Installation & Service Manual for

Fume Booth Custom Series






Table of Contents

For prompt help with any questions, please have Model and Serial Number.

Disclaimer

Although instructions and recommendations are included for installation of your **PDB System**, the manufacturer does not assume responsibility for the installation of this equipment nor shall he be held liable for direct or consequential damages resulting from improper installation, application, maintenance or use.

The immense variety of contaminants make it impossible to list all of the potential hazards that may be encountered with air pollution control systems. It is therefore important that the application of the equipment be discussed with a Controlled Air Design representative or application engineer prior to use. Additionally, users should consult and comply with all National and Local Fire, Electrical and /or other appropriate codes when determining the application, location and operation of any air pollution control equipment.

Collection of combustible or explosive materials and collection on flame or spark-generating operations may require specific system configurations (contact Controlled Air Design Applications Engineering Department for questions and/or design assistance). The combined collection of combustible or explosive materials and contaminants from spark or flame generating operations, with a common collector or duct system, is not recommended, unless special design provisions have been made to the system (sparks or flames resulting from such operations may ignite the combustible or explosive material). Under no circumstances should anyone be allowed to discard a lighted cigarette, other burning materials, or refuse into an inlet hood or the duct of the collection system. It is the responsibility of the end user to comply with all applicable national, state, and local fire and safety codes.

This manual should be read completely before attempting Operation or Maintenance of this equipment. All work should be performed by qualified personnel according to local requirements.

WARNING

Failure to comply fully with the following instructions and local code requirements may increase your risk of physical injury due to fire, explosion or electrical shock

All data and dimensions in this manual have been thoroughly checked however, we cannot assume responsibility for possible errors or omissions. We reserve the right to change designs and/or specifications without notice.

SECTION 1

Uncrating

1. Remove banding and cardboard shipping carton and packing.

2. Inspect the exterior of the unit and accessories for shipping damage or shortages that may not have been noticed or recorded when the shipment was initially received; **Immediately** notify Controlled Air Design of any discrepancies. Contact the shipping company if any damage or shortages have occurred.

SECTION 2

Description & Operation

The standard PDB Collector consist of several filter stages depending on application, the standard filter configuration is a ring polyester pad, MERV 14 or 95% ASHRAE efficient fiberglass box filter, two 28 lb activated carbon re-fillable cells, a final ring polyester pad a blower and an external out of the airstream The PDB is designed for 1000 CFM and uses a 1 HP single phase motor or an optional 1500 CFM which uses a 1.5 Hp motor. The fiberglass filter area is 58 square feet .

Optional Equipment

Motor Starters	Optional filters
Motor Voltages, Phase, & Cycles	Different Blends of Activated Carbon
48” wide table top with sides and back	12” x 12” Extension Shelf
Inlet Collar Option	Back Draft Hood
Mist Blow Off Package	Extraction Arms

Applications - General

Dust, mist, smoke, & vapor - The PDB is designed for the capture and removal of dust, mist, smoke, & gas/vapor contaminants from a wide variety of manufacturing processes. The standard Fiberglass Filter is 95% efficient and its main purpose is to protect the activated carbon, but it is also effective at stopping dust and fume. Activated carbon is designed to remove the odors from the gas and vapor. Is smoke is present than a HEPA can be added. If only mist needs to be filtered, than the carbon filter is removed.

SECTION 3

Assembly & Installation

Standard Collectors are mostly pre-assembled. Units that have hinged side doors come wrapped with the unit. These can easily be slipped onto the hinges already attached to the unit. If the unit has carbon, that is also shipped in a separate box with the unit. (see instructions on filter replacement) All other additional optional equipment will either come assembled to the unit, or have separate instructions on how to attach these item.

The PDB can be gently lifted off the skid and attach the arms to the bolt holes on the collector, simply plug the cord into a single phase outlet, (Wired according to order) and turn on switch. The blower and light will automatically come on.

Electrical

1. Single phase 115V 60HZ units are standard prewired from the factory, and include an On/Off switch wired to the electric motor with a power cord for single phase power. Single phase 230V and three phase units are an option, but do not include a switch, cord, or plug. All three phase and 230V single phase units are wired for the input voltage specified on the purchase order.

2. Motors used on the PDB are UL recognized and internal wiring is UL rated at 600 volts. Input power line protection is required for the motor and electrical components. Line load and current requirements are identified on the motor nameplate. Unless ordered with the machine, the power switch for operating the machine, any fusible disconnect, motor starter or controller are to be provided by the customer/user and located externally to the machine.

3. All connections to the non-standard units are made at the motor electrical box (three phase & 230V single phase). Wiring diagrams can be found on the motor nameplate or on the motor electrical box. Verify the incoming voltage and that the motor has been properly wired prior to connecting it to the machine.

4. Verify proper rotation of the blower motor. It will be necessary to view the blower wheel from the blower exhaust on the PDB series unit to verify the rotation. Proper rotation is marked on the motor housing. The blower wheel should be rotating clockwise when viewed from the motor end of the wheel. Counterclockwise from the blower inlet cone side of the wheel. If opposite rotation is experienced, see Figure 2 for directions to switch rotation.

NOTE

A motor starter with overload protection must be provided by the User. Thermal overload heaters are installed in the external motor starter. Consult the starter manufacturer for recommended heater size for the installed motor.

WARNING
Permanent damage to the motor will be sustained if connected to voltages other than the normal operating voltage for which the unit is pre-wired.

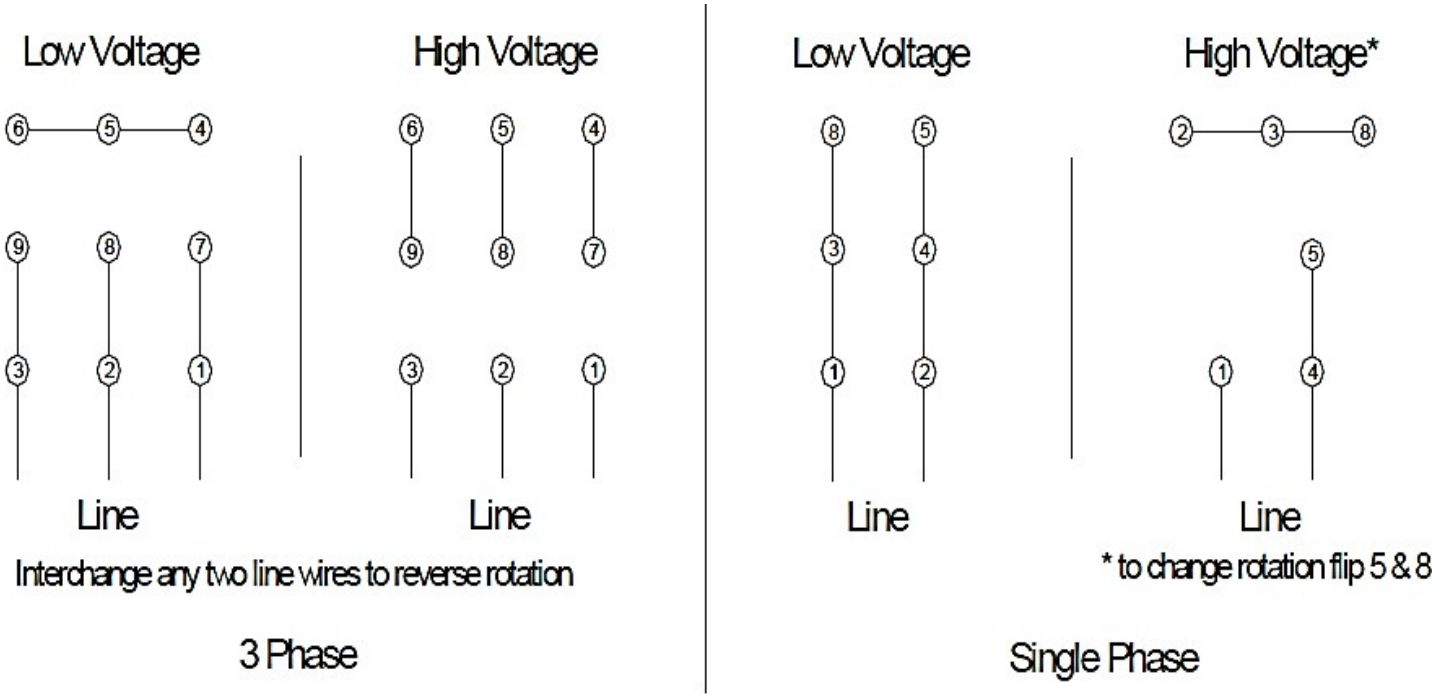


Figure 1 Wire Connection Diagram

SECTION 4

Operation & Maintenance

Eventually the filters will become loaded with dust, mist, smoke, or fumes, and the design airflow or suction will diminish. When this happens the filters will have to be replaced. The unit does have a filter gauge, it is best to mark on the gauge when your airflow has diminished below design airflow and in the future you will know when to change the filters by looking at the gauge. If you experience odor from the unit, then the carbon cell has reached its life and the carbon can be replaced.
Lubrication or other routine periodic preventative maintenance is not required. All that is needed is an occasional check of fasteners and a general visual check of the unit to make sure that nothing has gone wrong. Periodic replacement of the filters is required when necessary.

PDB Filter Replacement

The pressure drop across the filters will eventually reach a point at which the airflow and suction are too low. At this time, the filters should be replaced as follows:

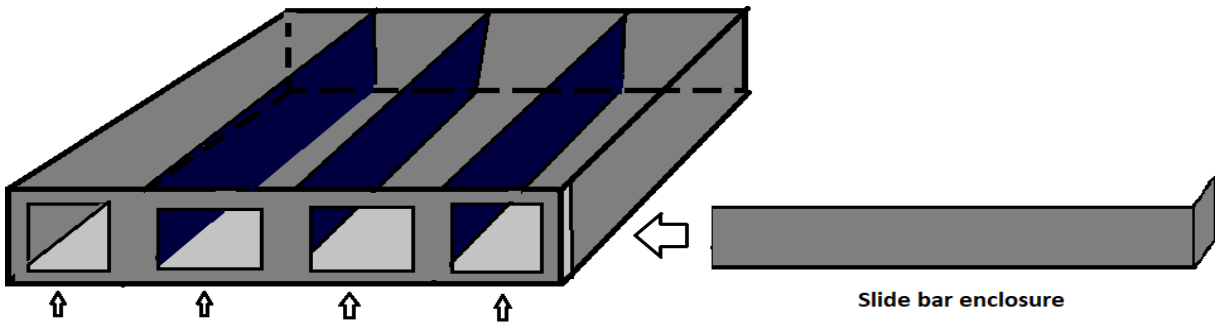
1. Shut off electrical power to the blower and control box.

2. Open the filter access door on the back side of the collector opposite the downdraft table.

3. Unscrew the knobs holding the filter panel on the unit, the filters are held down with a knob and at the end of the threaded knob is a filter hold down leveler. Unscrew the knob which takes the pressure off the top of the filter, remove the top filter stage and then the next filter going from top to bottom.
4. Remove the filters for inspection or replacement.

Carbon Filter Replacement

Remove tray from unit.



5. Reinstall the filters by placing one filter on top of each other starting from bottom to top. Screw the filter hold down knob to put pressure on the top filter, this will seal up the bottom filter and all of the other filters.
6. Close the filter access door by using the threaded knobs.
7. Dispose of filers/ used carbon appropriately. Depending on the application, some filters may require special disposal. Contact local environmental authority for information on proper disposal of media.

Troubleshooting

Problem	Cause	Solution
Motor Fails to Start	No Power to Unit	Check overloads or fuses in starter if supplied. Check power source for power. Check main panel for blown circuit breaker.
	Power to unit	Check electrical connections. Check for bad motor
Low Airflow and/or suction	Blower is running backwards	Check blower rotation, to reverse rotation switch 2 out of 3 input wires. (3 phase only) Switch #5 & #8 for single phase.
	Filters are dirty	Clean or replace filters
Contaminant blowing out the filter unit exhaust	Damaged filter (possibly hole in filter)	Replace filter
	Filter seal is not adequate	Check to make sure filter is seated well on the filter track seal.
	Contaminant too small for filter	May need a more efficient filter

SECTION 5

Ordering Replacement Parts

Information required for prompt delivery of replacement parts will be:

1. Model and/or Serial Number
2. Part Number and Description

Contact your local distributor for replacement parts. **(919 607 6765 sales@controlledairdesign.com)**

PART NUMBER	DESCRIPTION
1016-04	Impeller Wheel # 250 (PLASTIC)
1016-05	Impeller Wheel # 280 (PLASTIC)
1017-04	CONE # 250 (PLASTIC)
1017-05	CONE # 280 (PLASTIC)
1095-01	~5" SWIVEL CASTER WITH BRAKE
H10026-01	Magnehelic Gage
1002-03	1HP Motor
1002-06	1.5HP Motor
AFP95G-4406/AFP95G-4412	24" x 24" x 6" ASHRAE / 24" x 24" x 12" ASHRAE (for sticky fume)
11379	24x24x1 M3 2-Ply Ring Panel (replace these most often)
1044-38	3" x 24" x 24" Refillable Carbon Panel, No Carbon (for odors)
1046-04	28 lb bag of carbon for carbon tray 1044-38 (for odors)
1034-03	1 x 24 x 24 Aluminum Mesh
1040-10	OPTIONAL 23 3/8 x 23 3/8 x 11 1/2 Wood HEPA (fine/hazardous dusts)
1040-22	23 3/8 x 23 3/8 x 5 7/8 Wood 99.97% HEPA (fine/hazardous dusts)
1040-28	OPTIONAL 23 3/8 x 23 3/8 x 11 1/2, 99.97% Metal HEPA w/ flange

Specifications

Specification	PDB1000 1.0 HP	PDB1500 1.5 HP
Nominal Air Flow-CFM	1200	1500
Pre and Post Filter- Quantity	2	2
Main Filter- Quantity	1	1
Activated Carbon	2	2
Motor HP	1.0	1.5
Motor Temp. –Max. C	40	40
Blower Drive	Direct	Direct
Voltage	115-220	115-220
Frequency- Hz	60	60
Phase	Single	Single
Frame- NEMA	56C	56C
Power Factor	85	85
Motor Efficiency	70	70
Start Current Amps	38/19	50-25
Full Load Amps	11.8/5.9	16/8
Insulation Class	B	B
Motor Enclosure	TEFC	TEFC
Service Factor	1.15	1.15
Duty Cycle	Continuous	Continuous
BEARING Grease	Exon PolyEx EM	Exon PolyEx EM
Specification	UL & CSA	UL & CSA

LIMITED WARRANTY

Controlled Air Design warrants all products sold only to purchasers for use in business or for resale, against defects in workmanship or materials under normal use, for one (1) year after the date of purchase from Controlled Air Design. Decomposition by chemical action or reaction and wear caused by abrasion will not constitute defects. Warranty is void if the product has been subject to damage, unreasonable use, neglect, improper service, improper installation or other causes not arising from defects in original material or workmanship. Any part that is determined to be defective in material or workmanship and returned to Controlled Air Design distributer or authorized service facility, shipping cost prepaid, will be, as the exclusive remedy, repaired or replaced at Controlled Air Design option. Controlled Air Design. shall not be liable for any incidental or consequential cost, expenses, or damages resulting from any failure, defect, or malfunction of this product, liability is expressly disclaimed. Controlled Air Design liability in all events is limited to and will not exceed, the purchase price of the product. Title and risk of loss pass to the buyer on delivery to the common carrier. If a product is damaged in transit, the recipient **MUST** make note of any damage upon receipt of the product and file a claim with the carrier **IMMEDIATELY.** Controlled Air Design will make good faith effort for prompt correction or other adjustment, with respect to any product that proves to be defective within the warranty period.

Collection of combustible or explosive materials and collection on flame or spark-generating operations may require specific system configurations (contact Controlled Air Design Applications Engineering Department for questions and/or design assistance). The combined collection of combustible or explosive materials and contaminants from spark or flame generating operations, with a common collector or duct system, is not recommended, unless special design provisions have been made to the system (sparks or flames resulting from such operations may ignite the combustible or explosive material). Under no circumstances should anyone be allowed to discard a lighted cigarette, other burning materials, or refuse into an inlet hood or the duct of the collection system. It is the responsibility of the end user to comply with all applicable national, state, and local fire and safety codes. Controlled Air Design liability for consequential and incidental damage resulting from a fire or explosion is expressly disclaimed.

Installation of suitable overload protection such as a motor starter, according to NEC guidelines, is required. Failure to provide proper overload protection will void warranty coverage on electrical components in the system. (Combination motor starters with fusible disconnect packages are available through your local Controlled Air Design representative). To ensure optimum collector performance, always use Controlled Air Design replacement filters. **(919 607 6765 sales@controlledairdesign.com)**

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CORAL ARM Assembly & Installation for PDB Series

Standard Collectors are pre-assembled for the PDB Series with the exception to the extraction arm.
The assembly of the extraction arm consists of removing all the parts from the two boxes, one box is the arm and the other is the hood.

1. Take Arm From Box in Folded Position
2. Place Bottom Flange of Arm onto 6" Port and line up hole-hole patterns.
3. Metric bolts, washers, and nuts. Holding Arm in Vertical Position.
4. Attach the hood to articulation arms.
5. Slide the hose ends onto the hood, both tubes, and swivel base and secure with hose clamps.
6. Open Up arm.
7. Adjust the tension of the arm.
8. See separate Arm Manual for more.

Additional Video for Coral Arm Adjustment:

https://www.youtube.com/watch?v=h1lrHl12zOs