

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 24 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 24 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

System Nomenclature

System	Water Connection
W1	1 Hot Water

ATTENTION: SYSTEM MUST BE INSTALLED IN CONDITIONED SPACE BETWEEN 32°F AND 130°F

Ensure there is 36 Inches of service clearance to the front of the panel.

Plumbing Connections for Self Cleaning

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 thread sealant. 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.

1. All incoming plumbing connections are connected via 3/4" 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 a minimum required PSI, per **Table 1**, to 50 psi operating pressure. If the operating pressure is greater than 50 psi, a water regulator must be connected. Max water static pressure is 125 psi. 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. 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.
4. 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. Hoods 10' in length (or greater) will require 2 drains. 24" tall hoods with 20" filters will require 2 drains. All other hoods will require 1 drain. See Figure 3 for details.
5. Once all supply and drain lines are connected, remove one of the nozzles and flush the lines.
6. The Ansul fire system duct detection bracket and fusible link are shipped loose to be installed in the exhaust ductwork. The detector must be installed no more than 20 feet from the hood, and installed per the Ansul fire system guidelines.

Warning

All field connections between hoods and drain lines must be run with Steel, Stainless Steel, or Copper pipe. Plastic pipe cannot be used for drains or field connections between hoods, as it could fail and become hazardous.

Piping Loss Calculation for Wall Mount Self Cleaning System

To ensure proper operation of the Self Cleaning System, a minimum operating water pressure rating, see **Table 1**, during spraying must be achieved at the hood nozzles. For this to occur, proper sizing of the water line is required. Use the following steps to calculate the piping minimum size.

1. Use the **Minimum Pressure Requirements for Lengths of Hood** chart and find the Self Cleaning minimum PSI required at the hood inlet. Subtract this value from the available PSI at the panel pressure gauge. Maximum panel operating pressure is 50 psi. This will be your maximum allowable pressure drop for field installed pipes between the panel and the hood.
2. Most fittings add an equivalent pipe length to the total run. Use the chart below to calculate the equivalent pipe length for installed fittings. If you have multiple fittings of one type, simply multiply the number below by the total number of the fitting and add to the total run length.

Equivalent Pipe Length For Various Pipe Fittings

Pipe Size Inches	45° Elbow	90° Elbow	Tee Thru Run	Tee Thru Branch
3/4"	0.97	2.10	1.40	4.10
1"	1.23	2.60	1.80	5.30
1 1/2"	1.90	4.00	2.70	8.00
2"	2.40	5.20	3.50	10.40

3. To calculate the total flowing pressure drop between the panel and the hood, take the total equivalent length found in step 2 and add the total linear field installed pipe length. Multiply this number by the value found in the table below, Pressure Drop (PSI) per Equivalent Foot of Waterline. (Gallons per minute is calculated by multiplying the length of the hood by 0.7 gpm) This will be the friction pressure drop between the hood and the panel.
4. Add in the pressure drop due to gravity. This must be evaluated to overcome any rise in pipe elevation between the panel and the hood. There is .43 psi/ft of vertical rise of pressure drop.
5. Now, compare the maximum allowable pressure drop from step 1 to the calculated pressure drop from step 3. If the calculated pressure drop exceeds the maximum allowable pressure drop, increase the pipe size and recalculate steps 2 and 3. Continue this step until the calculated pressure drop is below the maximum allowable.

Pressure Drop (PSI) per Equivalent Foot of Waterline - Pipe Size

Gallons per Minute	Waterline Pipe Size (psi per foot of pipe)			
	3/4"	1"	1 1/2"	2"
5	0.028	0.008	0.001	0.000
10	0.102	0.029	0.004	0.001
15	0.216	0.062	0.008	0.001
20	0.368	0.105	0.014	0.002
25	0.556	0.159	0.022	0.003
30	0.779	0.223	0.030	0.004
35	1.036	0.296	0.040	0.006
40	1.327	0.379	0.052	0.008
45	1.650	0.472	0.064	0.009
50	2.005	0.573	0.078	0.011
55	2.391	0.684	0.093	0.014
60	2.809	0.803	0.110	0.016
65	3.257	0.931	0.127	0.019
70	3.736	1.068	0.146	0.021
75	4.244	1.213	0.166	0.024
80	4.782	1.367	0.187	0.027
85	5.350	1.529	0.209	0.030
90	5.946	1.700	0.232	0.034
95	6.572	1.879	0.256	0.037
100	7.226	2.066	0.282	0.041
105	7.909	2.261	0.309	0.045

Field Pipe Pressure Drop Calculation Example:

Wall mount panel installed with 30 feet of 3/4" linear pipe between panel and hood. (2) 90 degree elbows are installed in the pipe run and the pipe run has a vertical rise of 5 feet. Length of end-to-end hood system is 32 feet.

Hood System = 32 feet. Flow rate = 32 feet * 0.7 gpm = 23 gpm
Pressure required at hood = 37 psi
Pressure at panel gauge = 50 psi
Allowable pressure drop between panel and hoods: 50 psi – 37 psi = **13 psi**

Equivalent length of pipe = 30 + 2 * 2.10 = 34.20 feet
Friction Pressure Drop through pipe = 34.20 * 0.556 = 19.01 psi
Gravitational Pressure = 0.43 psi/ft * 5 feet = 2.15 psi
Total Pressure Drop in Field Pipe between panel and hood = 19.01 psi + 2.15 psi = **21.16 psi**
Allowable pressure drop = 13 psi

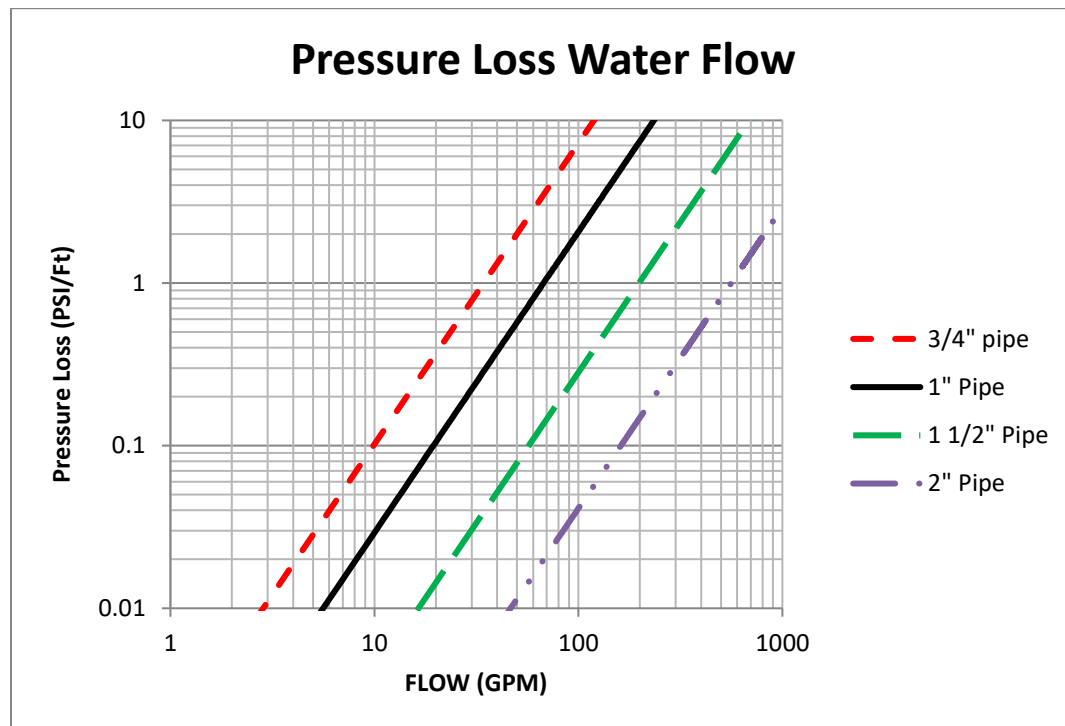
This system will not work correctly because calculated pressure drop is greater than allowable pressure drop. Pipe size will need to be change to 1 inch diameter.

Re-calculate with 1 inch pipe instead of 3/4" pipe:

Equivalent length of pipe = 30 + 2 * 2.60 = 35.20 feet
Friction Pressure Drop through pipe = 35.20 * 0.159 = 5.59 psi
Gravitational Pressure = 0.43 psi/ft * 5 feet = 2.15 psi
Total Pressure Drop in Field Pipe between panel and hood = 5.59 psi + 2.15 psi = **7.74 psi**
Allowable pressure drop = 13 psi

This system will work correctly because calculated pressure drop is less than allowable pressure drop.

Pressure Loss Through Typical Water Pipe Chart



Minimum Operating Pressure Requirements for Lengths of Hood

Table 1

3/4" Manifold Minimum Operating Pressure Requirements for Length of Hood

Length of Hood (Ft)	Minimum Inlet Water Pressure for Self Cleaning (PSI)	Self Cleaning Discharge Coefficients (K-Factor)
4	30	0.6
8	30	1.3
12	30	1.9
16	30	2.5
20	31	3.1
24	32	3.7
28	34	4.2
32	37	4.6
36	39	5.0
40	42	5.4
44	46	5.7
48	50	6.0

Table 2

1" Manifold Minimum Operating Pressure Requirements for Length of Hood

Length of Hood (Ft)	Minimum Inlet Water Pressure for Self Cleaning (PSI)	Self Cleaning Discharge Coefficients (K-Factor)
4	30	0.6
8	30	1.3
12	30	1.9
16	30	2.5
20	30	3.1
24	30	3.8
28	31	4.3
32	33	4.8
36	35	5.3
40	42	5.4
44	43	5.9
48	45	6.3

Table 3
1-1/2" Manifold Minimum Operating Pressure Requirements for Length of Hood

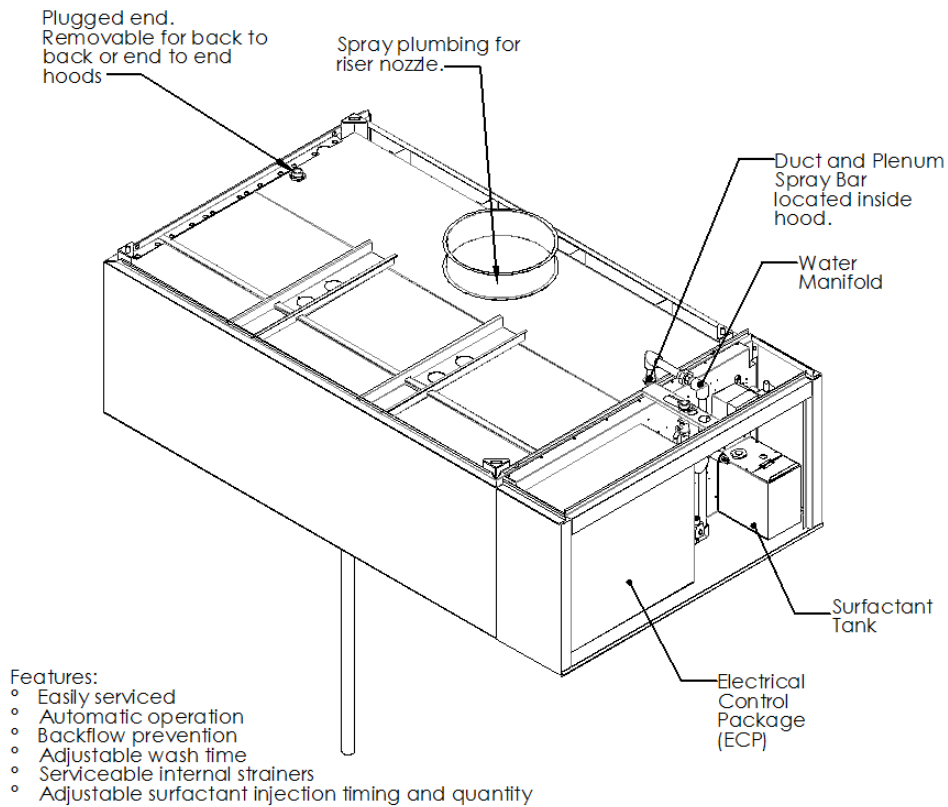
Length of Hood (Ft)	Minimum Inlet Water Pressure for Self Cleaning (PSI)	Self Cleaning Discharge Coefficients (K-Factor)
4	30	0.6
8	30	1.3
12	30	1.9
16	30	2.5
20	30	3.1
24	30	3.8
28	30	4.4
32	30	5.0
36	33	5.4
40	35	5.9
44	38	6.2
48	40	6.6

Note: Water pressure may not drop below the minimum required PSI while the hood hot water is operating. Pressure may not rise above 50 PSI when the hood is spraying. If the operating pressure is greater than 50 PSI, a water regulator must be connected.

The chart above is for continuous back to back and/or end to end hood installations. If the pipe connecting any hood contains excessive elbows or complicated paths, additional pressure may be required to overcome this pressure loss. Contact engineering for clarification in these circumstances.

Self Cleaning System Overview

Figure 1



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

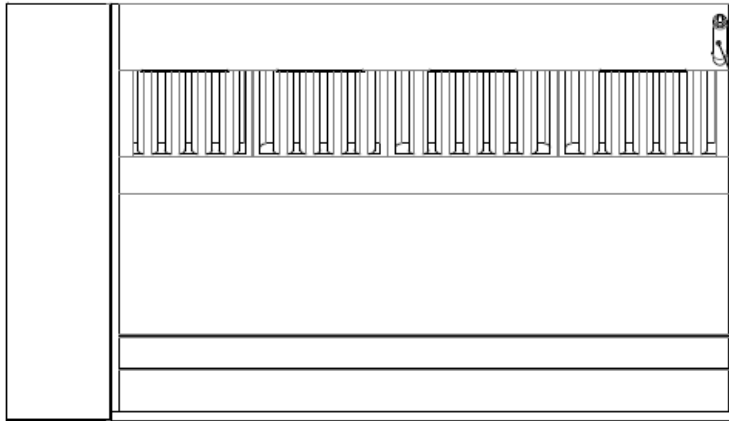
The Fully Integrated Self Cleaning System has the following options.

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 detergent injection is 1 second every 1 minute.
Water Pressure = 30 to 70 PSI Operating
Water Pressure = 125 PSI Maximum Static
Water Temp = 140° to 170° F

Self Cleaning Hood Top and Bottom View

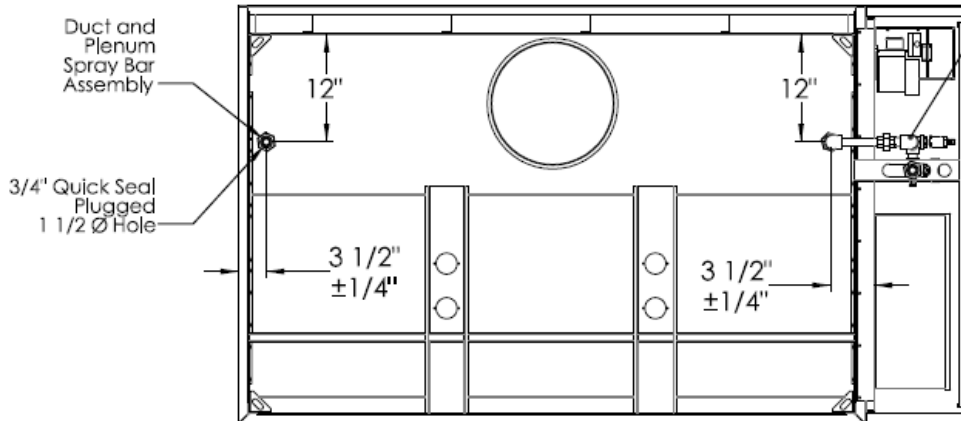
Figure 2

Bottom View of Hood



- 1 1/2" Pipe drains
- o Hoods 10' or greater in length => 2 Drains
- o 24" tall hoods with 20" filters => 2 Drains
- o All other hoods => 1 Drain. Read paperwork for placement

Top View of Hood



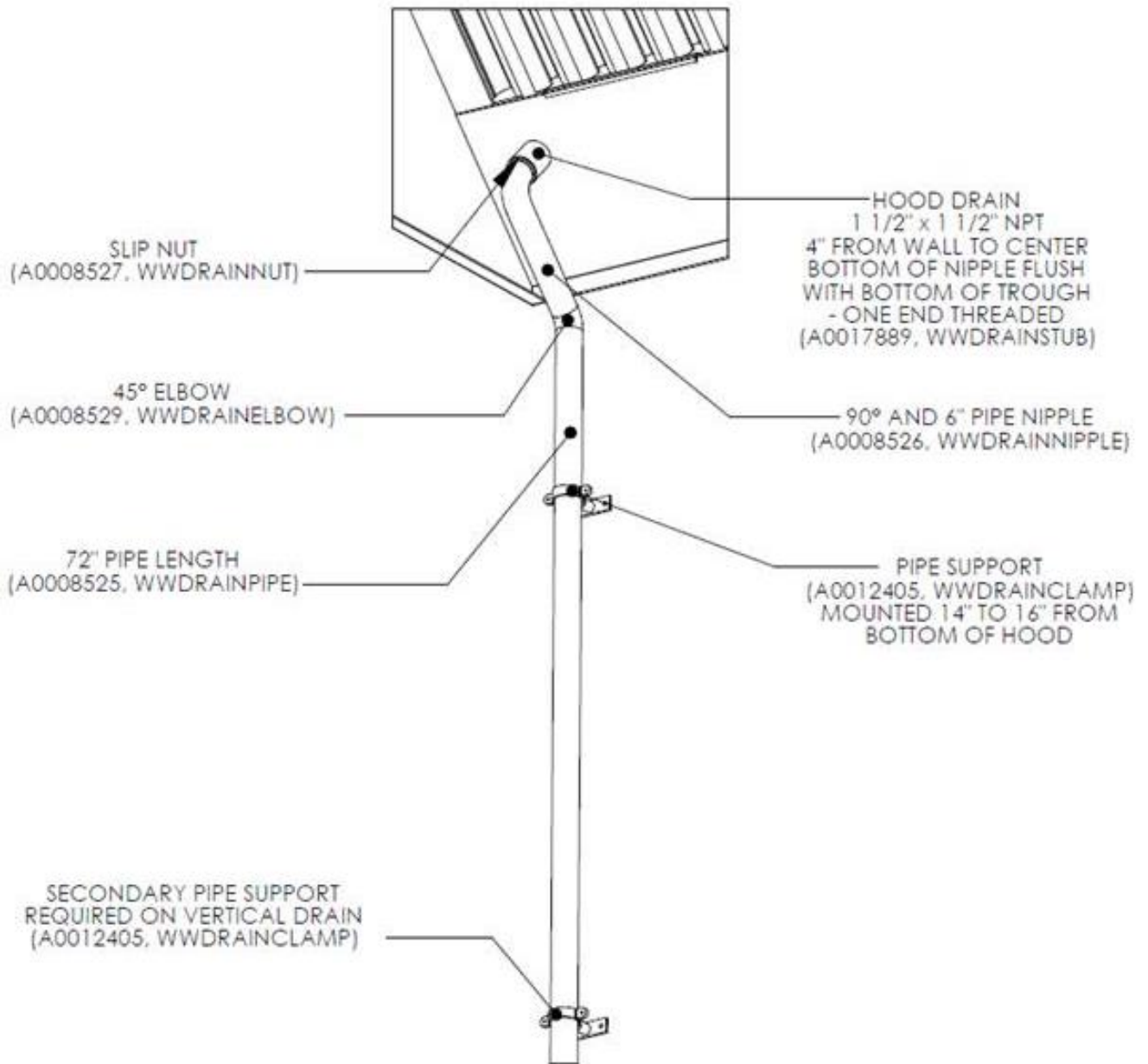
Self-Cleaning Manifold Assembly

Notes:

1. Plenum of hood must be dye penetrant tested for leaks.
2. Instead of 1" OD grease drain, hood must have 1 1/2" NPT drains installed. Follow same rules as the standard grease drains. This will be dye penetrant tested as well.
3. Hood lengths over 10 feet must have center supports. This support consists of a 3/4" tee, close pipe nipple, and a quick seal with a cap spaced evenly throughout the spray bar.

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. A qualified electrician should perform this work.

ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES.

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. The hood lights wiring will also need to be wired to terminals "B" and "W". 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.

Copper Wire Ampacity

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

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.

The Self Cleaning hood is designed to use hot water to wash the hood plenum and immediate duct section every time the fan switch button is pressed on the main control panel HMI. 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.

Start Up

Special Tools Required

- AC Voltage Meter
- Standard Hand Tools
- Surfactant (Part Number WWDETER for 4 Gallons, WWDETER-1G for 1 Gallon)

Jobsite Qualifications – Pre-installation Self Cleaning Hood

1. Verify the proper amount of water pressure and flowrate is available for Self Cleaning. Should the operating and static pressures exceed our maximum listing, correctly identify and size a pressure reducing valve.
2. Determine the pressure drop from the connection at the source to the connection at the Self Cleaning manifold inlet.
3. Verify the location of the manifold, and if a backflow preventer is required.
4. Verify hot water minimum temperature rating of 140°F will be provided.

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 electrical control package.
5. There are 2 timers that control the spray and the surfactant injection. The wash timer is set to 3 minutes from the factory. The surfactant timer is factory set for 1 second of injection during each minute of wash time. The injection occurs at the start of each minute. The timer settings should be verified. (See section “Self Cleaning Timers for information)
6. Turn the hood fan ON by pressing the HMI fan button. 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 press the fan button to turn the fans 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. Self Cleaning pressure should be between 30 and 50 PSI operating pressure, and Cold Mist operating pressure should be between 10 and 20 PSI.
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

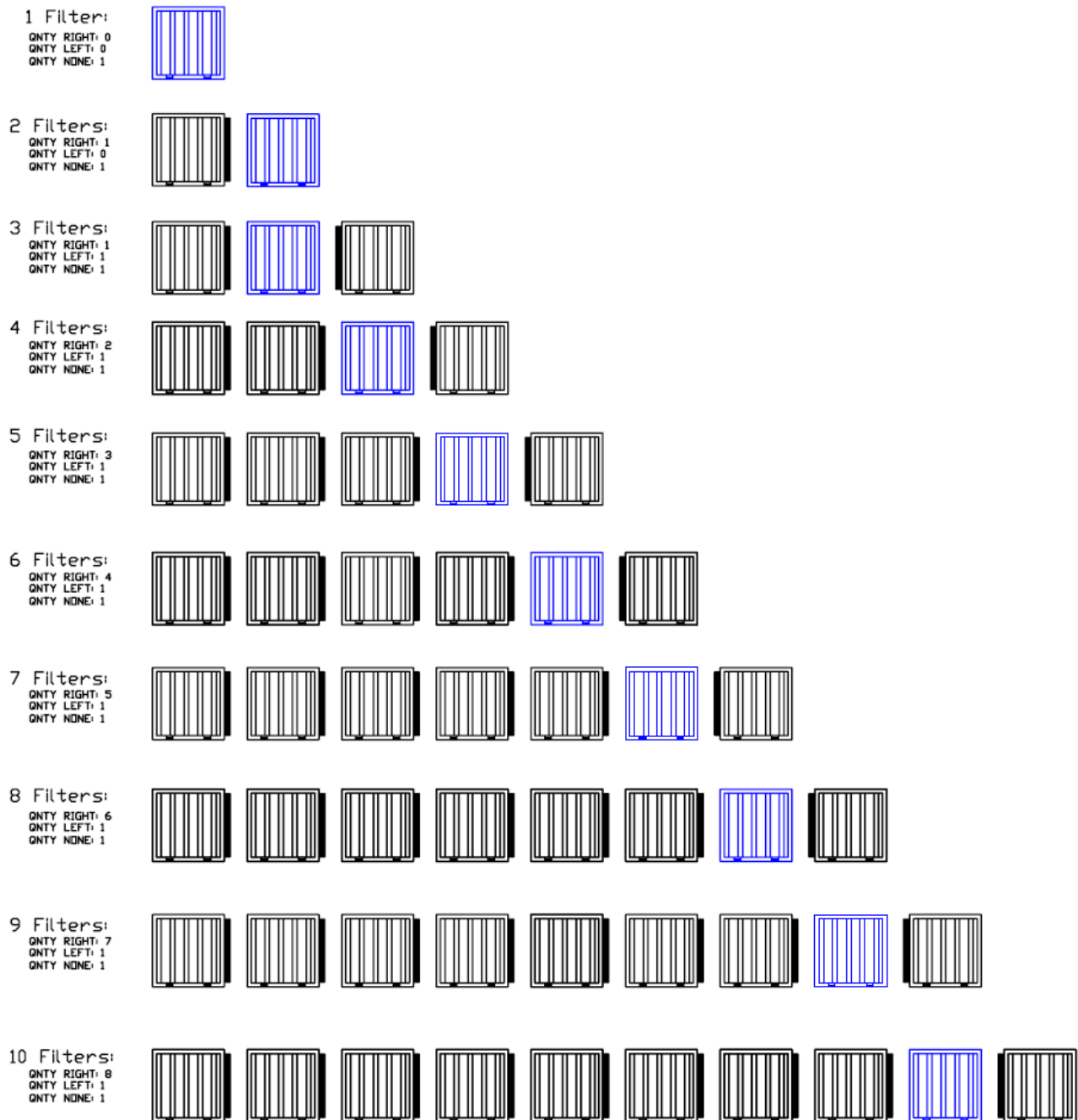


Filter Installation Configuration

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

*NOTE: BLUE FILTERS DESIGNATE THE LAST FILTER THAT IS INSTALLED IN THE HOOD.



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 Operating Hot Water Pressure (Table 1)		
Verify Operating Cold Water Pressure (10-20 PSI)		
Verify Max Water Static Pressure (125 PSI)		
Verify Hot Water Temperature		
Check For Leaks in Manifold		
Check For Leaks through Filters		
Verify that Water is Draining Properly		

Component Description

The following section lists the major controls and components used in the Self Cleaning hood.

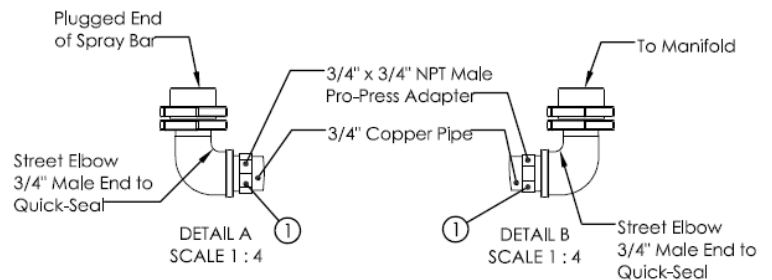
Self Cleaning Spray Bar

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 3/4" copper pipe with copper/brass Pro-press fittings with nozzles that spray directly toward the back of the hood. The same spray bar is used in hot water. Water enters the spray bar via a 3/4" quick seal. 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.

Figure 6

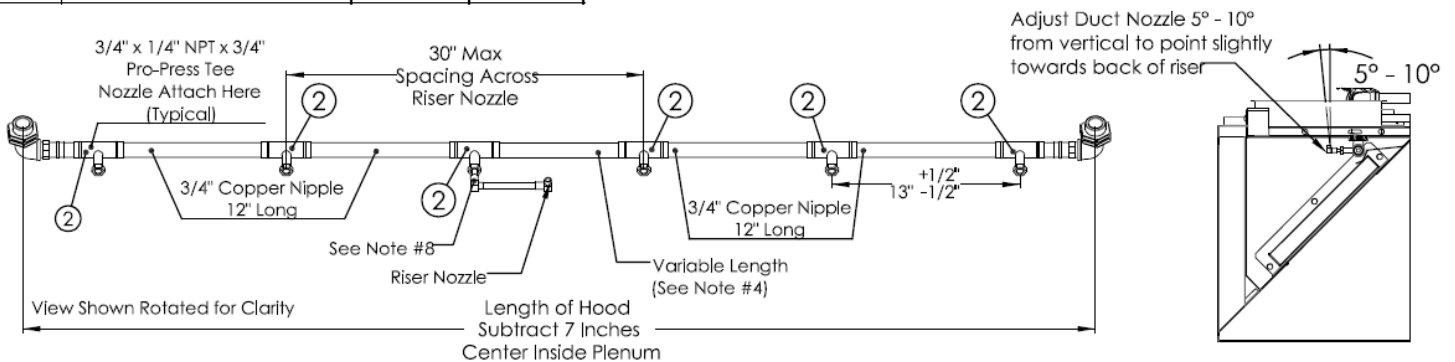
Notes:

1. All pipe will be Copper, Pipe fittings will be Brass/Copper Pro-Press.
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" x 3/4" NPT x 3/4" Pro-Press 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 elbow is dependent on the riser location. The nozzle needs to be centered, both vertically and horizontally, within the riser. Riser nozzle must follow table to right. Maintain 13" nozzle spacing.
7. When riser nozzle is located directly under center of riser on spray bar, main elbow must point upwards.
8. Omit plenum nozzle on riser nozzle branch.



Pro-Press Parts for Plenum Spray Bar			
Item	Description	Part Number	A/X
1	3/4" x 3/4" NPT Male Pro-Press Adapter	79230	A0028284
2	3/4" x 1/4" NPT x 3/4" Pro-Press Tee	79585	A0028285
Not Shown	3/4" x 3/4" NPT x 3/4" Pro-Press Tee	79595	A0028286

Nozzles for Hot Water Wash (W1)			
Description	Part Number	A/X	Flow Rate
Riser Nozzle	1/4TT+TG-4.3W	A0025166	.70 GPM @ 30 PSI
Spray Bar Nozzle	1/4TT+TG-4.3W	A0025166	.70 GPM @ 30 PSI



Water Manifolds

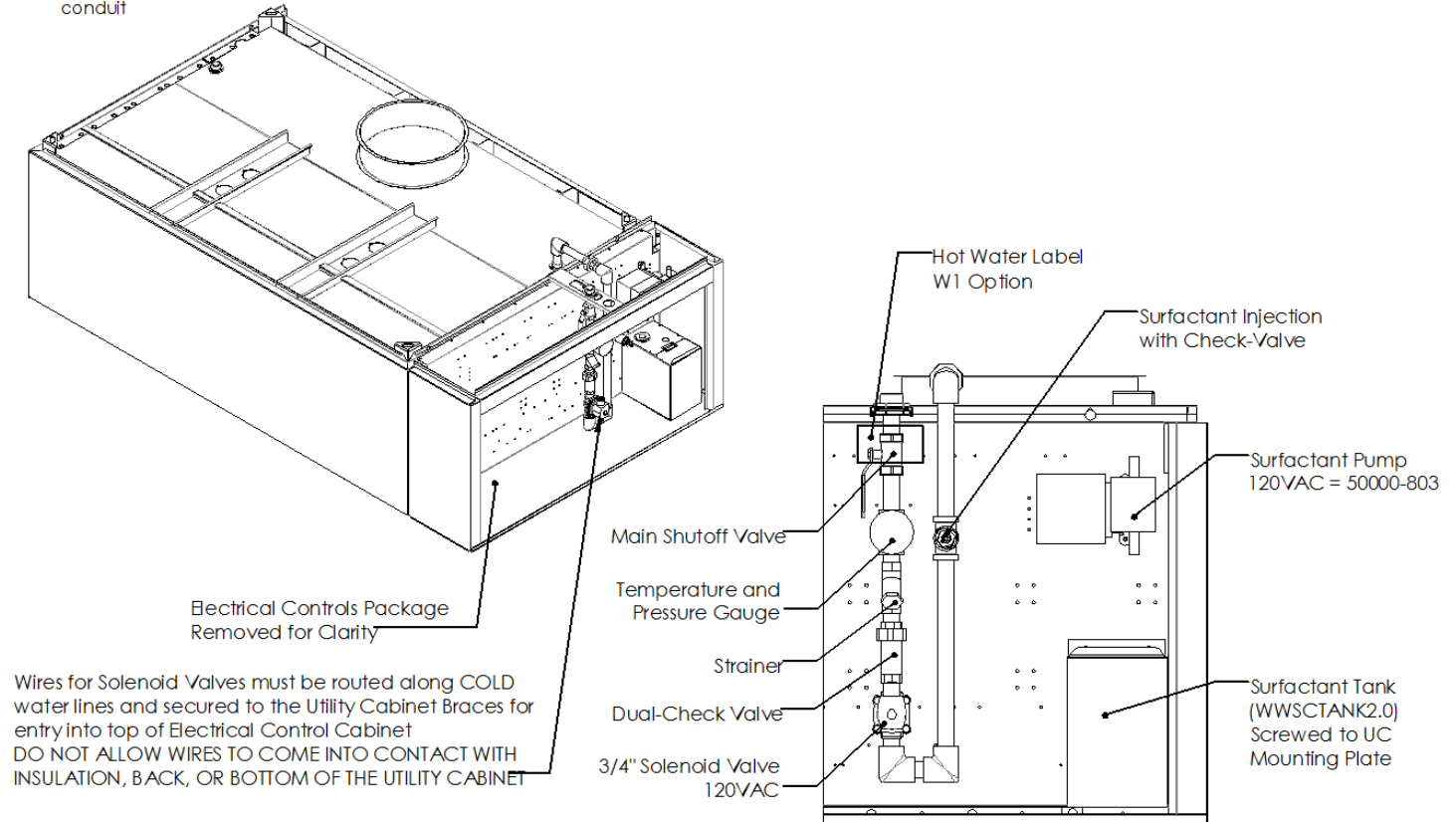
The Self Cleaning hot water wash (W1) water manifold has one hot water connection. The water wash manifold can be installed in the hood utility cabinet mounted on the hood, or when the utility cabinet is mounted on the wall.

Self Cleaning Manifold

Figure 7

Notes:

1. All manifold fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass
2. All wiring must be located inside liquid tight conduit

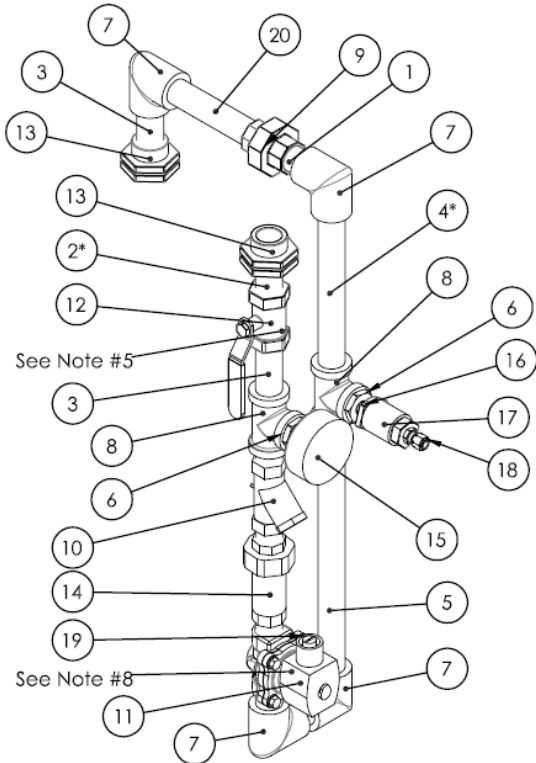


3/4" Self Cleaning Manifold Details

Figure 8

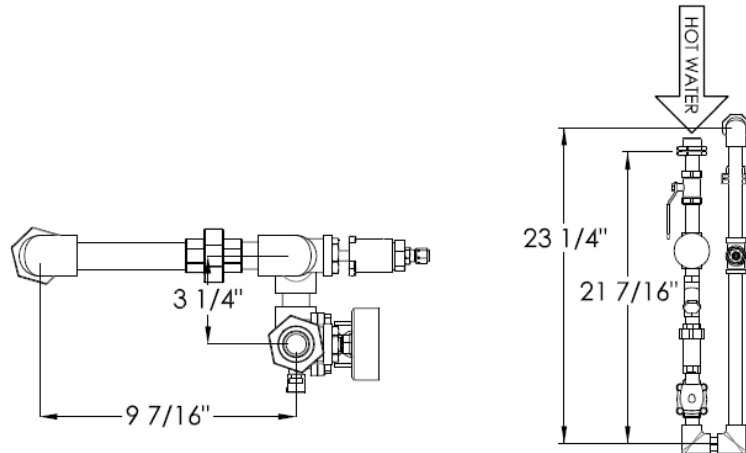
Notes:

1. All fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass.
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 two places by 5". This is noted below with an *.
5. Valves can be rotated for best fit inside cabinet
Thin wall copper tubing to be run to the coupling near the pump to #18. 1" of plastic tubing is used between coupler and pump.
6. Do not use Pipe Dope on union mating surfaces as this can cause leaks.
7. Optional Slow-Close Solenoid Part # SC8221G005-120VAC may be used as an alternative.



Manifold Parts					
#	Description	Part #		Macola #	Quantity Used
		24" Tall Hoods	30" Tall Hoods		
1	3/4" Close Brass Nipple	4568K191		4568K191	5
2	3/4" x 2" Brass Nipple	4568K192	4568K375	VARIES	1
3	3/4" x 3" Brass Nipple	4568K194		4568K194	2
4	3/4" x 7" Brass Nipple	4568K375	4568K215	VARIES	1
5	3/4" x 12" Brass Nipple	4568K215		4568K215	1
6	3/4" x 1/4" Adapter	AQ2564		AQ2564	2
7	3/4" Brass Elbow	4429K164		4429K164	4
8	3/4" Brass Tee	4429K254		4429K254	2
9	3/4" Brass Union	4429K215		4429K215	1
10	3/4" Brass Wye Strainer	43935K24		43935K24	1
11	3/4" Brass Solenoid Valve, 120V	SC8210G009 120/60, 110/50		AQ3105	1
12	3/4" Manual Ball Valve	47865K24		47865K24	1
13	3/4" Quick Seal	172		372	2
14	3/4" Backflow Preventer	LF7RU22		A0025518	1
15	Temperature and Pressure gauge	DPTG3-2-1/2		AQ2516	1
16	1/4" Close Brass Nipple	4568K131		4568K131	1
17	1/4" Check Valve	47715K21		47715K21	1
18	1/4" to Copper tubing adapter	5220K65		5220K65	1
	1/4" Thin Wall Copper tubing				
	1/4" Tube Coupler	5053K23		5053K23	
19	Solenoid Connection Cable 120V	5J684-551-US0A		AQ3602	1
20	3/4" x 5" Brass Nipple	4568K198		4568K198	1
Not Shown	Self Cleaning Manual	A0019144		A0019144	1

All Nipples will be Close, Unless Noted Otherwise



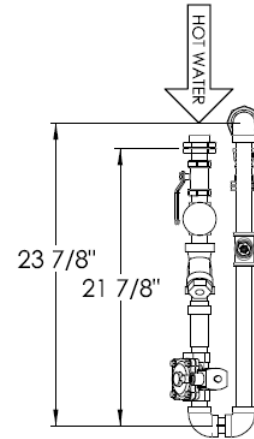
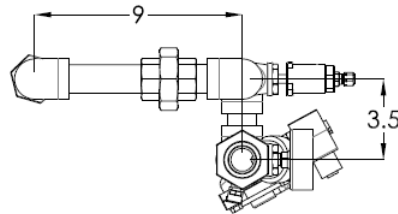
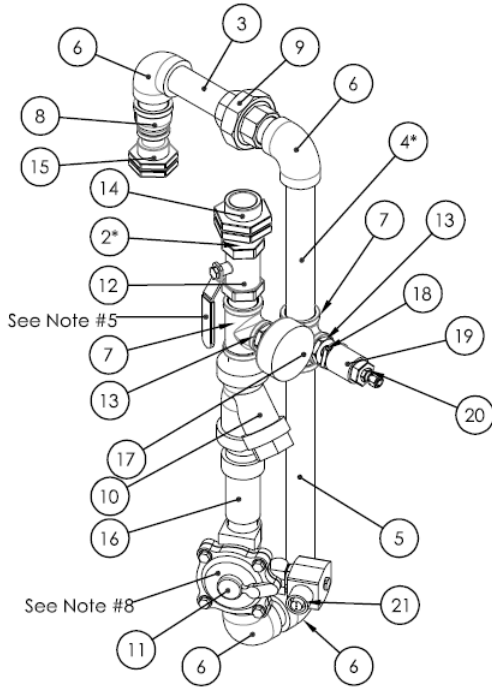
1" Self Cleaning Manifold Details

Figure 9

Notes:

1. All fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass.
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 two places by 3". This is noted below with an *.
5. Valves and Gauges can be rotated for best fit inside cabinet, gauge faces must be visible.
6. Thin wall copper tubing to be run to the coupling near the pump to #20. 1" of plastic tubing is used between coupler and pump.
7. Do not use Pipe Dope on union mating surfaces as this can cause leaks.
8. Optional Slow-Close Solenoid Part # SC8221G007-120VAC may be used as an alternative.

Manifold Parts					
#	Description	Part #		Macola #	Quantity Usod
		24" Tall Hoods	30" Tall Hoods		
1	1" Close Brass Nipple	AQ2522		AQ2522	8
2	1" Close Brass Nipple	AQ2522	4568K336	VARIES	1
3	1" x 4" Brass Nipple	4568K226		4568K226	1
4	1" x 7" Brass Nipple	4568K376	4568K234	VARIES	1
5	1" x 14" Brass Nipple	4512K751		4512K751	1
6	1" Brass Elbow	4429K165		A0014022	4
7	1" x 3/4" x 1" Brass Tee	4429K238		A0024232	2
8	1" x 3/4" Brass Reducing Coupling	4429K742		A0026276	1
9	1" Brass Union	BR106A		A0007774	1
10	1" Brass Wye Strainer	4393K25		A0026974	1
11	1" Brass Solenoid Valve, 120V	SC8210G004-120VAC		A0017119	1
12	1" Manual Ball Valve	MBV-1.0NN (EC)		10406	1
13	3/4" To 1/4" Brass Bushing	AQ2564		AQ2564	2
14	1" Quick Seal	213		A0003378	1
15	3/4" Quick Seal	172		372	1
16	1" Backflow Preventer	LF7RU2-2		A0026338	1
17	Temperature and Pressure gauge	DPTG3-2-1/2		AQ2516	1
18	1/4" Close Brass Nipple	4568K131		4568K131	1
19	1/4" Check Valve	47715K21		47715K21	1
20	1/4" to Copper tubing adapter	5220K65		5220K65	1
	1/4" Thin Wall Copper tubing				1
	1/4" Tube Coupler	5053K23		5053K23	1
21	Solenoid Connection Cable 120V	5J684-551-US0A		AQ3602	1
Not Shown	Self Cleaning Manual	A0019144		A0019144	1



1-1/2" Self Cleaning Manifold Details

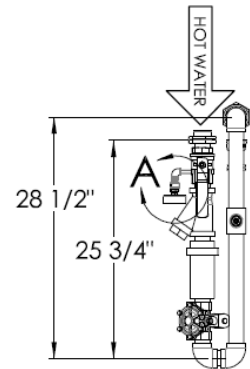
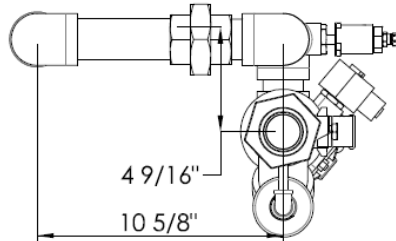
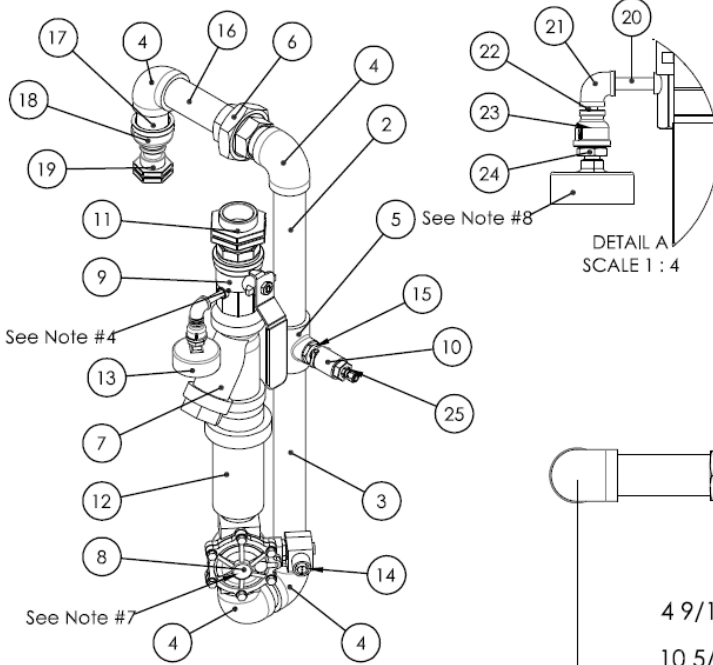
Figure 10

Notes:

1. All fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass.
2. Length and width of manifold must match measurements listed on this page.
3. All pipe nipples are close unless otherwise noted.
4. Valves and Gauges can be rotated for best fit inside cabinet, gauge faces must be visible
5. Thin wall copper tubing to be run to the coupling near the pump to #25. 1" of plastic tubing is used between coupler and pump.
6. Do not use Pipe Dope on union mating surfaces as this can cause leaks.
7. Optional Slow-Close Solenoid Part # SC8Z21G01 1-120VAC may be used as an alternative.
8. Gauge to be piped per Detail A, so that the face is visible when mounted in the Hood Utility Cabinet.

Manifold Parts				
#	Description	Part #	Macola #	Quantity Used
1	1-1/2" Close Brass Nipple	AQ2520	A0007003	7
2	1-1/2" x 10" Brass Nipple	4568K274	4568K274	1
3	1-1/2" x 14" Brass Nipple	4568K771	4568K771	1
4	1-1/2" Brass Elbow	AQ2502	A0008996	4
5	1-1/2" x 3/4" x 1-1/2" Brass Tee	4429K341	A0024232	1
6	1-1/2" Brass Union	1BR125UJ	A0023262	1
7	1-1/2" Brass Wye Strainer	43935K27	43935K27	1
8	1-1/2" Brass Solenoid Valve, 120V	SC8210G022-120VAC	A0017120	1
9	1-1/2" Gauge Port Ball Valve	4085T25	A0027373	1
10	1/4" Check Valve	47715K21	47715K21	1
11	1-1/2" Quick Seal	HMU375	376	1
12	1-1/2" Backflow Preventer	LF07S	A0027372	1
13	Temperature and Pressure gauge	DPTG3-2-1/2	AQ2516	1
14	Solenoid Connection Cable 120V	5J684-551-US0A	AQ3602	1
15	3/4" x 1/4" Adapter	AQ2564	AQ2564	1
16	1-1/2" x 5" Brass Nipple	4568K268	4568K268	1
17	1-1/2" x 2" Brass Nipple	4568K262	4568K262	1
18	1-1/2" x 3/4" Reducing Coupling	4429K746	4429K746	1
19	3/4" Quick Seal	172	372	1
20	1/4" Brass Nipple	VARIES	VARIES	1
21	1/4" Brass Elbow	4429K161	4429K161	1
22	1/4" Close Brass Nipple	4568K131	4568K131	1
23	1/4" x 1/2" NPT Coupling	4429K734	4429K734	1
24	1/2" x 1/4" NPT Bushing	4429K422	4429K422	1
25	1/4" to Copper tubing Adapter	5220K65	5220K65	1
	1/4" Thin Wall Copper Tubing			
	1/4" Tube Coupler	505K23	505K23	
Not Shown	Self Cleaning Manual	A0019144	A0019144	1

All Nipples will be Close, Unless Noted Otherwise

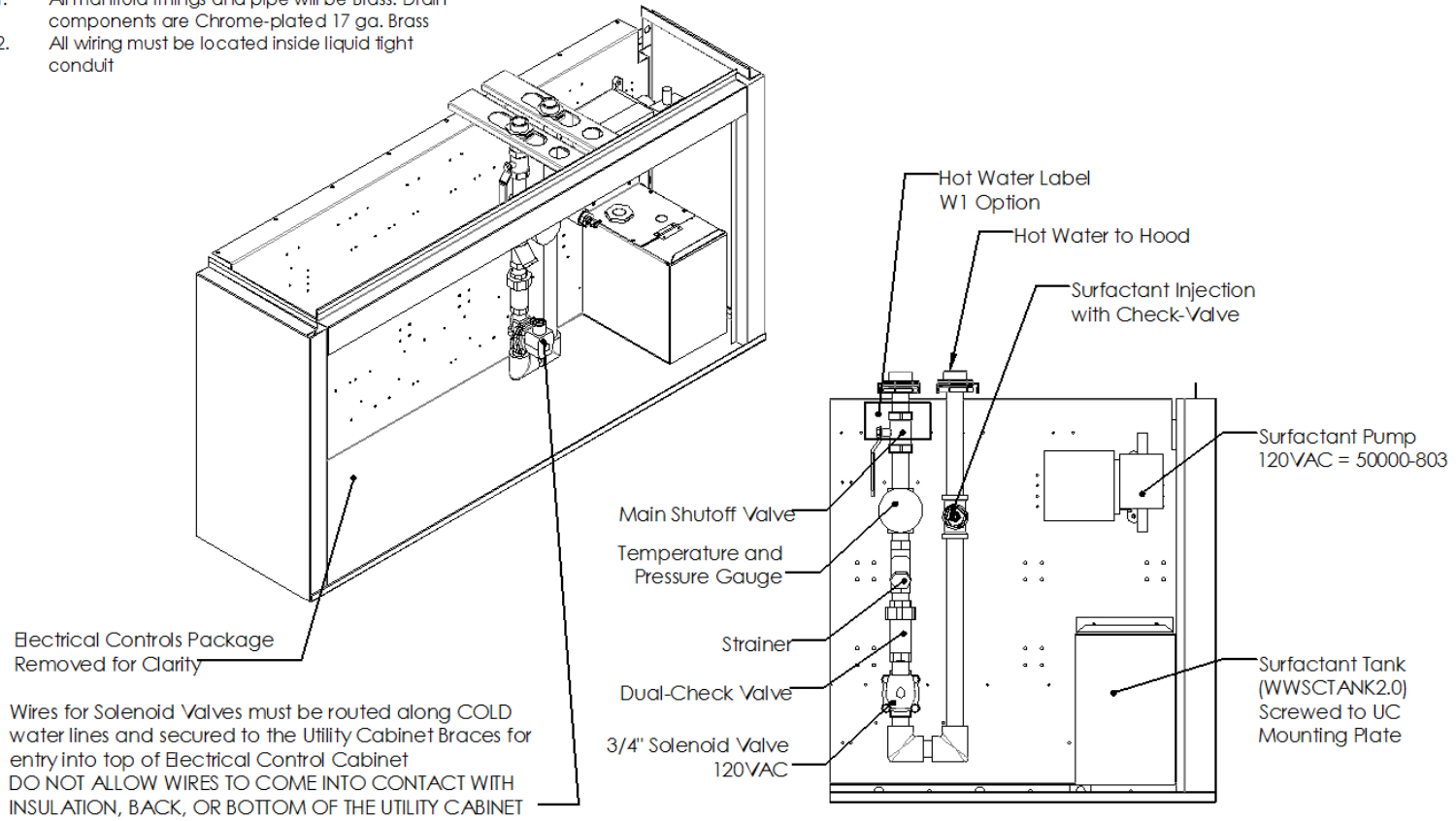


Wall Mounted Utility Cabinet Self Cleaning Manifold Details

Figure 11

Notes:

1. All manifold fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass
2. All wiring must be located inside liquid tight conduit

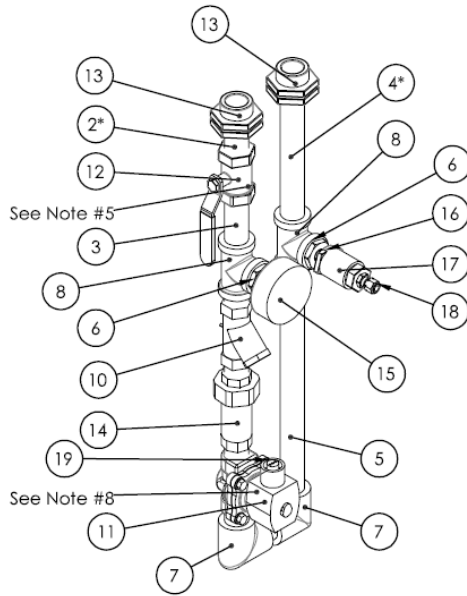


Wall Mounted Utility Cabinet 3/4" Self Cleaning Manifold Details

Figure 12

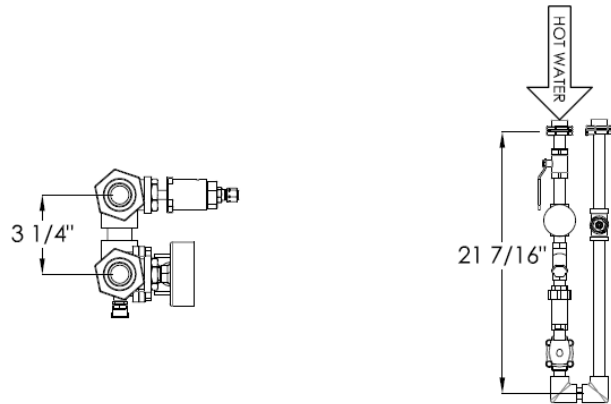
Notes:

1. All fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass.
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 two places by 5". 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 #18. 1" of plastic tubing is used between coupler and pump.
7. Do not use Pipe Dope on union mating surfaces as this can cause leaks.
8. Optional Slow-Close Solenoid Part # SC8221G005-120VAC may be used as an alternative.



Manifold Parts					
#	Description	Part #		Macola #	Quantity Used
		24" Tall Hoods	30" Tall Hoods		
1	3/4" Close Brass Nipple	4568K191		4568K191	5
2	3/4" x 2" Brass Nipple	4568K192	4568K375	VARIES	1
3	3/4" x 3" Brass Nipple	4568K194		4568K194	1
4	3/4" x 7" Brass Nipple	4568K375	4568K215	VARIES	1
5	3/4" x 12" Brass Nipple	4568K215		4568K215	1
6	3/4" x 1/4" Adapter	AQ2564		AQ2564	2
7	3/4" Brass Elbow	4429K164		4429K164	2
8	3/4" Brass Tee	4429K254		4429K254	2
9	3/4" Brass Union	4429K215		4429K215	1
10	3/4" Brass Wye Strainer	43935K24		43935K24	1
11	3/4" Brass Solenoid Valve, 120V	SC8210G009 120/60, 110/50		AQ3105	1
12	3/4" Manual Ball Valve	47865K24		47865K24	1
13	3/4" Quick Seal	172		372	1
14	3/4" Backflow Preventer	LF7RU22		A0025518	1
15	Temperature and Pressure gauge	DPTG3-2-1/2		AQ2516	1
16	1/4" Close Brass Nipple	4568K131		4568K131	1
17	1/4" Check Valve	47715K21		47715K21	1
18	1/4" to Copper tubing adapter	5220K65		5220K65	1
	1/4" Thin Wall Copper tubing				
	1/4" Tube Coupler	5053K23		5053K23	
19	Solenoid Connection Cable 120V	5J684-551-US0A		AQ3602	1
Not Shown	Self Cleaning Manual	A0019144		A0019144	1

All Nipples will be Close, Unless Noted Otherwise



Wall Mounted Utility Cabinet 1" Self Cleaning Manifold Details

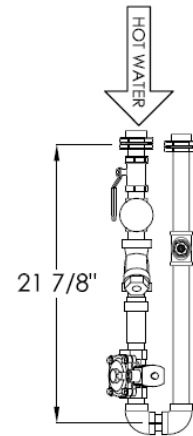
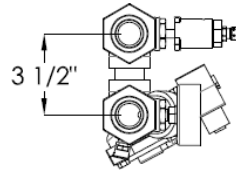
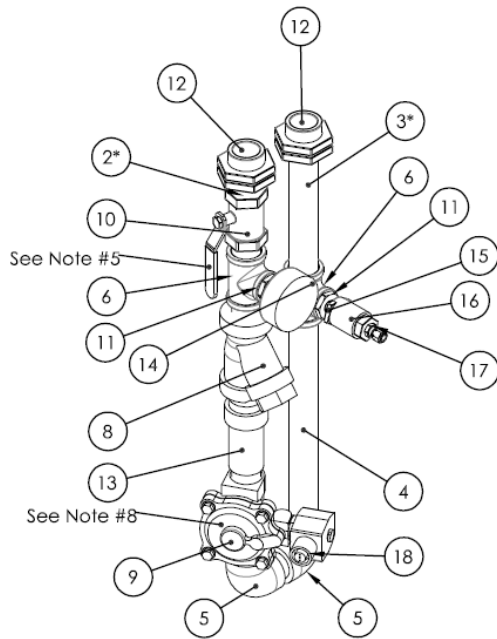
Figure 13

Notes:

1. All fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass.
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 two places by 3". This is noted below with an *.
5. Valves and Gauges can be rotated for best fit inside cabinet, gauge faces must be visible
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.
7. Do not use Pipe Dope on union mating surfaces as this can cause leaks.
8. Optional Slow-Close Solenoid Part # SC8221G007-120VAC may be used as an alternative.

Manifold Parts					
#	Description	Part #		Macola #	Quantity Used
		24" Tall Hoods	30" Tall Hoods		
1	1" Close Brass Nipple	AQ2522		AQ2522	8
2	1" Close Brass Nipple	AQ2522	4568K336	VARIES	1
3	1" x 7" Brass Nipple	4568K376	4568K234	VARIES	1
4	1" x 14" Brass Nipple	4512K751		4512K751	1
5	1" Brass Elbow	4429K165		A0014022	4
6	1" x 3/4" x 1" Brass Tee	4429K238		A0024232	2
7	1" Brass Union	BH106A		A0007774	1
8	1" Brass Wye Strainer	4393K25		A0026974	1
9	1" Brass Solenoid Valve, 120V	SC8210G004-120VAC		A0017119	1
10	1" Manual Ball Valve	MBV-1 0NN (EC)		10406	1
11	3/4" To 1/4" Brass Bushing	AQ2564		AQ2564	2
12	1" Quick Seal	213		A0003378	1
13	1" Backflow Preventer	LF7RU2-2		A0026338	1
14	Temperature and Pressure gauge	DPTG3-2-1/2		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
18	Solenoid Connection Cable 120V	5J684-551-US0A		AQ3602	1
Not Shown	Self Cleaning Manual	A0019144		A0019144	1

All Nipples will be Close, Unless Noted Otherwise

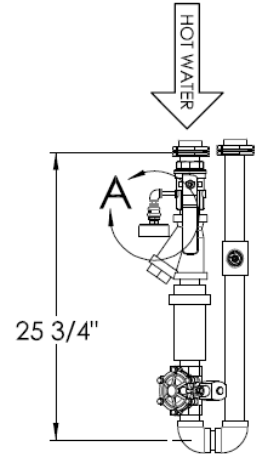
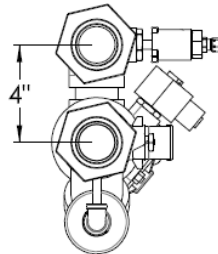
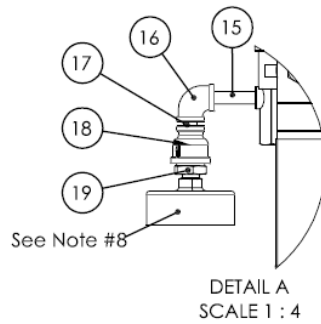
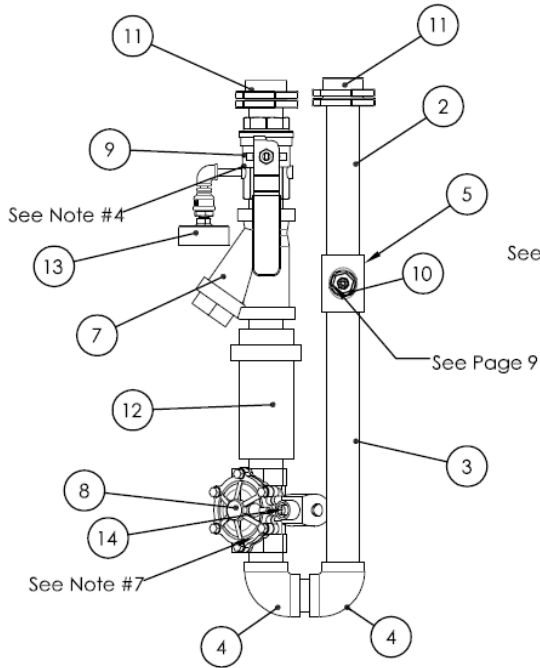


Wall Mounted Utility Cabinet 1-1/2" Self Cleaning Manifold Details

Figure 14

Notes:

1. All fittings and pipe will be Brass. Drain components are Chrome-plated 17 ga. Brass.
2. Length and width of manifold must match measurements listed on this page.
3. All pipe nipples are close unless otherwise noted.
4. Valves and Gauges can be rotated for best fit inside cabinet, gauge faces must be visible
5. Thin wall copper tubing to be run to the coupling near the pump to #10. 1" of plastic tubing is used between coupler and pump.
6. Do not use Pipe Dope on union mating surfaces as this can cause leaks.
7. Optional Slow-Close Solenoid Part # SC8221G011-120VAC may be used as an alternative.
8. Gauge to be piped per Detail A, so that the face is visible when mounted in the Hood Utility Cabinet.



Manifold Parts				
#	Description	Part #	Macola #	Quantity Used
1	1-1/2" Close Brass Nipple	AQ2520	A0007003	7
2	1-1/2" x 10" Brass Nipple	4568K274	4568K274	1
3	1-1/2" x 14" Brass Nipple	4568K771	4568K771	1
4	1-1/2" Brass Elbow	AQ2502	A0006996	4
5	1-1/2" x 3/4" x 1-1/2" Brass Tee	4429K341	A0024232	1
6	1-1/2" Brass Union	1BR125LU	A0023262	1
7	1-1/2" Brass Wye Strainer	4393K27	4393K27	1
8	1-1/2" Brass Solenoid Valve, 120V	SC8210G022-120VAC	A0017120	1
9	1-1/2" Gauge Port Ball Valve	4085T25	A0027373	1
10	1/4" Check Valve	47715K21	47715K21	1
11	1-1/2" Quick Seal	HMU375	376	1
12	1-1/2" Backflow Preventer	LF07S	A0027372	1
13	Temperature and Pressure gauge	DPTG3-2-1/2	AQ2516	1
14	Solenoid Connection Cable 120V	5J684-551-US0A	AQ3602	1
15	1/4" Brass Nipple	VARIABLES	VARIABLES	1
16	1/4" Brass Elbow	4429K161	4429K161	1
17	1/4" Close Brass Nipple	4568K131	4568K131	1
18	1/4" x 1/2" NPT Coupling	4429K734	4429K734	1
19	1/2" x 1/4" NPT Bushing	4429K422	4429K422	1
Not Shown	Self Cleaning Manual	A0019144	A0019144	1

All Nipples will be Close, Unless Noted Otherwise

Self Cleaning

1. During the wash cycle, water will be sprayed in the plenum and duct and surfactant will be injected at a set frequency. The wash cycle will stop when the wash timer expires or when the Wash button is pressed again.
2. The wash timer is factory set to 3 minutes and is adjustable through the Configuration Menu. The surfactant is injected for 1 second at the start of each minute of Wash. This setting is not adjustable. If equipped with CORE Fire Protection, the wash timer is not configurable through the ECPM03 control board. Refer to the CORE Owner's Manual for further information.
3. **Hood filters MUST remain in place during the wash cycle.**
4. The wash cycle can be initiated in several ways:
 - a. Manually, when the WASH button is pressed on the HMI.
 - b. Automatically, if the following conditions are met:
 - Fans will need to go out of modulation mode either with the FANS button being pressed or by the duct temperature cooling down and hysteresis value and timer are met.
 - The fans will need to have effectively run cumulatively for a period of time longer than the "Wash Min Fan Runtime" value configured under "Misc Options". Preparation Time mode and Cool Down mode fan time do not count towards runtime. The runtime is reset to zero when the wash cycle is run.
 - The amount of time elapsed since the previous wash cycle is greater than the "Wash Min Interval time" value configured under "Misc Options". That elapsed time is reset to zero when the wash cycle is run.
 - c. If a Building Management System (BMS) is remotely controlling the fans through the external input terminal IO1, when the Fans are turned ON and then OFF through the IO1 terminal, granted that the fans are not maintained on by the duct temperature sensors or the fan button.
 - d. Through a digital Building Management System. Refer to the Building Management Owner's Manual for more information.
5. If the surfactant level is too low, an alarm will be triggered on the HMI. If the wash cycle is initiated while this alarm is active, water will be sprayed but no surfactant will be injected. Refill Surfactant as soon as possible

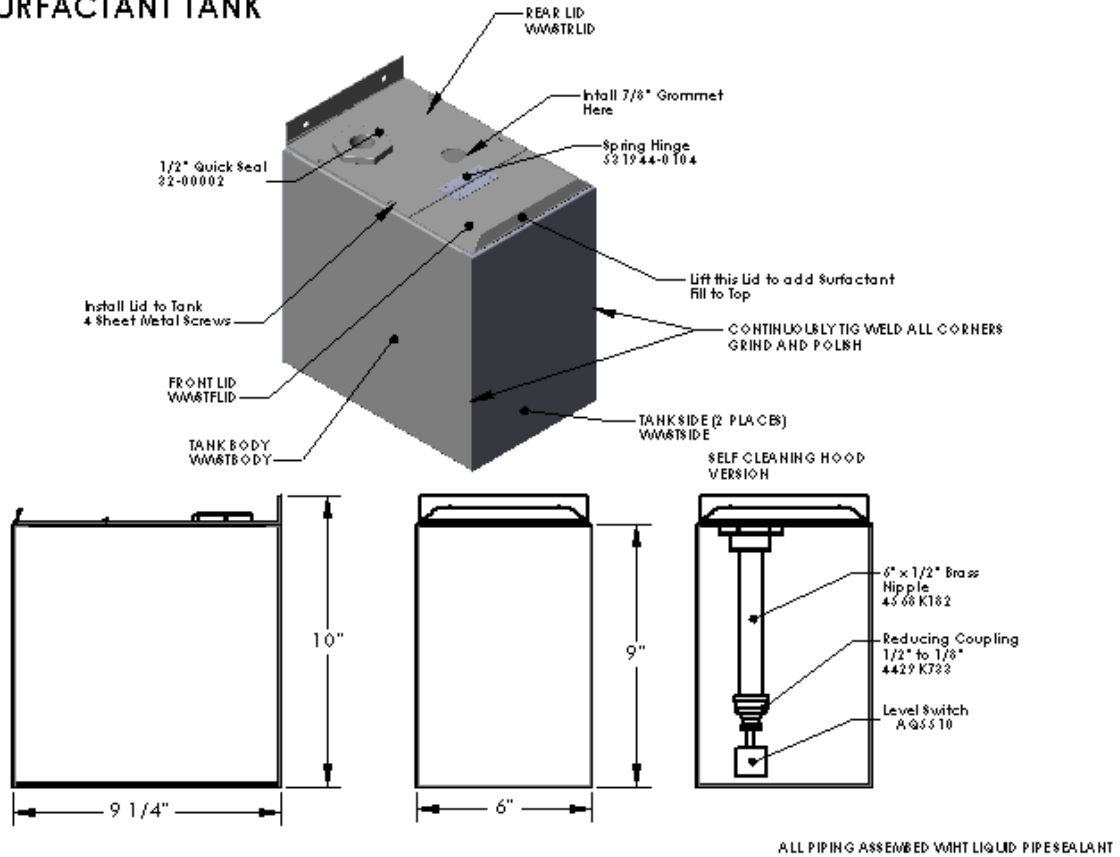
Surfactant Tank

The surfactant tank contains a liquid level control which energizes when the tank is completely empty. 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 9 below shows tank details.

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

Figure 15

SURFACTANT TANK



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
	Timer Settings improperly set	Wash timer should be set for approximately 3 minutes
	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 than 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

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.

Every 6 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.
4. Inspect hood plenum and wipe down any areas not being cleaned by the self-cleaning system. There may be an area where the water spray does not directly contact the metal.
5. 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.
6. Fill surfactant tank with surfactant.
7. The main line strainer in the manifold must be cleaned.
8. Verify that system has proper water pressure and temperature per the labels on the unit.

Every 2 Years

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 Operating Hot Water Pressure (Table 1)	
Verify Operating Cold Water Pressure (10-20 PSI)	
Verify Max Water Static Pressure (125 PSI)	
Verify Water Temperature	
Check For Leaks in Manifold	
Check For Leaks through Filters	
Verify that Water is Draining Properly	

Maintenance Record

Date	Service Performed

Factory Service Department
Phone: 1-866-784-6900
Fax: 1-919-554-9374