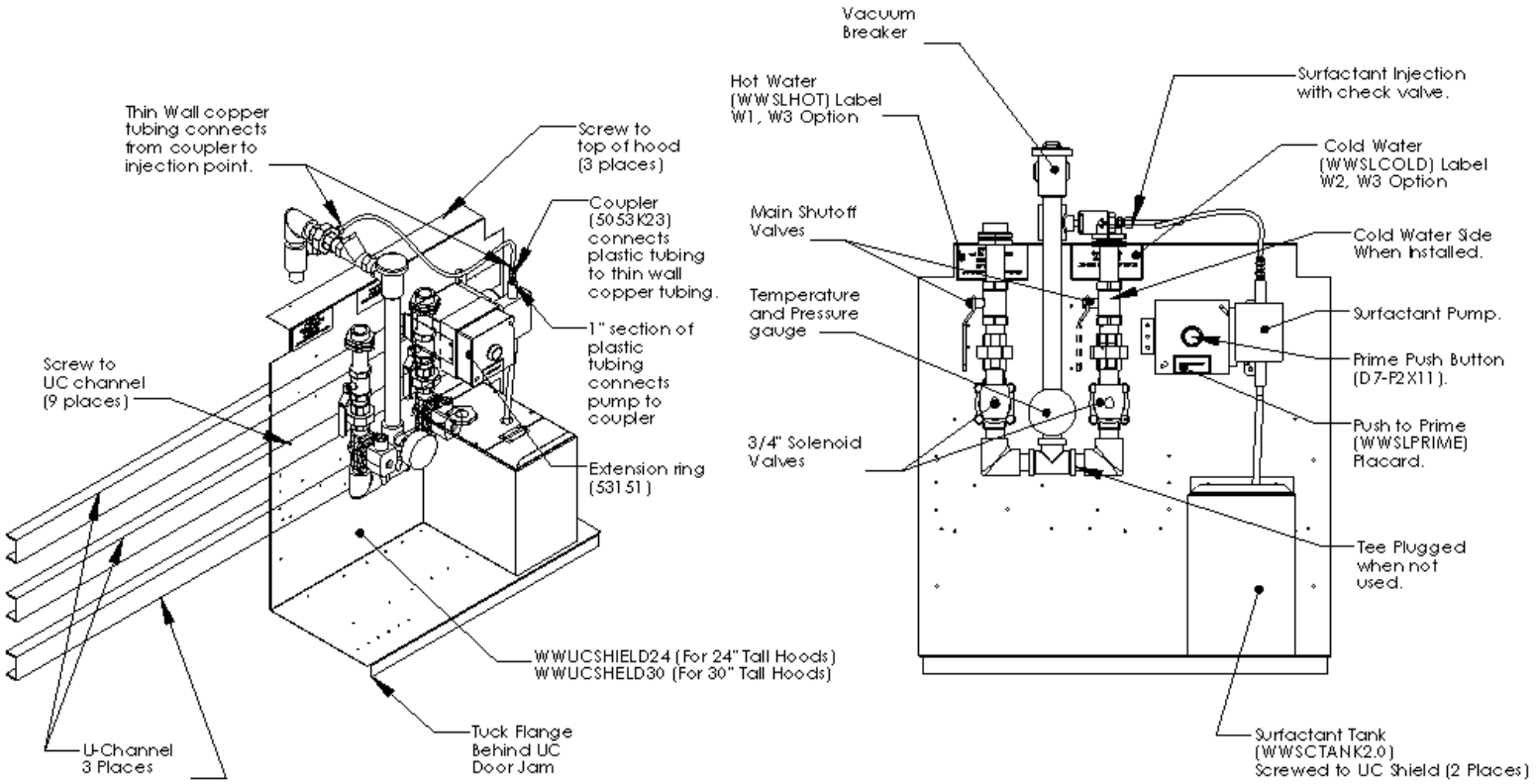


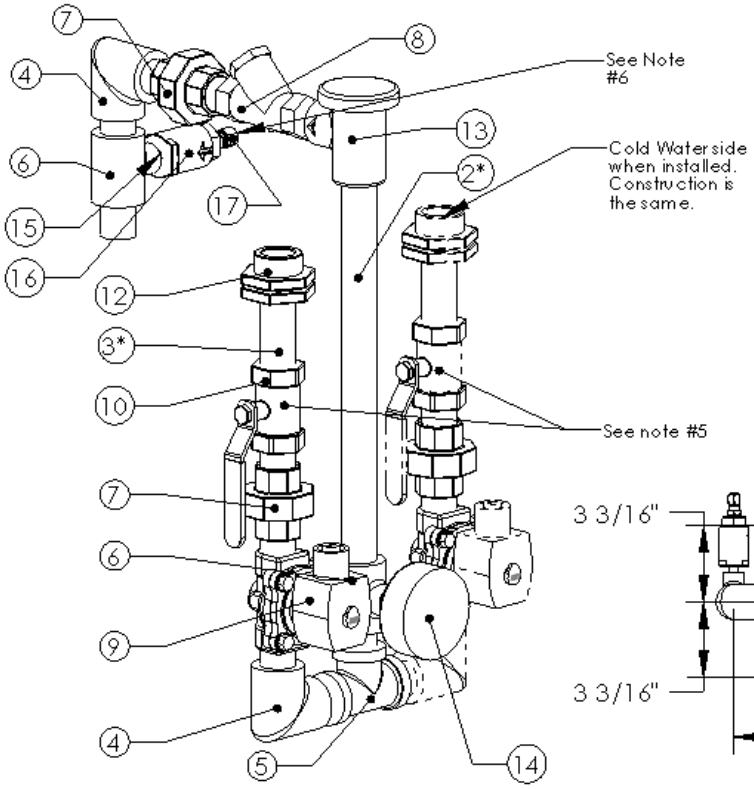
Figure 7

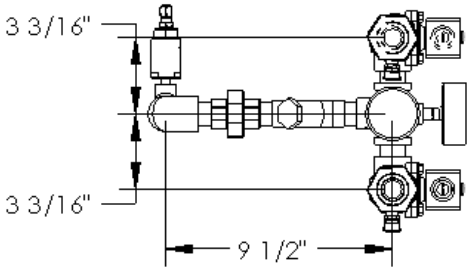
Self Cleaning Manifold Details

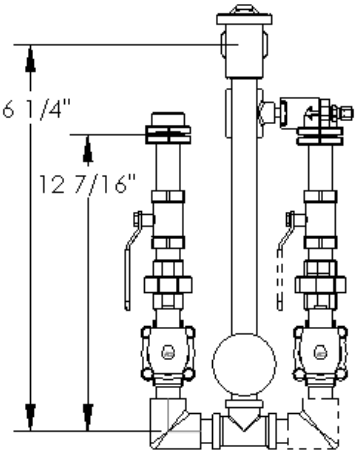
Notes:

1. All fittings and pipe will be Brass, except for drain components.
2. Length and width of manifold must match measurements listed on this page.
3. All pipe nipples are close unless otherwise noted.
4. For 30" tall hoods, plumbing must be lengthened in three places by 6". This is noted below with an *.
5. Valves can be rotated for best fit inside cabinet
6. Thin wall copper tubing to be run to the coupling near the pump to #17. 1" of plastic tubing is used between coupler and pump.

Manifold Parts				
#	Discription	Part #	Macola #	Quantity Used
1	3/4" Close Brass Nipple	4568K191	4568K191	14
2	3/4" x 12" Brass Nipple	4568K215	4568K215	1
3	3/4" x 3 1/2" Brass Nipple	4568K195	4568K195	2
4	3/4" Brass Elbow	4429K164	4429K164	3
5	3/4" Brass Tee	4429K254	4429K254	1
6	3/4" x 1/4" x 3/4" Brass Tee	4429K229	4429K229	2
7	3/4" Brass Union	4429K215	4429K215	3
8	3/4" Brass Wye Strainer	43935K24	43935K24	1
9	3/4" Brass Soleniod Valve	8210G009 120/60, 110/50	AQ3005	2
10	3/4" Manual Ball Valve	47865K24	47865K24	2
11	3/4" Plug	50785K256	50785K256	1
12	3/4" Quick Seal	172	372	2
13	3/4" Vacuum Breaker	9903K37	9903K37	1
14	Temperature and Presure gage	AQ2516	AQ2516	1
15	1/4" Close Brass Nipple	4568K131	4568K131	1
16	1/4" Check Valve	47715K21	47715K21	1
17	1/4" to Copper tubing adapter	5220K65	5220K65	1
	1/4" Thin Wall Copper tubing			1
	1/4" Tube Coupler	5053K23	5053K23	1







Note: Pipe Dope Must Be Used To Seal Threads. DO NOT USE TEFLON TAPE.

Figure 8

Self Cleaning With CORE Protection Manifold

Notes:

1. All fittings and pipe will be Brass. Except for drain components.
2. All wiring must be located inside liquid tight conduit.

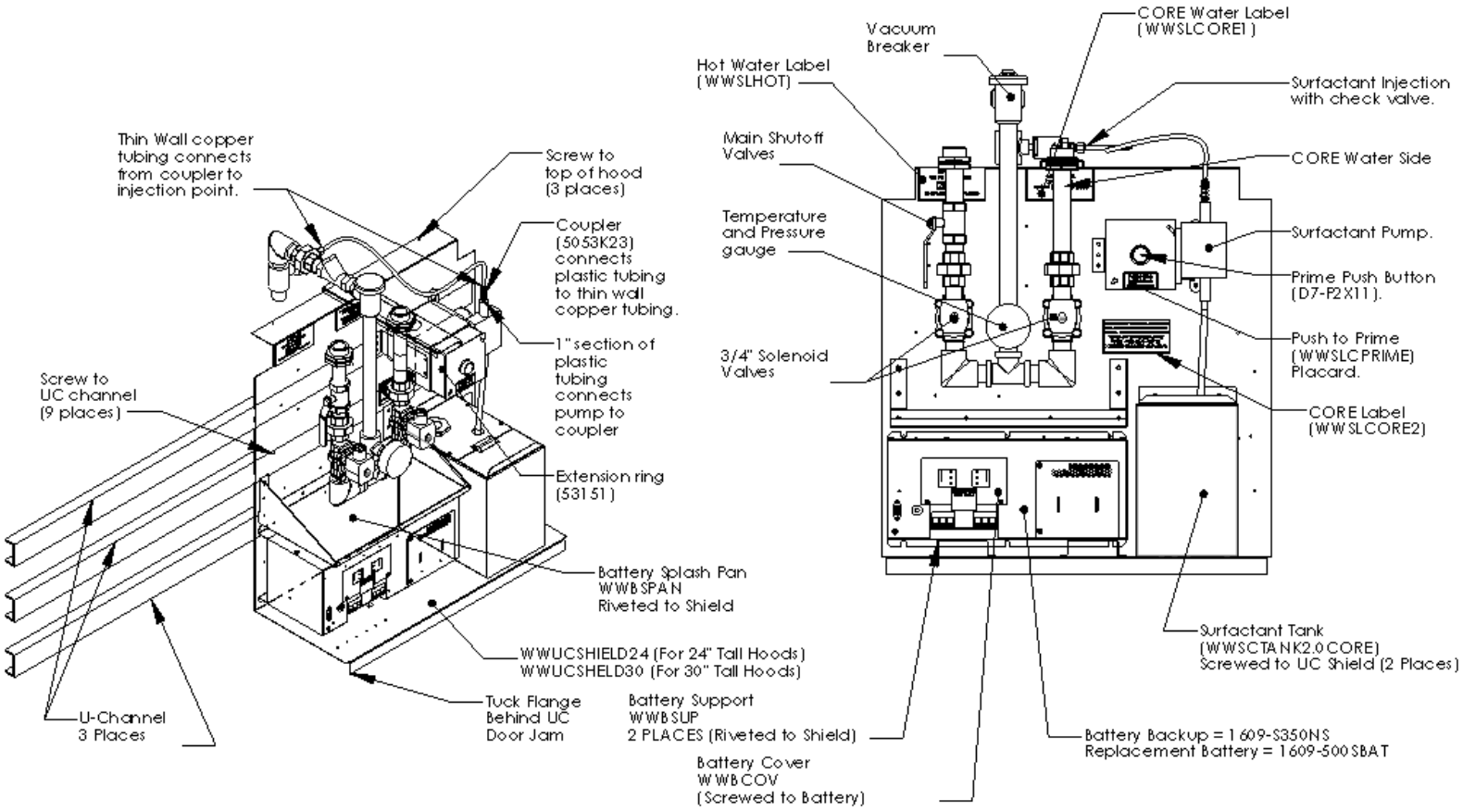
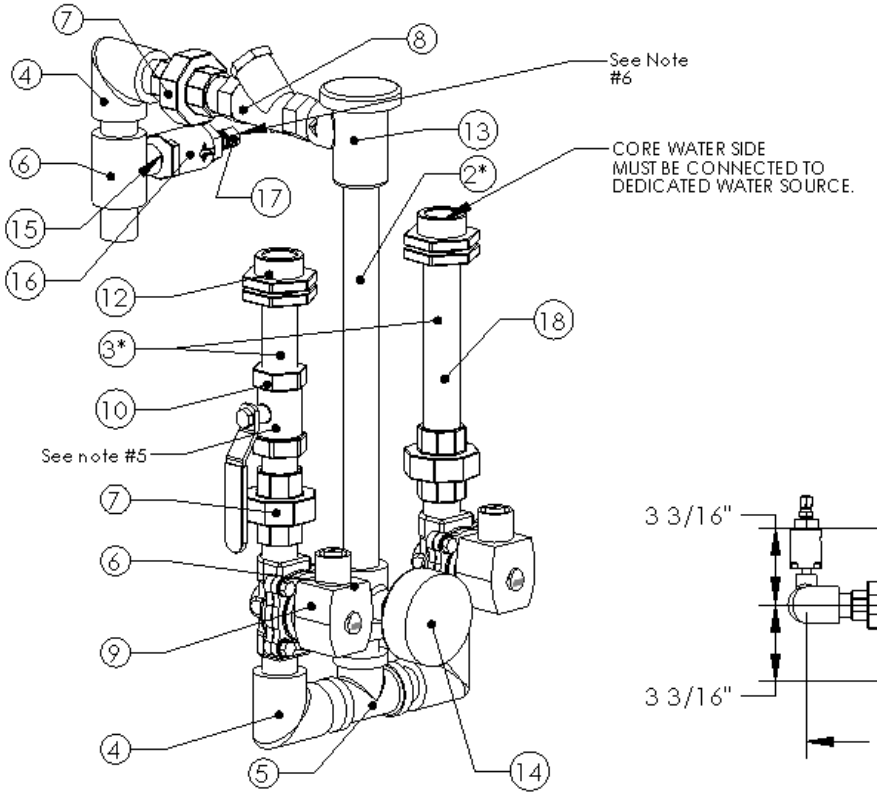


Figure 9

Self Cleaning With CORE Protection Manifold Details

Notes:

1. All fittings and pipe will be Brass, except for drain components.
2. Length and width of manifold must match measurements listed on this page.
3. All pipe nipples are close unless otherwise noted.
4. For 30" tall hoods, plumbing must be lengthened in three places by 6". This is noted below with an *.
5. Valves can be rotated for best fit inside cabinet
6. Thin wall copper tubing to be run to the coupling near the pump to #17. 1" of plastic tubing is used between coupler and pump.



Manifold Parts				
#	Discription	Part #	Macola #	Quantity Used
1	3/4" Close Brass Nipple	4568K191	4568K191	13
2	3/4" x 12" Brass Nipple	4568K215	4568K215	1
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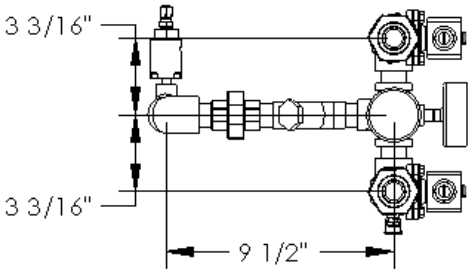
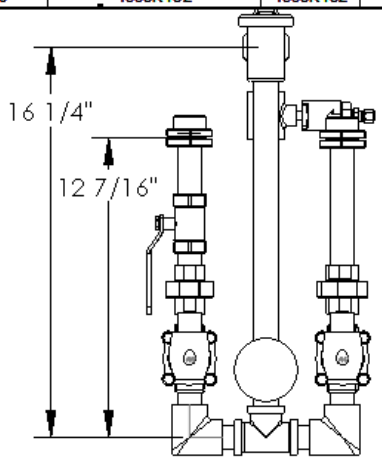
17	1/4" to Copper tubing adapter	5220K65	5220K65	1
	1/4" Thin Wall Copper tubing			1
	1/4" Tube Coupler	**5053K23**	**5053K23**	**1**
18	**3/4" x 6" Brass Nipple**	**4568K182**	**4568K182**	**1**





Note: Pipe Dope Must Be Used To Seal Threads. DO NOT USE TEFLON TAPE.

Figure 10

Self Cleaning Wash Timers

The water wash option includes two timers that ship in the main control panel. These timers control the wash cycle length and the surfactant injection.

The timer shown to the right is the wash cycle timer. The wash cycle timer is a fleeting off timer and is triggered by turning the fan switch to the “OFF” position. The time is factory set to 3 minutes but is adjustable on an application specific basis. It has a range of .5 to 10 minutes and is adjusted by simply rotating the large red dial.

The time shown on the right is the surfactant injection timer. The surfactant timer is an asynchronous on-off timer. This means that it cycles contacts on and off for adjustable time ranges. The timer is factory set to inject surfactant for 1 second and every minute. The interval time (time when not injecting) is set by the top two dials. The small top dial on the timer allows main unit adjustments. This dial can be set to 1, 3, 10, or 60 seconds (s), minutes (m), or hours (h). Once the small top dial is set, the top, large red dial adjusts the percentage of the middle dial. For example, if the small top dial is set to 1 minute, and the large red dial is set to 1.0, the selected time period would result in 1 (1 minute * 1.0 = 1 minute) minute. The large dial is a percentage of the small dial.

The surfactant injection time is set by the bottom two dials. The small bottom dial on the timer allows main unit adjustments. This dial can be set to 1, 3, 10, or 60 seconds (s), minutes (m), or hours (h). Once the small bottom dial is set, the bottom, large red dial adjusts the percentage of the middle dial. For example, if the small bottom dial is set to 1 second and the large red dial is set to 1.0, the selected time period would result in 1 (1 second * 1.0 = 1 second) second. The large dial is a percentage of the small dial.

The red switch on the right side of the face of the timer should not be adjusted and is factory set to the bottom position (beginning of time period). **The pictures shown illustrate the factory settings of the timers.**

CORE Protection Fire System Timer

The timer included in this package is energized when the fire system is activated. The fire system is activated either by the Firestat in the duct or a remote pull station. The timer holds the fire system duct and plenum protection on for a factory setting of 30 minutes.

Once the time period expires, the electric circuit checks to see if the pull station is still pulled or the Firestat is still hot. If either of those conditions is still met, the timer is reenergized for an additional 30 minutes.

During fire system commissioning, there is a reset button inside of the control panel door located on the surfactant pump cover. Pressing this button will interrupt the timer. If the Firestat is cool and the remote pull station is reset, this button will reset the fire system.

This time period is factory set at **30 minutes,** but is adjustable on an application specific basis. The time range adjustment is from 30 minutes to 10 hours. The small top dial on the timer allows main unit adjustments. Once the small top dial is set, the large red dial adjusts the percentage of the middle dial. The large dial is a percentage of the small dial. The red switch on the right side of the face of the timer should not be adjusted and is factory set to the bottom position (on delay).

CORE Protection Firestat

The Firestat is a device installed in the hood's duct connection that measures temperature. The standard temperature setting is 360°F. Other temperatures are available. If a temperature higher then the set point is sensed, the Firestat contacts will close and energize the fire system. The fire system will run for a minimum of 30 minutes (based on the adjustable fire system timer) and then recheck the temperature. If the temperature is still higher then the setpoint, the process restarts immediately.

The Firestat has 2 black wires and 2 white wires. The black wires should be wired to the incoming power and the white wires should be wired to the leaving side of the switch. High temp wirenuts must be used. There must be one sensor installed for every 12 feet of hood. Multiple sensors are wired in parallel. Solid Fuel appliances require a firestat sensor at the end of the duct near the exhaust fan if duct is longer then 10 feet or has horizontal runs. The firestat may be installed on the opposite side of the quick seal for access in the duct. SOLO filters and listed ductwork are required for Solid Fuel appliances. See **Figure 11** below for details.

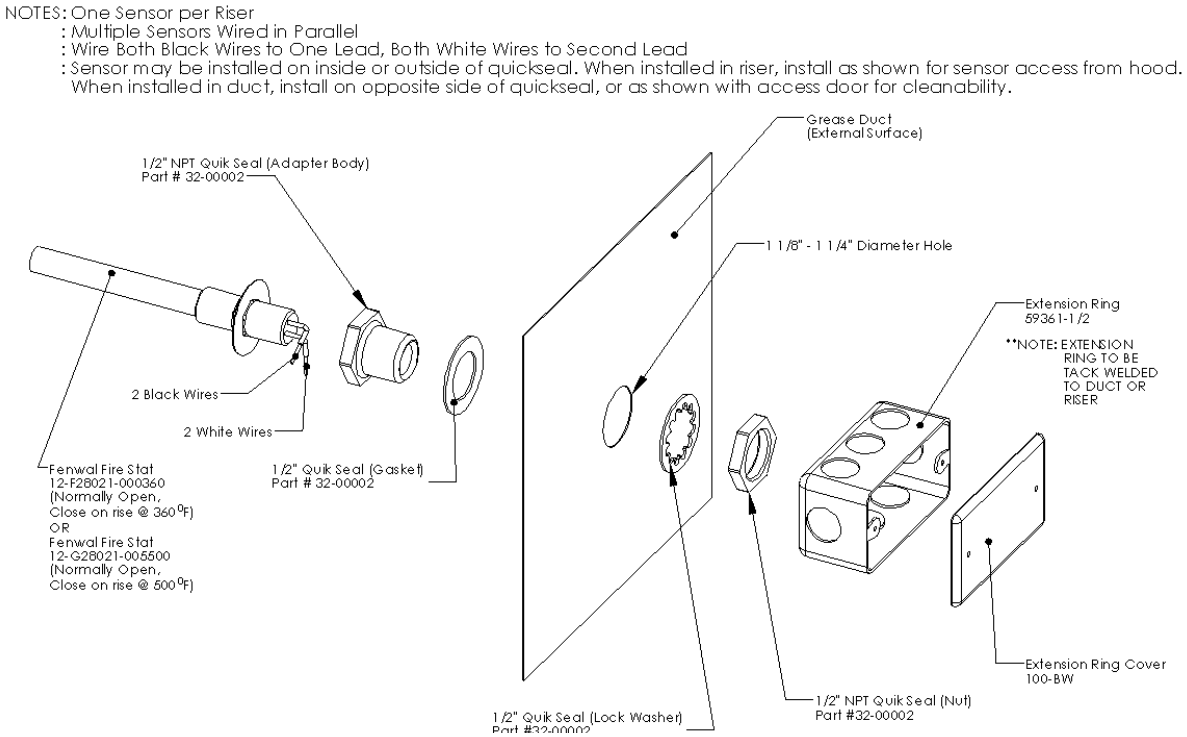


Figure 11

CORE Protection Pull Station

The FSF103 pull station is a manual device to activate the fire system. This pull station contains one set of normally open contacts, and mounts to any standard junction box. When the front lever is pulled, the electrical connection to the fire system is completed, thus activating the fire system.

The remote pull station should be mounted at a point of egress and positioned at a height determined by the authority having jurisdiction (AHJ). This position is usually 10 to 20 feet from hood and 42 to 48 inches above the floor. Multiple pull stations are acceptable to use in the CORE system and are wired in parallel per the electrical schematic. Pull station is reset by turning top screw with hex key and pulling top out from wall.

Surfactant Tank

There are two versions of the surfactant tank and both tanks have a volume of 2 gallons. The first version is used for the basic Self Cleaning hood. The liquid level control in this version energizes when the tank is completely empty. The second version is for the CORE Protection fire system. In this instance, the low level control is located at the 1 gallon mark. In the event of a fire, surfactant is continuously injected into the water spray to help suppress the fire. One gallon of surfactant will last for approximately 15 minutes of fire protection. In the event that the low level sensor is activated, an "Add Surfactant" light will illuminate on the control panel. To reset light, simply fill the surfactant tank with surfactant. Figure 12 below shows tank details.

NOTE: SC-5 surfactant from 20/10 Products Incorporated must be used.

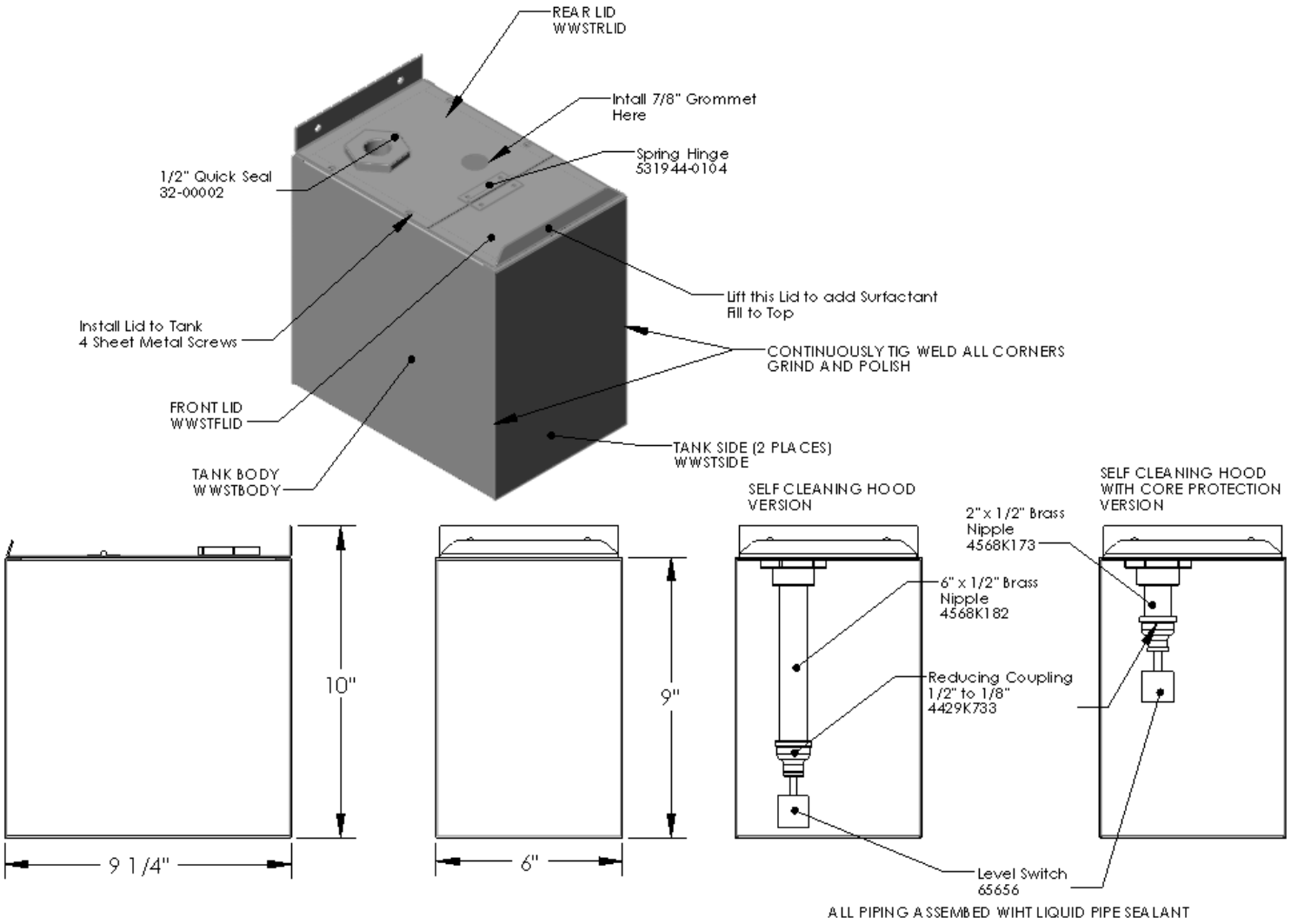


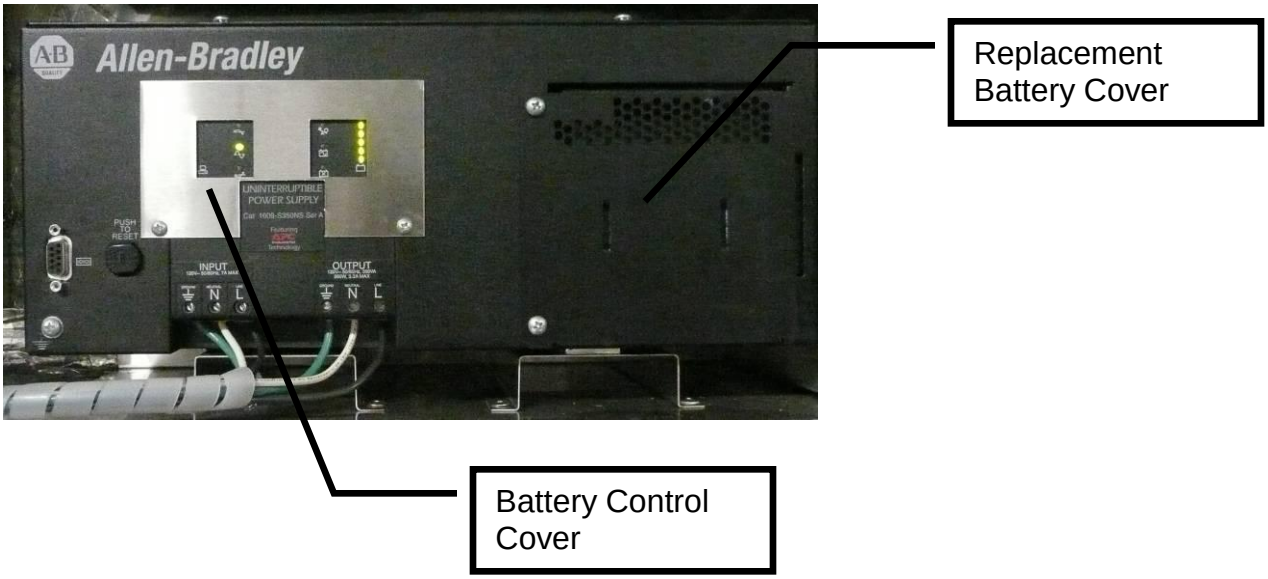
Figure 12

Battery Backup

The CORE system contains a battery backup. In the event of a power loss, all appliances under the hood must be electrically disconnected and the battery power energized. The battery will last for approximately 2 hours after a power outage. In the event of a fire, the battery will keep the fire system energized for a minimum of 30 minutes.

The battery cell must be replaced every 3 years. **The battery is hot swappable, which means it can be replaced while there is input power to the battery.** To replace the battery, remove the replacement battery cover and pull out the cell. Unplug the cell with the quick disconnect and connect the new battery. Replace the battery cover.

There is a battery control cover factory installed to prevent users from turning the battery off. If there are lights illuminated on the battery, the battery is turned on. The system should not be utilized unless the battery lights are on. In the event of an extended power outage, the battery will drain and turn off. To turn the battery back on, re-apply main power and remove the battery control cover. Press the on switch on the battery until the lights illuminate. Replace the battery control cover.



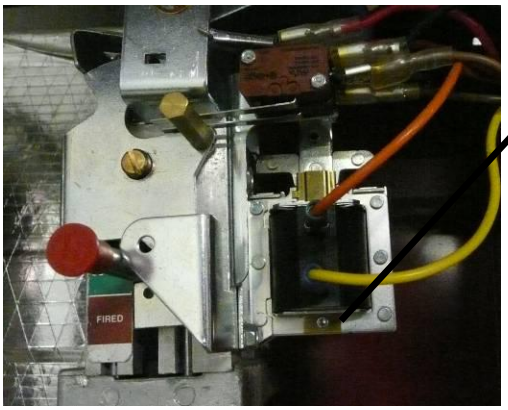
IMPORTANT!!

CORE Protection battery backup system requires that the battery be changed every 3 years maximum. Failure to do this will result in a void in product reliability and may cause severe damage to facility due to loss of fire protection.

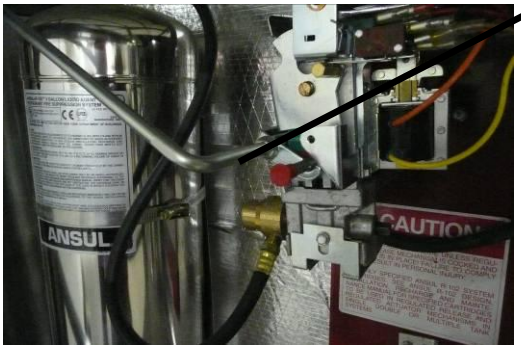
Appliance Protection Solenoid and Automan

This system contains an electric solenoid that activates the appliance surface fire system. When the Firestat senses a fire condition or when the remote pull station is tripped, an electric signal trips the solenoid and activates the appliance fire system.

The appliance fire system automan must be armed, tanks must be full of wet chemical and the high pressure canister must be installed to guarantee proper operation. Refer to the appliance fire system manufacturer for more details.



Solenoid



Cocking Tool Automan shown not armed

Cocking Tool Automan shown armed

Canister shown Mounted

Troubleshooting

The following table lists causes and corrective actions for possible problems with Self Cleaning hoods. Review this list prior to consulting manufacturer.

Self Cleaning Hood Troubleshooting Chart

Problem	Potential Cause	Corrective Action
Plenum not being cleaned	No Water Pressure	Verify Hot Water Pressure >30 psi Open Manual Valve if closed
	Clogged nozzles	Clean or replace nozzles or strainer
	Timer Settings improperly set	Wash timer should be set for approximately 3 minutes Surfactant timer should be set for approximately 1 second and 1 minute
	No water pressure	Turn main building water valve on
	Nozzle spray pattern incorrect	Nozzles must be pointed toward back of plenum
	No Surfactant	Add Surfactant
Leaking Manifold Pipes	Pipes not tight or sealed	Reseal and tighten pipes
Water Leaking from Vacuum Breaker	Riser nozzle installed too high	Verify that vacuum breaker is installed higher then all downstream piping components
Add Surfactant Light On	Low Surfactant Level	Add Surfactant
Water leaks out of Filters	Filters have gaps between them	Add Filter Drip Blanks or reorient filters
Water Overflows Grease Trough	Clogged Drain	Clean Drain or grease trap
	Wrong Filters Installed	Install Proper Filters per Manufacturer
	Water Pressure Too High	Water Pressure should be 50 psi max
	Wash Timer Set Too Long	Reduce Wash Time
	Nozzles are Loose	Tighten Nozzles
	Filters are Clogged with Grease	Clean Filters
	Too much surfactant	Reduce surfactant injection time

CORE Protection Fire System Troubleshooting Chart

Problem	Potential Cause	Corrective Action
Appliance Drops do not Discharge	Canister Not Installed in Fire System Automan	Cock Automan and install canister
	No Wet Chemical	Fill Tanks with Wet Chemical
	Automan Solenoid Not Tripping	Verify wiring to Solenoid from main control cabinet. Must be High Temp Wiring.
	Automan not Cocked	Use Cocking tool to Arm Automan
Exhaust Fan On and Supply Fan will not Start	Broken supply fan belt	Replace fan belt
	Fire system not armed	Fire system distributor must arm fire system
Add Surfactant Light On	Low Surfactant Level	Add Surfactant
Fire System Activated Light On	Fire System is Activated	Make Sure Fire is Out and Reset Fire System
Audible Alarm is On	Fire System is Activated	Make Sure Fire is Out and Reset Fire System
Battery Backup Is Beeping	Main Power is off or disconnected	Turn main power back on at breaker or resolve power outage
Battery Backup is Not Functioning	Battery is turned Off	Remove battery cover and turn battery on. Replace Battery Cover.
	Battery will not turn on	Battery cell is disconnected or is not charged. Connect battery, apply incoming power and turn battery on.
Fire System will not turn off	Duct Sensor is Hot	Heat has activated the duct sensor. Remove heat source or let system extinguish fire. Once Heat source or problem is resolved, press reset button in control cabinet.
	Remote Pull Station has been pulled	Reset Remote pull station with allen key once fire is out and press reset button in control cabinet.
	Fire system is running on timer	Make sure duct sensor is cool and pull station is reset, then press reset button in control cabinet.

MAINTENANCE

To guarantee trouble free operation of this system, the manufacturer suggests following these guidelines. Most problems associated with unit failures are directly related to poor service and maintenance. Record any maintenance or service performed on this equipment in the documentation section located at the end of this manual.

General Maintenance

1. Hood filters must be maintained on a daily basis to ensure proper airflow and grease extraction.
2. All water connections must be verified for tightness and leak-free operation.
3. The “Add Surfactant” indicating light will illuminate when the surfactant tank is empty. Surfactant must be added immediately to guarantee proper cleaning of the hood plenum and duct connection. When the CORE Fire Protection system is integrated into the system, the “Add Surfactant” indicating light will illuminate when there is one gallon of surfactant remaining. Surfactant must be added immediately to ensure proper hood cleaning.

Every 3 months

1. Clean all duct sensors in hood duct connections (if equipped).
2. Check all nozzles for proper and evenly distributed water flow. If nozzles are clogged, clean or replace.
3. Check drain(s) on hood to verify there is no blockage. Improper drainage could cause hood leaks or water to back up into trough and overflow onto appliances.

Every 6 months

1. Inspect hood plenum and wipe down any areas not being cleaned by the self-cleaning system. This may be areas where the water spray does not directly contact the metal.
2. Inspect the surfactant pump for proper operation and ensure liquid level sensor in surfactant tank is operational. Test by manually lowering the sensor to see if the “Add Surfactant” light illuminates.
3. All nozzle strainers should be removed and cleaned. Nozzles must be re-installed tightly.
4. Fill surfactant tank with surfactant. Verify that liquid level sensor operates correctly.
5. The main line strainer in the manifold must be cleaned.
6. Verify that system has proper water pressure and temperature per the labels on the unit.
7. A certified technician should test and inspect the fire system for CORE system. This includes verifying proper operation of the duct Firestat, all remote pull stations, proper surfactant injection and battery backup operation. Refer to the CORE Protection startup procedure to check the proper operation of these components.

Every 3 Years

1. Replace battery pack in battery back-up module for CORE Protection Systems. The battery is hot swappable which means that the battery can be replaced while input power is applied to the unit. The replacement battery part number is 1609-500SBAT. Once the battery is disconnected, the connected equipment is not protected from power outages. The new battery must be installed immediately. Refer to the replacement battery installation guide for more details.
2. Inspect condition of all wires and plumbing. Plumbing should be free of corrosion and wire insulation must be in good condition.

Start-Up and Maintenance Documentation

START-UP AND MEASUREMENTS SHOULD BE PERFORMED AFTER THE SYSTEM HAS BEEN INSTALLED (Warranty will be void without completion of this form)

Job Information

Job Name	
Address	
City	
State	
Zip	
Phone Number	
Fax Number	
Contact	
Purchase Date	

Service Company	
Address	
City	
State	
Zip	
Phone Number	
Fax Number	
Contact	
Start-Up Date	

Self Cleaning Hood Information

Refer to the start-up procedure in this manual to complete this section.

Name Plate and Unit Information	
Hood Model Number	
Serial Number	
Volts	
Hertz	
Phase	

Field Measured Information	
Input Voltage	
Check All Nozzles for Tightness	
Open all Valves to Hood	
Fill Surfactant Tank	
Set All Timers	
Check Fan Operation	
Operate Wash Cycle	
Verify Surfactant Pump Operation	
Verify Water Pressure	
Verify Water Temperature	
Check For Leaks in Manifold	
Check For Leaks through Filters	
Verify that Water is Draining Properly	

Fire System Information (When Supplied)

Refer to the start-up procedure in this manual to complete this section.

Name Plate and Unit Information	
Hood Model Number	
Serial Number	
Volts	
Hertz	
Phase	

Field Measured Information	
Self Cleaning Startup Complete	
Main Water line ¾" or Larger	
Main Water Line from Dedicated Supply	
Battery Backup Lights are Illuminated	
Set CORE Protection Timer	
Test Firestat System Activation	
Test Remote Pull Station System Activation	
Verify Water Pressure (30 psi) min.	
Verify Constant Surfactant Injection	
Verify Appliance System Activates	
All Gas and Electric Appliances Shut Down	
Fire System Activated Light Illuminates	
Audible Alarm Sounds	
Verify CORE Timer Works Correctly	
Verify Reset Button Works Correctly	
System Activates on Battery Backup	
Verify Surfactant Tank is Full	
Appliance Protection Tanks Full	
Appliance System Armed	
Appliance Canister Installed	
Reset Remote Pull Station	

Maintenance Record

Date	Service Performed

Factory Service Department

Phone: 1-866-784-6900
Fax: 1-919-554-9374