Pollution Control Unit

Installation, Operation, and Maintenance Manual

Pollution Control Unit

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 unit should only be performed by a qualified professional who has read and understands these instructions and is familiar with proper safety precautions. Read this manual thoroughly before installing or servicing this equipment.

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.

A0011036
Feb 2012 Rev. 19

TABLE OF CONTENTS

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.

LISTINGS

This pollution control unit (PCU) is ETL listed to standard UL-710, CAN/ULC-S646, CAN/ULC-S647 when installed in accordance with these installation instructions and National Fire Protection Association Standard “NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.”

APPLICATION

The listed pollution control unit is suitable for use in commercial cooking installations for the removal of smoke and grease laden vapors.

Grease duct installations require provisions for cleaning the interior of the duct. NFPA 96 cleanout requirements are as follows:

1. A cleanout must be provided at each change of direction except where the entire length of duct can be inspected and cleaned from either the hood or the discharge end.
2. On horizontal duct runs, at least one (1) 20” diameter opening must be provided. Where the opening is smaller than 20” diameter, openings large enough to permit cleaning must be provided at intervals of no more than 12’.
3. Openings in the duct must be at the side or the top, whichever is more accessible. When the opening is on the side of the duct, the lower edge of the opening must be at least 1 ½” above the bottom of the duct. For listed grease duct, this is accomplished by the use of the grease manifold tee and cleanout cap.
4. On vertical duct runs where personnel entry is possible, access must be from the top of the riser. Where entry is not possible, access must be provided at each floor.

NOTE: ACCESS REQUIREMENTS ARE SUBJECT TO CHANGE IN ACCORDANCE WITH LOCAL CODE. LOCAL AUTHORITIES SHOULD BE CONSULTED FOR EXACT REQUIREMENTS. GREASE DUCT MAY BE CONNECTED ONLY TO HOODS IN A SINGLE FIRE ZONE ON ONE FLOOR. DO NOT CONNECT GREASE DUCTS TO ANY OTHER PART OF THE BUILDING VENTILATION OR EXHAUST SYSTEM.

A grease fire can burn at extremely high temperatures. This system should be dismantled and inspected after any exposure to a grease fire. Any section that is distorted or discolored should be replaced. All joints in the system should be examined. Because the sealant expands to assure a positive seal in the case of a fire, any sealant that has been exposed to high temperature must be replaced. This will ensure that the system maintains its integrity against fire conditions in the future. The manufacturer of this PCU cannot be responsible for grease duct systems that are not properly maintained or have been subjected to one or more grease fires. Warranty and listing is void in a fire situation without consulting factory.

Grease duct systems size and capacity information may be obtained from the “ASHRAE Handbook – Fundamentals” or from the “Air Pollution Engineering Manual” of the “US Environmental Protection Agency.” Refer to the grease duct systems catalog for descriptions and dimensional data of parts.

INSTALLATION

It is imperative that this unit is installed and operated with the designed airflow, filters, exhaust fan placement, and construction 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.

WARNING: DO NOT RAISE PCU BY THE DOOR, FILTER FRAMES, OR UTILITY CABINET – USE LIFTING LUGS PROVIDED OR A SLING.

Site Preparation

1. Provide clearance around installation site to safely rig and lift equipment into its final position. Supports must adequately support equipment. Refer to manufacturer's estimated weights.
2. Consider general service and installation space when locating unit. Allow a minimum of 36 inches of clearance on the filter removal side of the unit to replace filters.
3. Locate unit close to the space it will serve to reduce long, twisted duct runs.
4. Support unit above ground or at roof level high enough to prevent precipitation from being drawn into unit.
5. The PCU is designed to operate in a negative pressure environment. Be sure to install the PCU between the exhaust fan and hoods. This will also keep the fan cleaner during operation.
6. The PCU drains must be connected to the building grease interceptor or an approved building drain. Black Iron or Stainless Steel Pipe must be used for this connection. If PCU assembly has Multiple Modules, the drain line must be 2.5 inch NPT pipe minimum.

Joint Sealant

The joint sealant used to seal all internal joint assemblies is a 3M product. 3M Fire Barrier 2000 + Silicone Sealant is a ready-to-use, gun-grade, one-component silicone elastomer that cures upon exposure to atmospheric humidity to form a flexible seal. 3M Fire Barrier 2000 + Silicone Sealant, when installed properly, will control the spread of fire before, during and after exposure to open flames. It will stop the spread of noxious gas, smoke and water and maintain the integrity of fire rated assemblies and construction. **NO SEALANT SUBSTITUTES MAY BE USED.**

Sealant Features

1. Superior adhesion.
2. Capable of withstanding 2000 °F + temperatures.
3. Class 25 sealant, per ASTM 920.
4. Re-enterable/repairable.
5. Provides up to 4-hours fire-rating.
6. Cures upon exposure to atmospheric humidity.
7. Working time 30 minutes.
8. Cure time 14 to 21 days.
9. Applied with a standard caulk gun.

Ductwork

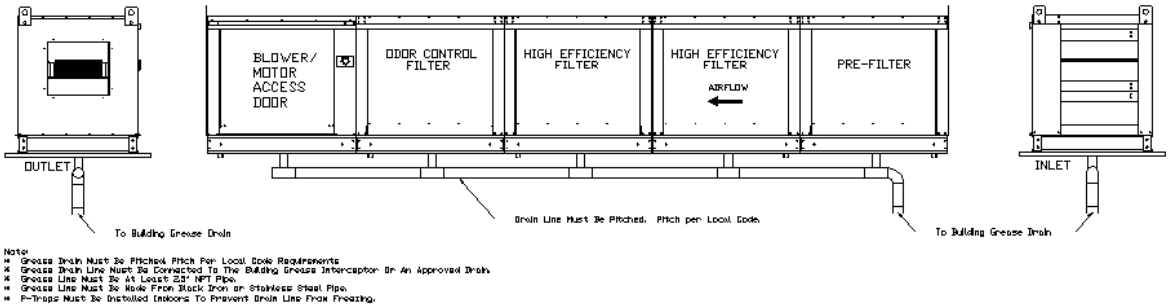
The ductwork attached to this unit will significantly affect the airflow performance. Flexible ductwork and square elbows should not be used. **There must be atleast 3 duct diameters of straight duct leading to the inlet of the pollution control unit.** The chart to the right shows the recommended duct sizes for optimal performance. **The maximum velocity at the inlet of the pollution control unit must be less than 1000 feet per minute for light duty applications and less than 800 feet per minute for heavy duty applications and solid fuel applications.**

Recommended MIN Ductwork Sizes

PCU Size	Duct Height	Duct Width
PCU-1	23 in.	23 in.
PCU-2	30 in.	30 in.
PCU-3	35 in.	35 in.
PCU-4	43 in.	43 in.
PCU-5	50 in.	52 in.
PCU-6	46 in.	58 in.

Follow SMACNA guides and recommendations for the remaining duct run**.**
Ensure duct connections are properly aligned and sealed. When the pollution control unit is used in commercial grease ductwork, the ductwork connections must be **FULLY WELDED** to the PCU. Clearance ratings of ductwork connected to the unit apply to the PCU as well. Ductwork must be listed or installed in accordance with the IMC.

Unit Drains

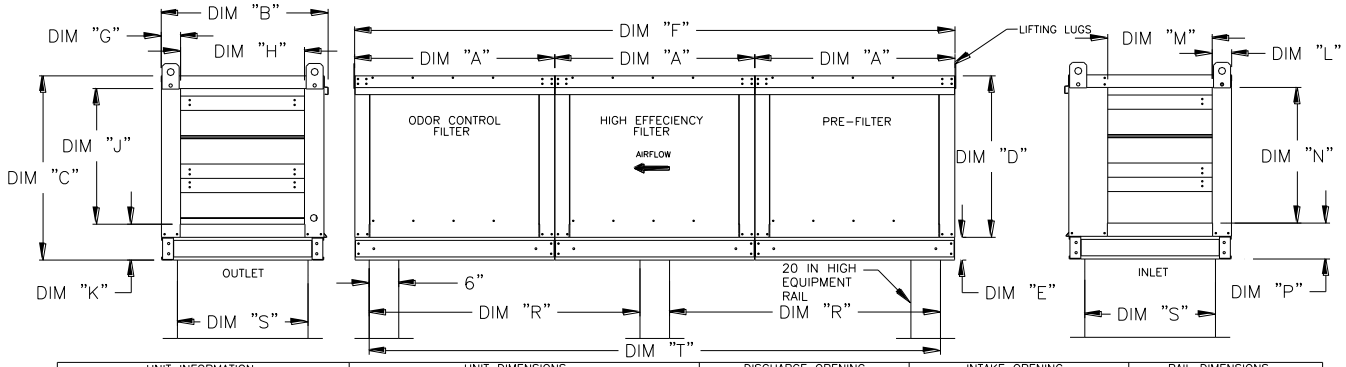


Each module of the Pollution Control Unit contains a drain that **must be connected to an approved grease interceptor or to an approved drainage point**. The drain connections must be made with Black Iron or Stainless Steel piping. This will allow the water collected in the unit, either from Self Cleaning hood, ductwork cleaning, or from the Core Protection Fire System, to drain away from the unit. If installed outdoors, the drains must be piped so that water cannot buildup in the pipes and burst due to freezing.

Equipment Rails

The unit should be installed on a curb and/or rail elevated not less than 14” above any roof surface. Secure PCU to rails through vertical portion of the PCU base assembly flange using a minimum of eight (8) lug screws, anchor bolts, or other suitable fasteners (not furnished). Shims may be required depending upon equipment rail installation and roofing material. When installed indoors, uni-strut channels may be used under the PCU for attachment to threaded rod from the roof structure above. Check all fasteners for tightness. The diagrams below show different mechanical installation configurations.

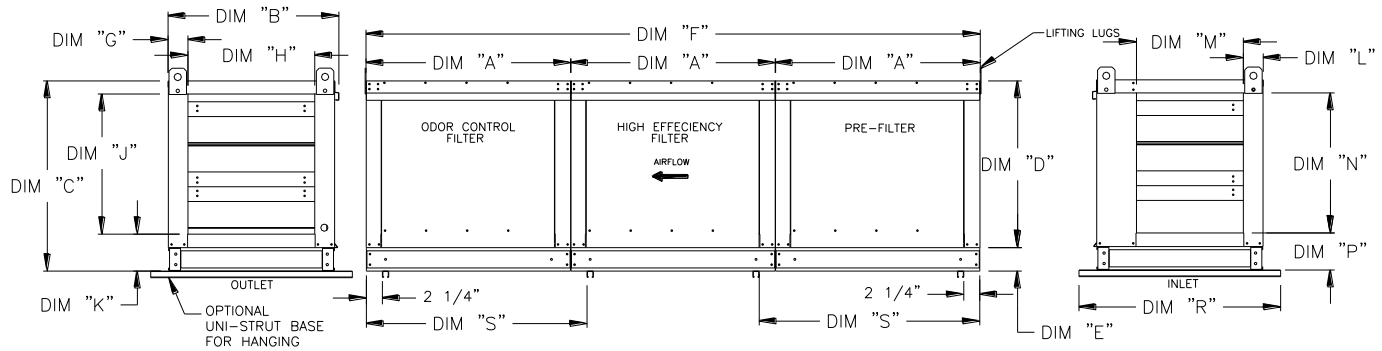
Roof Mount Installation (Typical)



UNIT INFORMATION			UNIT DIMENSIONS						DISCHARGE OPENING				INTAKE OPENING				RAIL DIMENSIONS		
MODEL	WEIGHT	FILTER SIZE & QTY*	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T
PCU-TPF-1	285 LBS	20"x25"x4" (3)	32-1/8	26-3/4	29-3/4	26	3-3/4	96-5/8	3-1/8	19-7/8	21-7/8	5-3/4	3-1/8	16-3/4	21-7/8	5-3/4	43-5/16	21	92-5/8
PCU-TPF-2	405 LBS	16"x20"x4" (8)	32-1/8	36-3/4	36-3/4	33	3-3/4	96-5/8	5-1/8	27-7/8	28-7/8	5-3/4	5-1/8	24-3/4	28-7/8	5-3/4	43-5/16	31	92-5/8
PCU-TPF-3	495 LBS	20"x25"x4" (8)	38-1/8	40-3/4	43-3/8	38-1/8	5-1/4	114-5/8	4-5/8	32-3/8	33-7/8	7-1/2	4-5/8	29-1/4	33-7/8	7-1/2	53-5/16	35	110-5/8
PCU-TPF-4	705 LBS	16"x20"x4" (15)	35-1/4	47-7/8	51-3/8	46-1/8	5-1/4	106	4-5/8	39-3/8	41-7/8	7-1/2	4-5/8	36-1/4	41-7/8	7-1/2	48	42	102
PCU-TPF-5	885 LBS	20"x25"x4" (12)	35-1/4	58-5/8	58-3/8	53-1/8	5-1/4	106	4-5/8	50-1/8	48-7/8	7-1/2	4-5/8	47	48-7/8	7-1/2	48	52-3/4	102

ALL DIMENSIONS ARE NOMINAL AND GIVEN IN INCHES.
C/US UL710 LISTED FOR GREASE DUCT INSTALLATION
WHEN USED IN KITCHEN GREASE DUCT, UNIT MUST BE INSTALLED DOWNSTREAM OF A LISTED HOOD ASSEMBLY
*FILTER QUANTITY SHOWN IS PER MODULE.

Indoor (Inline) Installation (Typical)

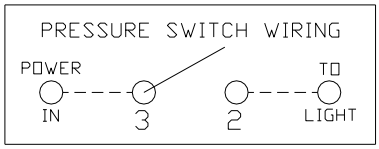


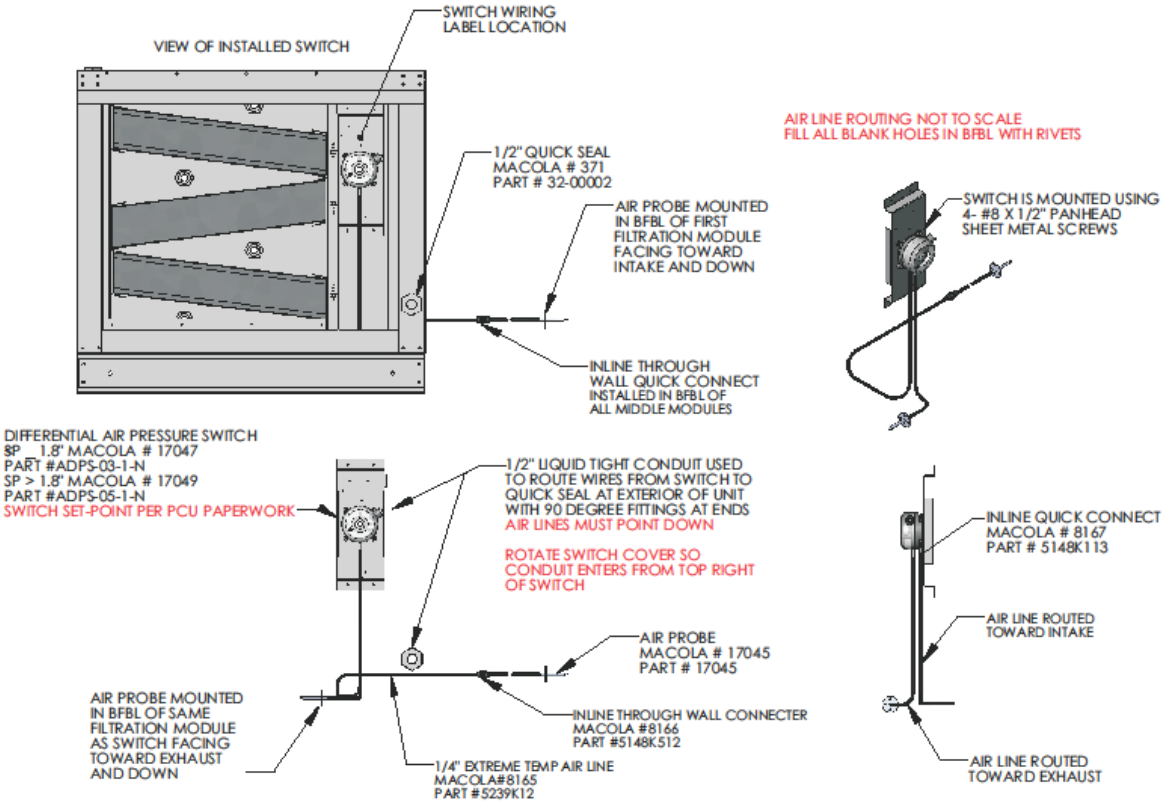
UNIT INFORMATION			UNIT DIMENSIONS						DISCHARGE OPENING				INTAKE OPENING				UNI-STRUT SUPPORT	
MODEL	WEIGHT	FILTER SIZE & QTY*	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
PCU-TPF-1	285 LBS	20"x25"x4" (3)	32-1/8	26-3/4	29-3/4	26	3-3/4	96-5/8	3-1/8	19-7/8	21-7/8	5-3/4	3-1/8	16-3/4	21-7/8	5-3/4	36	34-3/8
PCU-TPF-2	405 LBS	16"x20"x4" (8)	32-1/8	36-3/4	36-3/4	33	3-3/4	96-5/8	5-1/8	27-7/8	28-7/8	5-3/4	5-1/8	24-3/4	28-7/8	5-3/4	48	34-3/8
PCU-TPF-3	495 LBS	20"x25"x4" (8)	38-1/8	40-3/4	43-3/8	38-1/8	5-1/4	114-5/8	4-5/8	32-3/8	33-7/8	7-1/2	4-5/8	29-1/4	33-7/8	7-1/2	60	40-3/8
PCU-TPF-4	705 LBS	16"x20"x4" (15)	35-1/4	47-7/8	51-3/8	46-1/8	5-1/4	106	4-5/8	39-3/8	41-7/8	7-1/2	4-5/8	36-1/4	41-7/8	7-1/2	60	37-1/2
PCU-TPF-5	885 LBS	20"x25"x4" (12)	35-1/4	58-5/8	58-3/8	53-1/8	5-1/4	106	4-5/8	50-1/8	48-7/8	7-1/2	4-5/8	47	48-7/8	7-1/2	72	37-1/2

ALL DIMENSIONS ARE NOMINAL AND GIVEN IN INCHES.
C/US UL710 LISTED FOR GREASE DUCT INSTALLATION
WHEN USED IN KITCHEN GREASE DUCT, UNIT MUST BE INSTALLED DOWNSTREAM OF A LISTED HOOD ASSEMBLY
*FILTER QUANTITY SHOWN IS PER MODULE.

Air Pressure Switch Option

Switches are preset from plant to .15” w.c. above the internal static pressure of the PCU with clean filters. Air pressure switch is located in downstream filter module. Route wiring from hood control panel to PCU using ½” conduit through quick seal located near lower right area of filter module containing switch. Use existing conduit in module to route wires from exterior of module to switch. Install wiring according to label above switch. Be sure all conduit fittings are tight. Once filters become clogged, switch closes illuminating light in kitchen. User should then clean or replace filters as required.





Advanced Filter Pressure Monitoring Option

The PCU Filter Monitoring Module (PCUFMM) utilizes proprietary algorithms to make determinations about filter loading percentages as well as fault conditions, such as missing filters and missing doors. These algorithms take into consideration known characteristics and interactions of many specific filter combinations, stored calibration values derived from measurements taken at the time of test and balance, and measurements of the dynamically changing current operating conditions such as demand ventilation. Personnel servicing the PCU have direct access to operating characteristics and fault conditions thru the use of an HMI (Human Machine Interface), which is conveniently located directly on the PCU. Accurate monitoring of PCU filter conditions not only ensures proper operation of the PCU, but can also reduce the operating cost of the PCU by reporting the condition of each individual filter module. This can eliminate the needless replacement of filters that have not yet reached the end of their useful life.

Features and Benefits:

- Monitors pressure drop across each filter module of the Pollution Control Unit (PCU).
- Fans and Cooking equipment will shut off for Missing Door (of the unit) fault or Missing Filter fault.
- Detects Filter Clogged Condition. If clogged condition persists for 24 hours, an audible alarm will begin to sound. If the clogged condition continues to persist for an additional 48 hours, a signal will be sent to the electrical control package that will prevent the fans and cooking equipment from restarting the next time they have been manually turned off.

Several techniques are employed to insure the validity of the pressure readings. Consequently disturbances caused by events such as fan starting and stopping, filter door removal and sudden changes in building or atmospheric pressure will cause a delay in updating the faults until the disturbances have subsided and enough fresh data has been gathered.

The filter monitoring system has 8 ports which are used based on the number of filter modules in the PCU assembly. The following chart shows the port connections used for different PCU configurations. PORT 7 is used only if the PCU assembly has a blower installed. The unused ports remain exposed to the space in the cabinet. Port 8 is used to measure ambient pressure, external to the PCU.

PCUFMM PORT CONNECTIONS								
No of PCU filter modules	**PORT 1**	**PORT 2**	**PORT 3**	**PORT 4**	**PORT 5**	**PORT 6**	**PORT 7**	**PORT 8**
1	YES	YES	NO	NO	NO	NO	YES/NO	YES
2	YES	YES	YES	NO	NO	NO	YES/NO	YES
3	YES	YES	YES	YES	NO	NO	YES/NO	YES
4	YES	YES	YES	YES	YES	NO	YES/NO	YES
5	YES	YES	YES	YES	YES	YES	YES/NO	YES

HMI Screen

The HMI for the PCU filter pressure monitor is a “Smart” rocker switch installed with a built in organic LED monochrome graphic display. The rocker switch has three momentary switches, one is actuated when the top portion of the rocker is depressed, the second one is actuated when the middle portion of the rocker is depressed and the third is actuated when the bottom portion of the rocker is depressed.

General Navigation Rules

- Top button is used to go to the previous menu.
- Middle button is used to select or enter the current selection choice.
- Bottom button is used to step through the available selection choices.
- Screen saver is automatically selected after 2 minutes of inactivity. During normal operation the screen saver is a blank screen, but if there is a fault it will flash the fault screen.

HMI MENUS

Following are the various menus that appear in sequential order during navigation thru the HMI.

- **PCU logo**
  - This screen shows up upon unit start up.

- **Filter Status**
  - Displays percentage of filter clogging for up to 5 filter modules or “Missing” if a module’s filters are missing. “Calibration Required” will be displayed if the calibration sequence has not been completed upon PCU unit start up.

- **Pressures**
  - This menu has 2 screens. The first screen displays pressure drop for up to 5 filter modules. The second screen displays the total pressure drop across the PCU, PCU inlet static and discharge pressure if configured.

- **Faults**
  - The following are various faults that are displayed on the HMI. “No faults” are displayed if the PCU is functioning as desired.

“Calibration Required”
“Fltr Clogged”
“Fltr Missing”
“PCU clogged”
“72hr Clog”
“Missing Door”

- **Reset faults**
  - Once a fault is activated and the necessary corrected action is taken this menu choice is selected to clear the fault.

- **Calibration**
  - A 4 digit PIN (1234) is entered using bottom and middle buttons. Once entered correctly the new filter calibration sequence is started. “Calibrating” will be displayed until calibration is complete. A percentage complete will also be displayed**. Fan speed must be maintained at 100% for the entire calibration time**. If fluctuations are detected the calibration sequence will restart from zero percent.
  - Calibration **MUST** be performed after PCU unit start up or with any PCU or Hood Filter configuration change. Calibration is **ALWAYS** performed with clean PCU filters.

- **Config**
  - PCU is configured at the factory. PCU has to be re configured only if filter types in any filter module are changed.
  - To Configure the PCU a 4 digit PIN (5678) is entered using middle and bottom buttons.

    The following are the sub menus available
    - **Configure PCU modules**
      - This sub menu steps through the process of configuration. Module count for the PCU assembly is entered followed by the filter type for each module.
      - The bottom button is used to step though the available filter types. The middle button is used to select the desired filter type for each module.
    - **PCU number**
      - The number for this PCU will be displayed in reverse video and is selected using the bottom and middle buttons. This number allows for up to 8 PCUs to exist on one modbus network. Once the middle button is pressed to select the PCU number, a prompt will be displayed to press any button to reboot the PCU filter monitor module. This is required for proper operation after the modbus address is changed.

    - **Inlet pressure variation percentage**
      - This sub menu allows the user to adjust the variation in inlet pressure for faults to be detected by the PCU.
      - The default parameter setting is 15%, i.e. if the pressure at the inlet of the PCU drops by more than 15% of the calibrated value due to changes in inlet conditions like Missing Hood Filters or Open Duct Access doors, all faults on the PCU except “Missing Door” will be **IGNORED.**
      - The default parameter setting value can be changed anytime without the need to recalibrate the PCU unit.

- **Information**
  - This menu has 5 screens which can be stepped through using the bottom button. The first screen displays the filter type for up to 5 modules. The second screen displays the software revision, number of modules, the configuration number currently selected, PCU number and software CRC. The third screen displays the calibration values for modules 1 through 3. The fourth screen displays the calibrations values for modules 4 and 5, the total calibration value across the PCU and the inlet calibration value. The fifth screen displays the Inlet pressure variation percentage setting.

PCUFMM Wiring

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.

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.

Electrical wiring and connections should be done in accordance with local ordinances and the National Electric Code, ANSI/NFPA 70. Be sure the voltage and phase of the power supply and the wire amperage capacity is in accordance with unit nameplate.

1. Always **disconnect power** before working on the PCUFMM. Lock and tag the disconnect switch to breaker to prevent accidental power up.
2. **120VAC** should be wired from terminals H1, N1, P2, P3, P4 and AA to like terminals in the Electrical Control Package.
    - For an EMS, Terminal H1 is wired to H1B and N1, P2, P3, P4, AA are wired to like terminals in the Electrical Control Package.
    - For an EMS PLUS, Terminal H1 is wired to H1B and N1, MBA, MBB, MBC are wired to like terminals in the Electrical Control package. MBA, MBB and MBC are connected to the EMS plus using shielded single twisted pair cable like Beldon # 88760.

Copper Wire Ampacity

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

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. Do not kink the power cable and never allow the cable to come in contact with oil, grease, hot surfaces or chemicals.
6. Before powering up the system, make sure that the interior of the control is free of loose debris or shipping materials.

Troubleshooting

The following table lists causes and corrective actions for possible faults shown on the HMI with the Pollution Control Units. Review this list prior to consulting manufacturer.

Fault	Potential Cause	Corrective Action
Calibration Required	Unit not calibrated upon start up	Calibrate the PCU
	Unit taking too long to calibrate	Varying airflow at inlet of the PCU Check for blocked Atmospheric port
Ftlr Clogged	Filters in a module are clogged	Replace filters in module showing “100% Clog” with clean filters of the same filter type
	Access door in duct left open	Close access door in duct
Ftlr Missing	Filters in a module are missing	Place filters back in Missing Filter module and check for missing filters in all other modules
	Hood filters are clogged	Clean filters in the hood
	Blocked Inlet to the PCU	Make sure nothing is blocking air flow entering the PCU
PCU clogged	Pressure drop across entire PCU exceed allowable limits	Replace filters in module showing maximum percentage clog with clean filters of same type
	Access door in duct left open	Close access door in duct
72hr Clog	Filters in a module are clogged for 72 hours	Replace filters in module showing “100% Clog” with clean filters of the same filter type
	Pressure drop across entire PCU exceed allowable limits for 72 hours	Replace filters in module showing maximum percentage clog with clean filters of same type
	Access door in duct left open for 72 hours	Close access door in duct
Missing Door	Missing Door in one of the modules	Place door back in modules having missing door and check for missing filters in each module

ATTENTION!!

In order to prevent erroneous issuing of fault conditions, the monitoring system takes several minutes to issue a fault.

FAULTS will not be detected if PCU is running outside Normal Hood operating conditions.

Fire System

Pollution Control Units often require a fire system to be installed with the PCU. CORE or Ansul R-102 Fire Suppression Systems are available for the PCU. This system uses fusible links or electric sensors set at 360°F to activate the fire system. Outdoor installations require a climate controlled cabinet to ensure the fire system does not drop below 32°F and does not exceed 130°F. See below for more information about outdoor installations. The Pollution Control Unit fire system must be interlocked with a hood fire system so that if the hood system activates, the PCU system activates. Reverse activation is not required by code, but is recommended for safety. Details of this interlock can be found in the installation guide provided by the fire system manufacturer.

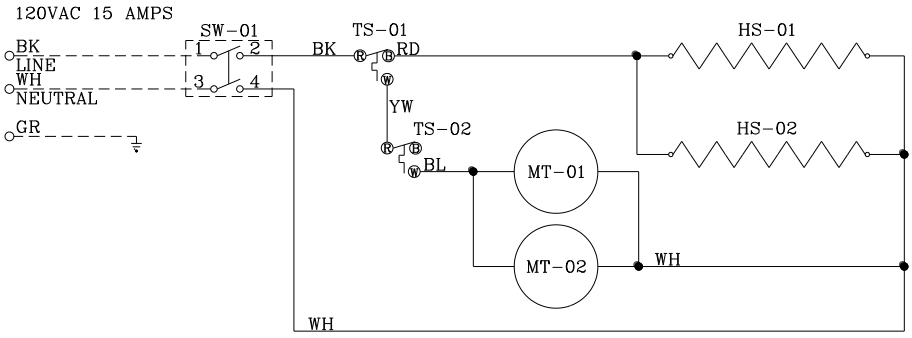
In the event that the fire system is accidentally activated, all disposable filters must be replaced and the prefilter cleaned. The water or agent used in the fire system can cause the filters to prematurely fail.

In the event that a fire occurs in the ductwork leading to the PCU or inside the PCU, the following must be completed. The unit must be cleaned of all fire suppression chemicals and grease. The filters must be replaced, this includes the prefilter. If any of the gasketing is damaged, replace the gasketing between modules and between the doors. If any of the components that make-up the Pollution Control Unit are damaged by fire, then that component must be replaced and inspected by factory trained service personnel.

Installation, commissioning, or resetting of the fire system must be done by a licensed fire system installer, per the guidelines set forth by the fire system manufacturer.

Climate Controlled Utility Cabinet

For outdoor installations, a climate controlled cabinet is available to house the fire system. This box contains a heater, an exhaust fan, and thermostats to control the temperature inside the cabinet. The Utility Cabinet thermostats come preset to heat below 40° F and cool above 90° F. The climate controlled cabinet requires a dedicated 15 amp, 60 Hz, 115 volt, single phase electrical service.

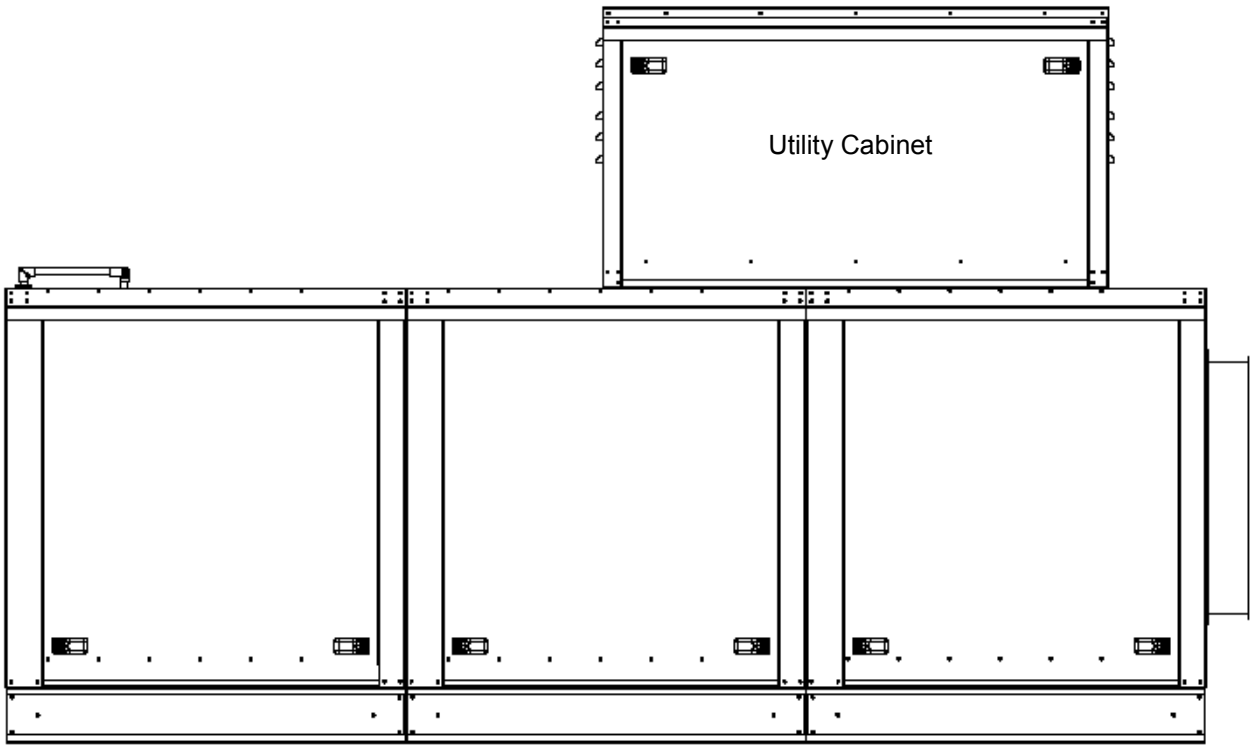


SET THERMOSTAT TS-01 (HEAT) TO 40°F.
SET THERMOSTAT TS-02 (COOL) TO 90°F.

Component Identification

Label	Description	Location
HS-01	450WSTPHTR HEATER	[1]
HS-02	450WSTPHTR HEATER	[2]
MT-01	1976K42 EXHAUST FAN	[2]
MT-02	1976K42 EXHAUST FAN	[3]
SW-01	20AC2 DISCONNECT	[1]
TS-01	T6031A1136 THERMOSTAT	[1]
TS-02	T6031A1136 THERMOSTAT	[2]

Typical Wiring Schematic for the Climate Controlled Utility Cabinet



Pollution Control Unit with Climate Controlled Utility Cabinet Installed

OPERATION

Prior to starting up or operating the PCU, check all fasteners for tightness. In particular, check the module connection seal and the door seals. With power to the fan **OFF**, check the airflow direction of the filters as they must match the label on the filter.

Start Up

Special Tools Required

- 3M Fire Barrier 2000 + Silicone Sealant
- Standard Hand Tools

Start Up Procedure

1. Check all fasteners and connections for tightness.
2. Inspect the air-stream for obstructions and install filters if missing.
3. Filters must be installed in the correct direction.
4. When the fan is started up, observe the operation and check for any unusual noises.
5. Inspect the entering and leaving ductwork connections. Ensure there are not leaks or pinholes in grease duct. Grease rated duct should be continuously welded to the PCU.
6. If unit is installed on vibration isolators, ensure that the isolators are adjusted correctly leaving plenty of spring force on the unit to absorb vibration.

Troubleshooting

The following table lists causes and corrective actions for possible problems with the pollution control units and the fan attached to the PCU. Review this list prior to consulting manufacturer.

Troubleshooting Chart

Problem	Potential Cause	Corrective Action
Fan Motor Overload / Excessive Airflow	Filters not installed	Install all filters and unit doors
	Fan speed is too high	Reduce fan RPM
	Motor wired incorrectly	Check motor wiring to wiring diagram located on fan motor
	Overload in starter set too low	Set overload to motor FLA value
	Motor HP too low	Determine if HP is sufficient for job
	Duct static pressure lower than design	Reduce fan RPM
Insufficient Airflow	Fan rotating in the wrong direction	Be sure fan is rotating in the direction shown on rotation label
	Poor outlet conditions	There should be a straight clear duct at the outlet
	Duct static pressure higher than design	Improve ductwork to eliminate or reduce duct losses
	Blower speed too low	Increase fan RPM. Do not overload motor
	Dirty or clogged filters	Clean and/or replace
	Belt slippage	Adjust belt tension
Excessive Vibration and Noise	Misaligned pulleys	Align pulleys
	Damaged or unbalanced wheel	Replace wheel
	Fan is operating in the unstable region of the fan curve	Refer to performance curve for fan
	Bearings need lubrication or replacement	Lubricate or replace
	Fan speed is too high	Reduce fan RPM
	Belts too loose, worn or oily	Inspect and replace if needed
Check PCU filter light is ON	**Air Pressure Switch Option**	
	Dirty or clogged filters	Clean and/ or replace filters
	Switch set incorrectly	Set switch to .15” w.c. above internal pressure of clean PCU
	Internal static pressure is higher than estimated	Increase switch setting by .1” w.c.
	Advanced Filter Monitoring Option	
	Fault shown on HMI screen	See Page 12 for details
Check PCU light does NOT come on	Light is burned out	Check light with jumper wire, check related wiring, replace/ repair if needed
	Switch is set incorrectly	Set switch to .15” w.c. above internal pressure of clean PCU
	Internal static pressure is lower than estimated	Decrease switch setting by .1” w.c.
Fan and Cooking Equipment wont operate	PCU Missing Door	See page 12 for details
	PCU Missing Filters	
	PCU Filters Clogged for 72 hours	
Sounding of Audible Alarm	PCU filters clogged for 24 hours	Replace Clogged filters with clean filters of same type
Smoke/Odor leaking from PCU	Exhaust fan installed before PCU	Move exhaust fan to discharge side of the PCU

MAINTENANCE

To guarantee trouble free operation of this PCU, the manufacturer suggests following these guidelines. Most problems associated with PCU failures are directly related to poor service and maintenance such as not replacing or cleaning filters.

Please record any maintenance or service performed on this fan in the documentation section located at the end of this manual.

WARNING: DO NOT ATTEMPT MAINTENANCE ON THE PCU UNTIL THE ELECTRICAL SUPPLY HAS BEEN COMPLETELY DISCONNECTED FROM THE FAN.

General Maintenance

1. PCU doors and approaches to PCU should be kept clean and free from any obstruction.
2. Filters have a airflow direction associated with them. Pre-filters should be installed so drains are at the bottom edge of the filter. All other filters have an airflow direction sticker that must match the direction of airflow. See the picture below for this illustration and filter part numbers.
3. All fasteners should be checked for tightness each time maintenance checks are performed prior to restarting unit.
4. Ductwork and PCU should be cleaned according to code requirements.

Filter Information

NOTE FILTERS INSTALLED WITH DIRECTION ARROW STICKERS MATCHING DIRECTION ARROW ON PCU FRAME

Standard Filter Part Numbers

PCU Module Size	16" x 20" x 4"	20" x 25" x 4"	Steel Pre-Filter	High Efficiency (MERV 14)	Odor Control
Size 1		3	118-700-014	LG4-M-912-P	BPSL 31222
Size 2	8		118-700-011	LG4-M-909-P	BPSL 31224
Size 3		8	118-700-014	LG4-M-912-P	BPSL 31222
Size 4	15		118-700-011	LG4-M-909-P	BPSL 31224
Size 5		12	118-700-014	LG4-M-912-P	BPSL 31222
Size 6		18	118-700-014	LG4-M-912-P	BPSL 31222

Optional Pre-Filters, High Eff, and HEPA Filter Part Numbers

PCU Module Size	16" x 20" x 4"	20" x 25" x 4"	UL-1046 Pre-Filter	Captrate Solo Pre-Filter	Grease Lock Combination Pre-Filter*	High Temperature High Efficiency Filter	HEPA Part Number	Class 1 HEPA Filter
Size 1		3	SSH2025	CSF2025-NH	GL2025/CSF	110-500-404	H1924x22-0B8000036	2909329
Size 2	8		SSH2016	CSF2016-NH	GL2016/CSF	110-500-405	H1519x22-0B8000036	2909332
Size 3		8	SSH2520	CSF2520-NH	GL2520/CSF	110-500-404	H1924x22-0B8000036	2909329
Size 4	15		SSH2016	CSF2016-NH	GL2016/CSF	110-500-405	H1519x22-0B8000036	2909332
Size 5		12	SSH2025	CSF2025-NH	GL2025/CSF	110-500-404	H1924x22-0B8000036	2909329
Size 6		18	SSH2025	CSF2025-NH	GL2025/CSF	110-500-404	H1924x22-0B8000036	2909329

* Grease Lock Combination Pre Filter is a combination of Grease Lock Filter and Captrate Solo Filter

Grease Lock Filter Replacement	
PCU Size	Part Number
1,3,5,6	GL2025
2,4	GL1620

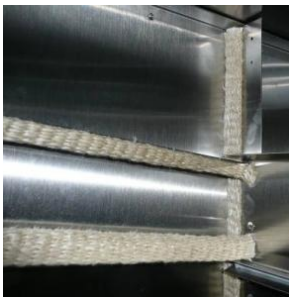
Optional Odor Control Media Part Numbers

PCU Module Size	16" x 20" x 4"	20" x 25" x 4"	100% Carbon	100% Permanganate	Caustic Impregnated	Carbon / Permanganate Blend Panel	100% Carbon Panel	100% Permanganate Panel	Caustic Impregnated Panel
Size 1		3	BPSL 31231	BPSL 31226	BPSL 31229	B21711	B21709	B21712	B21710
Size 2	8		BPSL 31230	BPSL 31227	BPSL 31228	B21199	B21197	B21200	B21198
Size 3		8	BPSL 31231	BPSL 31226	BPSL 31229	B21711	B21709	B21712	B21710
Size 4	15		BPSL 31230	BPSL 31227	BPSL 31228	B21199	B21197	B21200	B21198
Size 5		12	BPSL 31231	BPSL 31226	BPSL 31229	B21711	B21709	B21712	B21710
Size 6		18	BPSL 31231	BPSL 31226	BPSL 31229	B21711	B21709	B21712	B21710

There are two types of gasket used in sealing the PCU. The orange gasket is used for weatherproofing the exterior seams between modules. It is rated at 450° F and has a PSA backing. The white gasket is a 1500° F degree gasket that is used to seal all internal joints in the PCU, including the doors, filter tracks, and inner perimeter between modules. Orange gasket is applied to the sides and White gasket is applied at the top of the filter access area to prevent infiltration. There is a double layer of gaskets between modules as shown below.

450° F Gasket between Modules and doors

1500° F Gasket for Internal Joints



Gasket Type Chart

Gasket Type	Application	Size	Temp Rating	Part Number
High Temp Closed Cell (Orange)	Exterior Seam Between Modules	3/16" x 1"	450°F	SNS200A-1/4x1
High Temp Ceramic (White)	Internal Seams	¼" x 1"	1500°F	397-91PSA

2 Weeks After Startup

1. Inspect the unit and duct for grease or air leaks and repair leaks where required.
2. All fasteners and hardware should be checked for tightness each time maintenance checks are performed prior to restarting unit.
3. Monitor filter loading and determine the frequency that filters should be replaced. This will vary with the amount of contaminated effluent being filtered. Airflow will be effected (reduced) by filter loading. It is important that the pre-filter be cleaned on a regular basis and that the remaining filters be replaced when necessary to keep design airflow requirements.
4. Make necessary adjustments to air pressure switch to ensure proper function of indicator light.

Every Month

1. Inspect the unit and duct for grease or air leaks and repair leaks where required.
2. Filters need to be checked monthly for loading. If required, the filters either need to be cleaned or replaced. Filter change out may occur more often in severe conditions. Washable steel pre-filters can be washed in warm soapy water. When re-installing filters, be sure to install with the **airflow in the correct direction** as indicated on the filter or with drain holes on bottom edge of filter.

Duct Cleaning

1. Place tarp under PCU to catch overspray during cleaning.
2. Place tarp over Blower insulation and motor to prevent damage during cleaning.
3. Remove all tarps from Unit after cleaning is completed.

Yearly

1. Inspect all seals for wear and deterioration. Replace if necessary.
2. Inspect pre-filter for cleanliness. Replace if necessary.
3. Replace all secondary filtration and odor control media.
4. Inspect unit for leaks where ductwork is attached and in modules themselves. Repair where necessary

Start-Up and Maintenance Documentation

START-UP AND MEASUREMENTS SHOULD BE PERFORMED AFTER THE SYSTEM HAS BEEN AIR BALANCED (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	

PCU Information

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

Name Plate and Unit Information	
Model Number	
Serial Number	
Pressure Switch Set Point	

Maintenance Record

Date	Service Performed

Date	Service Performed

Factory Service Department

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