



Unimodule METD
100% Exhausted
Vertical Laminar Flow
Clean Workstation
OPERATION MANUAL

Model METD 424 #10662
Model METD 624 #10663
Model METD 824 #10664
Custom METD Workstations

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Please read through instructions before beginning installation.

Installation & Service Manual

■ Cautions and Warnings

CAUTION: To reduce the risk of fire, electrical shock or injury to persons, observe the following:

- A. Installation work and electrical wiring must be done by a qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- B. When cutting or drilling into a wall or ceiling, do not damage electrical wiring or other hidden utilities.
- C. Service to this equipment should be performed by authorized technicians trained and experienced in performance evaluation and maintenance of clean air equipment. However, certain procedures are outlined in this manual that may be performed by the owner.
- D. Before servicing the unit, switch power <OFF> at service panel and lock service panel to prevent power from being switched on accidentally, and follow proper procedures as necessary.
- E. Use this unit only in the manner intended by the manufacturer. If you have any questions, please contact:

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1. INTRODUCTION

1.1. Purpose

The ENVIRCO Corporation METD 100% Exhausted Workstation is a self-contained vertical laminar airflow clean workstation for operations that may involve toxic or noxious fumes. The Unimodule M-2 Air Module provides a negative pressure plenum and incorporates High Efficiency Particulate Air (HEPA) filters to provide the following benefits:

- 1.1.1. Protects the work from airborne contaminants generated in the ambient air.
- 1.1.2. Protects against cross-contamination within the work area, by preventing particles from moving laterally during a work procedure.
- 1.1.3. Complies with current Federal Standard 209 within the work area.

1.2. Description

NOTE: Proper unit operation requires the customer to provide an exhaust system capability equal to 125% of M-2 Air Supply Module CFM. Makeup air must compensate for air exhausted and final exhaust balancing must be accomplished by customer-provided modulation in external exhaust duct.

Air enters the METD 100% Exhausted Workstation through a prefilter located on the top (or front) of the Unimodule M-2 Air Supply Module. The prefilter removes most of the larger particles from the air. The air is then evenly distributed across the High Efficiency Particulate Air (HEPA) filters by a blower(s). The HEPA filters remove particles 0.3 microns and larger and impart a unidirectional or laminar flow pattern to the air which moves through the work area at a velocity of 90 feet per minute, $\pm 20\%$. Work samples or equipment placed on the solid stainless steel work deck located behind the perforated front grille are continually bathed in ultra-clean air while all airborne contamination generated by activities within the work area are removed.

The work area is protected by a 15-inch hinged viewscreen that forms a fixed 11-inch access opening. The front of the work surface is perforated to accommodate the inward airflow that forms a protective air curtain. Fumes and other contaminants generated from within the work area are pulled down into lower tub through slots in work deck and exhausted to the exterior through the rear exhaust plenum and transition duct by the customer provided exhaust and flow modulation system.

1.3. Features

- 1.3.1. Supply HEPA filters are 99.99% efficient at 0.3 micron and are aerosol challenged to provide a Class 100 environment
- 1.3.2. 30% ASHRAE disposable prefilter assembly with a standard top mount is interchangeable to a front mount
- 1.3.3. Average air velocity is 90 feet per minute + 10 FPM, measured six inches from the light diffuser with a uniformity + 20% of average or better.
- 1.3.4. Stainless steel work surface and return air grills
- 1.3.5. Stainless steel side enclosure panels, exhaust tub (with center liquid drain), exhaust plenums and transition duct with 12" diameter collar
- 1.3.6. Rugged tubular steel support stand (1½" x 3" x ¼" construction) complete with leveling feet and neoprene caps
- 1.3.7. Fifteen inch hinged Plexiglas viewscreen
- 1.3.8. Built-in fluorescent lighting provides 100 foot-candles at the work surface
- 1.3.9. Control panel equipped with separate lighting and blower switches
- 1.3.10. Negative pressure plenum design utilizing direct drive, continuous duty motors with sealed-for-life bearings, dynamically balanced and mounted on rubber-inshear vibration isolators. Motor/blower is designed to provide rated airflow through filter loading in excess of 50% over initial static pressure.
- 1.3.11. Unimodule M-2 Air Supply Module sound insulated for quiet operation
- 1.3.12. Stand and Air Module finished in polyurethane enamel

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2. INSTALLATION

2.1. Uncrating

- 2.1.1. All ENVIRCO equipment should be uncrated and inspected for shipping damage immediately upon arrival. If any damage exists, a damage claim report must be filled out and promptly sent to the responsible carrier.
- 2.1.2. The METD 100% Exhausted Workstation comes partially assembled with three main components, the Unimodule M-2 Air Module, the Enclosure/Stand Assembly and the Upper and Lower Rear Exhaust Plenum packaged in open framed crates.
- 2.1.3. Carefully remove top and four sides of each crate.
- 2.1.4. Remove the protective plastic covering from the main components.

2.2. Assembly

- 2.2.1. Locating the METD 100% Exhausted Workstation
 - 2.2.1.1. Care should be taken in selecting the location and placement of the METD 100% Exhausted Workstation. Heavily contaminated areas where dust producing activities take place should be avoided. Even though the unit performs equally well in this type of area, there is greater danger of introducing particles into the work area and filter life will be reduced.
- 2.2.2. The unit should be placed in an area of the laboratory away from strong air currents, heavy traffic and particulate microbial or chemical contamination. This will reduce any disruption of the airflow patterns at the face opening, prolonging the life of the HEPA filters.
- 2.2.3. The top of the M-2 Air Supply Module should be a minimum of 4" below the ceiling to allow air to enter the prefilter on the top and to provide access for prefilter maintenance. Where this space is not available, the prefilter assembly should be mounted on the front of the unit.
- 2.2.4. The prefilter panel and the front access panel of the M-2 Air Supply Module are directly interchangeable and may be accomplished without the use of tools.
- 2.2.5. Installation of Unimodule M-2 Air Supply Module on the Enclosure/Stand Assembly
 - 2.2.5.1. Position Enclosure/Stand Assembly in its desired location.
 - 2.2.5.2. Adjust leveling feet at the bottom four (4) corners of the stand for level conditions in all planes.
 - 2.2.5.3. Remove the clips from the Enclosure/Stand Assembly (See Figure 1).
 - 2.2.5.4. Hoist the Unimodule M-2 Air Supply Module and position it above the Enclosure/Stand Assembly.
 - 2.2.5.5. Lower the Unimodule M-2 Air Supply Module into place, making certain that the Air Supply Module and the Enclosure/Stand Assembly are centered.
 - 2.2.5.6. Re-install the clips to hold the Unimodule M-2 Air Supply Module and the Enclosure/Stand Assembly in place. Two clips are required at the end of each Air Supply Module.
- 2.2.6. Installation of Plexiglas Eyelid
 - 2.2.6.1. Remove the screws on the Hinge Assembly located on the front of the Upper Filter/Blower Assembly.
 - 2.2.6.2. Position the Plexiglas eyelid into the Hinge Assembly and replace the screws to secure the eyelid.
- 2.2.7. Installation of the Lamp Tubes and Light Diffuser
 - 2.2.7.1. Install fluorescent light tubes into sockets located on either end of the module directly below the HEPA filter.
 - 2.2.7.2. Insert the egg-crate acrylic light diffusers below the lamp tubes and allow them to rest on the lower flange of the module. It may be necessary to slightly bend the diffuser in performing this operation.
 - 2.2.7.3. Install the aluminum perforated "hat" channel strip between the diffuser sections so that the joints between the sections are supported.

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- 2.2.8. Unimodule M-2 Air Supply Module Initial Check-out Procedure
- 2.2.9. Connect the M-2 Air Supply Module to a 120 VAC, single phase, 60 hertz, grounded power source. Assure that the circuit is sized to provide sufficient amperage as noted on the module data plate.
- 2.2.10. Convenience outlets, if installed in the work area, are factory wired with a separate power cord to handle 15 amps, maximum, at 120 VAC.
- 2.2.11. Switches for module operation are located at the lower right-hand side of the Unimodule M-2 Air Supply Module. The switches are maintain contact type and activate or deactivate power to the lights or the blower(s). The top, green, pushbutton switch turns the desired portion (lights or blower) of the module "ON" and "OFF." The lower, clear push-button is an indicator light.
- 2.2.12. Turn the Unimodule M-2 Air Supply Module blower and lights on. The module will provide a clean air environment within the work area within 5 to 10 seconds.
- 2.2.13. The Air Module velocity may be checked using a thermoanemometer or similar airflow-measuring device. If the average velocity is not 90 ft/min \pm 10 ft/min, see Maintenance and Service in Section 4 for instructions on adjusting the speed of the blower.
- 2.2.14. Connect the 12-Inch Exhaust Collar to the Facility Exhaust System Proper unit operation requires the customer to provide an exhaust system (installed by others) capacity equal to 110-125% of face velocity and the M-2 Air Supply Module volume. Makeup air must compensate for air exhausted and final exhaust balancing must be accomplished by a customer-provided modulation system in the external exhaust duct.
- 2.2.15. Calibration of the Optional Pressure Switch Proper alarm system operation requires the customer to determine the appropriate set point of the pressure switch in relation to the exhausted air.
- 2.2.16. After all desired air velocities and volumes have been achieved, open the front panel of the M-2 Air Supply Module. To make the adjustment to the pressure switch, the unit must be operating.
- 2.2.17. **WARNING:** Extreme caution should be taken to avoid electrical shock.
- 2.2.18. The pressure switch is located on the right front corner of the blower plenum. A small flat head screwdriver will be required to make the adjustment to the pressure switch. If the unit is not already in an alarmed condition, clockwise rotation of the pressure switch set screw will take the unit to an alarmed condition. With the unit in an alarmed condition, begin slowly rotating the set screw counter clockwise. Continue turning the screw counter clockwise until the alarm is silenced. A small clockwise adjustment may be necessary to "fine tune" the setting.
- 2.2.19. Replace the front panel of the M-2 Air Supply Module and test for proper functioning of the alarm system. Turning the exhaust blower down or off at this setting should place the unit in an alarmed condition. Repeat the above steps as necessary to insure the proper set point has been achieved.

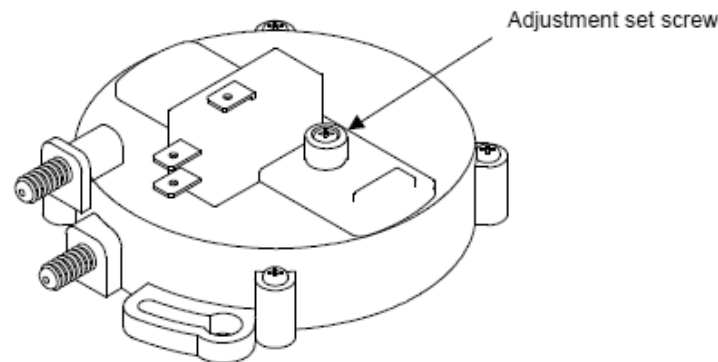


Figure 1. Pressure switch identification and set screw location

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3. OPERATION

The Unimodule M-2 Air Module and HEPA filters are thoroughly tested at the Factory before shipment. However, since subsequent handling may cause leaks to develop, the METD 100% Exhausted Workstation should be tested by an authorized service contractor prior to initial use to ensure the integrity of the HEPA filter and to assure specified performance and air velocity measurements.

3.1. Equipment Procedure

- 3.1.1. Clean the interior walls, Plexiglas viewscreen and surface of the work area with a mild disinfectant solution. The work tray, front air grille, work tray support and rear air grille are easily removed for clean up of any spillage. After use, the work area should be wiped out at least once per work shift.

Caution: Nonabrasive, special purpose plastic cleaners must be used on the Plexiglas viewscreen surfaces. Never use abrasive cleaners or alcohol on Plexiglas as this can mar or discolor the surfaces.

- 3.1.2. Remove the perforated air diffuser screens and clean both sides before replacing them.

Caution: Do not clean the bottom of the supply HEPA filter. Any contact with the filter surface may cause damage, contamination or leakage.

Caution: Be careful not to tear the HEPA filter with the edge of the diffuser screen when repositioning it back onto the air module.

- 3.1.3. Turn the unit "ON" with the fan switch front panel.
- 3.1.4. Allow the Workstation to run for five minutes in order to remove any airborne particulate material from the system before beginning work.
- 3.1.5. Clean all equipment before placing inside the Workstation's work area.
- 3.1.6. In order to maintain proper airflow and avoid air turbulence, do not obstruct the front and rear return grilles. Work procedures should be conducted only on the non-perforated work surface.
- 3.1.7. Do not store items on top of the Workstation.
- 3.1.8. Do not lift the view screen during a procedure. This may disrupt the airflow characteristics of the Workstation allowing contaminated air to leave the Workstation and room air to enter the Workstation.
- 3.1.9. Strict adherence to established sterile techniques will maximize the contamination control benefits provided by the METD 100% Exhausted Workstation.
- 3.1.10. After a procedure is completed and all equipment and containers are removed, the Workstation should be allowed to run for an additional 15-30 minutes to ensure removal of airborne contamination and fumes within the Workstation. If the Workstation is used on a daily basis, it is suggested that it be operated continuously, 24 hours a day, seven days a week.
- 3.1.11. If the METD 100% Exhausted Workstation has been turned "OFF" or when activities change, the work surfaces should be wiped clean per section 3.1.1 and the air supply allowed to operate at least 5 minutes before activities commence within the work area.
- 3.1.12. The Workstation does not have the ability to remove contaminants from surfaces. The wall areas and work surfaces should be kept clean and free of particles. After the Workstation is shut off, the work area surfaces should be cleaned with a suitable surface disinfectant. The work tray, front air grilles, work tray support and rear air grilles are easily removed for clean up of any spillage.

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3.2. Operator Procedure

- 3.2.1. Hands, forearms and sleeves of the operator should be free of loose dirt and lint before placing them inside the work area.
- 3.2.2. Employ good clean techniques to minimize potential transfer of contamination from the operator to the critical work.
- 3.2.3. Work should be performed at least 6 inches behind the front edge of the work deck.
- 3.2.4. Clean parts transported in protective containers should be removed from the containers inside the work compartment. Containers should be kept inside the work compartment until the part is returned to the container and the container is closed.
- 3.2.5. It should be recognized that when objects, tools or operator's hands are brought into the work area, that a slight vacuum is created behind these objects which carries contaminated air into the work area. Care must be taken that critical parts or processes are not exposed to this contamination.

4. MAINTENANCE AND SERVICE

The Unimodule M-2 Air Module requires little or no servicing except for replacing the filters and adjusting the blower speed to compensate for filter loading due to particulate collection. These components are located behind the Unimodule M-2 Air Supply Module's front panel. Remove the front access panel by lifting the panel's face at the bottom, bringing the panel slightly outward and lowering the panel to remove it from its top brace.

Caution: An authorized service contractor should always perform installation and removal of the Workstation's HEPA filters and recertification. The unit should be re-tested and certified by an authorized service contractor annually or whenever service to the unit is needed.

Caution: Disconnect the unit from its electrical power source before attempting any service.

4.1. Air Velocity Adjustment

Note: Before adjusting the air velocity, confirm the integrity of the prefilter and clean or replace as necessary (see Section 4.2.)

- 4.1.1. Air velocity within the work compartment should normally be 90 ft/min \pm 10 ft/min. This is determined by taking a series of readings using a thermoanemometer or similar device 6 inches below the air diffuser screen. These readings should be taken on an imaginary 6" x 6" grid in a plane defined by the module bottom.
- 4.1.2. Adjust the supply blower speed by turning the motor speed control (located inside the blower compartment) clock-wise.
- 4.1.3. When the speed control has been turned all the way clock-wise and the required air velocity cannot be reached, the HEPA filter(s) should be replaced (see Section 4.3.)

4.2. Prefilter Replacement

The 30% ASHRAE prefilter life is directly dependent upon the condition of the ambient air and should be routinely inspected and replaced as necessary to prolong the life of the HEPA filter.

- 4.2.1. Standard prefilters are located on the top of the Unimodule M-2 Air Supply Module. Replace by removing the prefilter panel from the top of the module, sliding the prefilters out of the perforated portion of the panel and inserting new prefilters in reverse order of removal.

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4.3. HEPA Filter Replacement

NOTE: Only an authorized service contractor should remove and install the HEPA filter(s). The METD 100% Exhausted Workstation should always be re-certified following HEPA filter replacement.

- 4.3.1. Normally HEPA filters require replacement after 2 to 4 years of operation. This, however, is dependent upon the conditions of the ambient air and how frequently the workstation is turned "ON" for operation.
- 4.3.2. Locate the four (4) barrel bolt locks. There are two (2) barrel bolt locks on the front side and two (2) located on the rear side of the HEPA housing and supply plenum that rests on top of the HEPA filter. The pin on the locks must be retracted before removing the HEPA filter.
- 4.3.3. After the barrel bolt locks have been retracted, use the plenum handles to raise the front of the plenum enough so that the lock pins can be raised and allowed to rest on their strike brackets.
- 4.3.4. Slide the HEPA filter forward until it clears the cabinet and can be removed.
- 4.3.5. Install a new HEPA filter in the reverse order and perform a HEPA filter leak test described in Section 4.4 below

4.4. HEPA Filter Leak Test

The Unimodule M-2 Air Supply Module is designed with a negative plenum concept, and leaks between the HEPA and its mating frame should not cause induction of contamination into the work area. Leaks that may occur between frame and filter occur in a negative pressure area with respect to the work area and are drawn back to the blower housing for return to the HEPA filter. However, it is still recommended that the following leak tests be performed.

- 4.4.1. An aerosol generator is placed adjacent to the prefilters of the module to introduce particles.
- 4.4.2. A particle counter/photometer is used to reveal leaks. Any leaks passing more than 0.01 % of the upstream concentration should be sealed.
- 4.4.3. Carefully check for the presence of particles around the edges of the filter and across the entire filter face.
- 4.4.4. If a leak is detected, determine by close inspection if the leak is coming through or around the gasket, indicating a poor seal, or if the leak is in the filter media itself, indicating a rupture in the HEPA filter. Repair the HEPA filter as necessary.

4.5. Filter Repairs

- 4.5.1. Shipping movement and handling may cause filter leaks. These leaks can normally be repaired as follows:
- 4.5.2. Caulking with silicone RTV can usually repair small leaks in the filter media or at an adhesive joint from the downstream side of the HEPA filter.
- 4.5.3. Leaks at gasket seal may also be stopped with the RTV sealant on the downstream side. If leaks cannot be stopped from the downstream side, the HEPA filter(s) will have to be removed from the Workstation (see Section 4.3.)
- 4.5.4. Remove the HEPA filter(s) and seal leaks by pouring rubber base cement down into leaking area. Check for separation at gasket corners and repair with silicone RTV. Put silicone grease on gasket surface before re-installing filter(s) to improve gasket seal.
- 4.5.5. Re-install the HEPA filter(s) and the front access panels and retest (Section 4.4.)

4.6. Lubrication of Belt Drive Blower Motors

- 4.6.1. The Motor(s) are permanently lubricated for the life of the motor and require no lubrication.

4.7. Light Maintenance

- 4.7.1. Fluorescent tubes are accessible from within the work compartment. Remove the light diffuser to gain access to the light tubes.
- 4.7.2. The remote ballast is located in the supply module blower compartment and is accessible by removing either the prefilter panel or the front access panel.

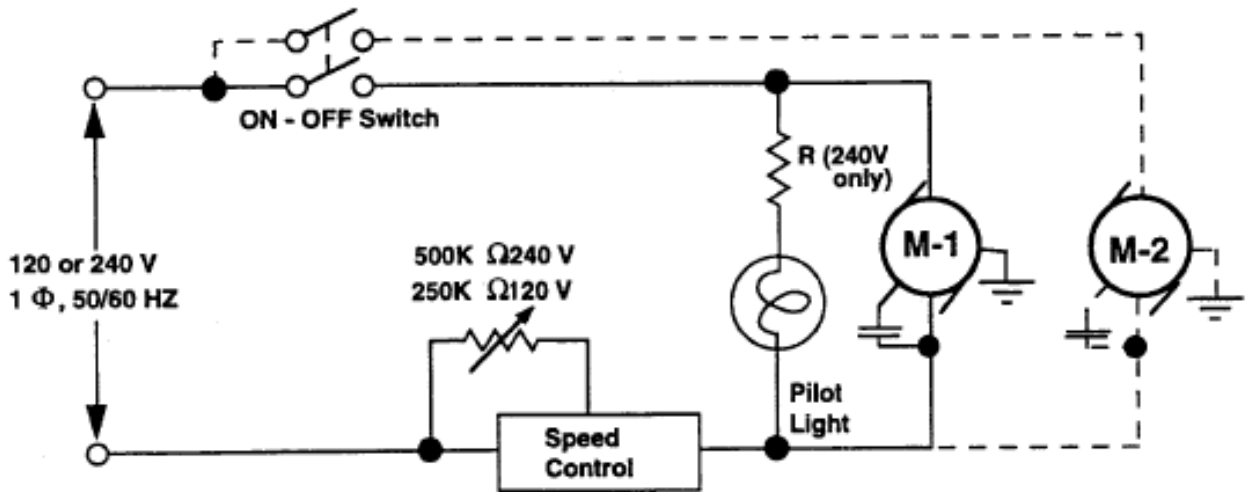
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5. TROUBLESHOOTING

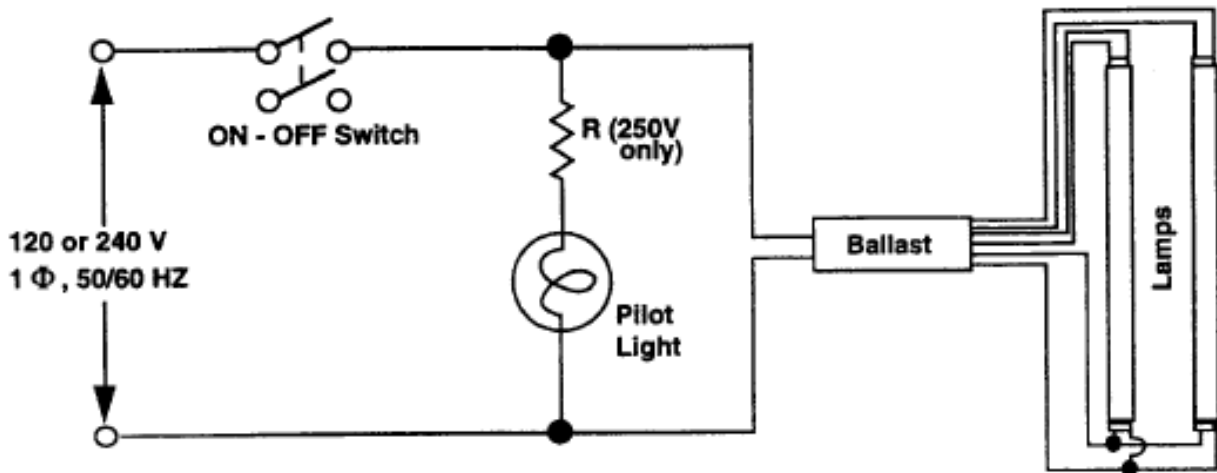
Symptom	Causes	Action
1. Air Supply Inoperative	<ul style="list-style-type: none"> A. Power Failure. B. Switch or internal wiring failure. C. Motor Failure. D. Speed Control set wrong. 	<ul style="list-style-type: none"> A. Check building power at plug. B. Check switch, relay and wiring (see Section 6.) and replace the faulty component. C. Replace motor. D. Adjust speed control (Section 4.1.)
2. Exhaust Air Unbalanced	<ul style="list-style-type: none"> A. Power Failure B. Exhaust is discharged into a cramped area or a high static pressure duct. 	<ul style="list-style-type: none"> A. Check building power at plug. B. Modify the discharge area. The total static pressure drop in a duct system should not exceed 0.2" w.g.
3. Low Air Velocity	<ul style="list-style-type: none"> A. Dirty prefilter. B. Fully loaded HEPA filter. C. Defective speed control. 	<ul style="list-style-type: none"> A. Replace prefilter. B. Replace HEPA filter. C. Replace speed control
4. High Air Velocity	<ul style="list-style-type: none"> A. Blower speed control turned all the way up. B. Defective speed control. 	<ul style="list-style-type: none"> A. Adjust speed control (Section 4.1.). B. Replace speed control.
5. Non-Laminar Airflow	<ul style="list-style-type: none"> A. Obstruction of airflow. B. Blower failure. C. HEPA filter damaged. D. External draft present. E. Low air velocity. 	<ul style="list-style-type: none"> A. Remove large objects from work area. B. Confirm blower is operational. C. Repair or replace HEPA filter (Section 4.3). D. Relocate unit or restrict external draft. E. Follow procedure in Section 3 above.
6. Excessive Contamination	<ul style="list-style-type: none"> A. HEPA filter damaged B. Aspiration of dirty air into clean area caused by an obstruction in the work area or a crack in a construction joint. 	<ul style="list-style-type: none"> A. Repair or replace HEPA filter (Section 4.3). B. Remove obstruction. Seal any cracks in joints with caulking compound.

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6. WIRING DIAGRAMS



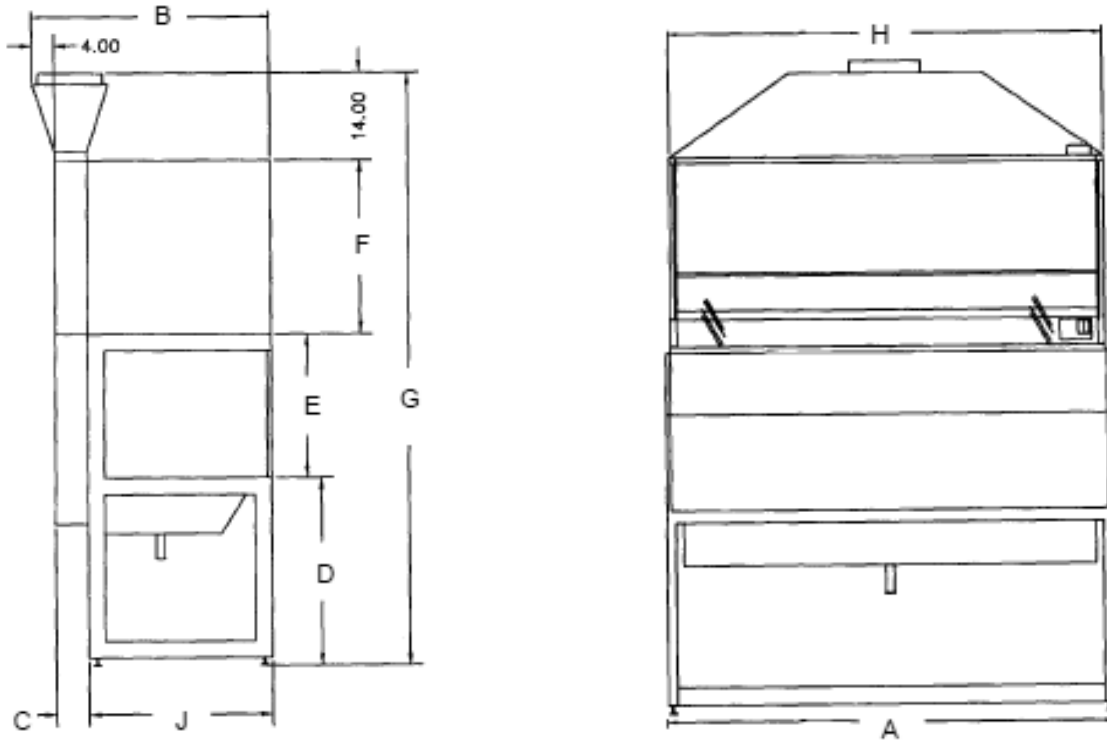
METD 100% Exhausted Workstation Motor/Blower Wiring Diagram
Standard 120 V (220V optional)



METD 100% Exhausted Workstation Fluorescent Light Wiring Diagram
Standard 120 V (220V optional)

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7. SPECIFICATIONS



Model Number	Product Number	Dimensions in Inches (CM)							Plenum Width	Opening Width	Ship Wt lbs. (kg)
		A	B	C	D	E	F	G			
METD 424	10662	51.44 (131)	37.05 (95)	6.00 (15.2)	34.00 (87)	26.00 (66)	31.50 (80)	115.5 (294)	48.44 (123)	46.94 (120)	425 (193)
METD 624	10663	75.44 (192)	37.05 (95)	6.00 (15.2)	34.00 (87)	26.00 (66)	31.50 (80)	115.5 (294)	72.44 (184)	70.94 (181)	615 (279)
METD 824	10664	99.44 (253)	37.05 (95)	6.00 (15.2)	34.00 (87)	26.00 (66)	31.50 (80)	115.5 (294)	96.4 (245)	94.94 (242)	780 (354)

Model Number	Product Number	Supply Volume @ 90 FPM	Supply Air Velocity	Power Req'd* Amps @ 115V	BTUH	Face Velocity	Req'd Exhaust Volume
METD 424	10662	720 CFM	90 ± 10 FPM	8.9	3480	110 FPM	1125 CFM
METD 624	10663	1080 CFM	90 ± 10 FPM	15.2	5944	110 FPM	1690 CFM
METD 824	10664	1440 CFM	90 ± 10 FPM	15.5	6060	110 FPM	2235 CFM

* Unimodule M-2 Air Module only. Convenience outlets, if installed in the work area, are factory wired with a separate power cord to handle 15 amps, maximum at 115V.

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8. PARTS AND OPTIONAL ACCESSORIES

8.1. Model METD 424 Part No. 10662

<u>Part No</u>	<u>Description</u>	<u>Qty</u>
32836	Motor/Blower Assembly	1
62260	Motor Only	1
20290	Ballast Assembly	1
60062	Lamp F48 T12 CW HO	2
23132-15	Speed Control Assembly	1
69286-012	HEPA Filter 24" x 48" x 5-7/8"	1
60360	Prefilter 16" x 12" x 1"	4
60077	Capacitor	1
OBSOLETE	Square Pilot Light	2
OBSOLETE	Square Pushbutton Switch	2
60081	Lamp Socket (fixed)	2
60082	Lamp Socket (plunger)	2
30229	Light Lens	2
30217	Lens Support Channel	1
63585	Rocker Switch w/ Pilot Light	2
24506	Replacement Control Panel	1

* For obsolete parts order a new Replacement Control Panel.

To place parts order call: 800.884.0002 or locate your local Rep by visiting www.envirco.com.

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8.2. Model METD 624 Part No. 10663

<u>Part No</u>	<u>Description</u>	<u>Qty</u>
32836	Motor/Blower Assembly	2
62260	Motor Only	2
20290	Ballast Assembly	1
60064	Lamp F72 T12 CW HO	2
23132-25	Speed Control Assembly	1
69286-010	HEPA Filter 24" x 72" x 5-7/8"	1
60036	Prefilter 16" x 20" x 1"	3
60360	Prefilter 16" x 12" x 1"	1
60077	Capacitor	2
OBSOLETE	Square Pilot Light	2
OBSOLETE	Square Pushbutton Switch	2
60081	Lamp Socket (fixed)	2
60082	Lamp Socket (plunger)	2
30229	Light Lens	3
30223	Lens Support Channel	2
63585	Rocker Switch w/ Pilot Light	2
24506	Replacement Control Panel	1

* For obsolete parts order a new Replacement Control Panel.

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8.3. Model METD 824 Part No. 10664

<u>Part No</u>	<u>Description</u>	<u>Qty</u>
32836	Motor/Blower Assembly	2
62260	Motor Only	2
20679	Ballast Assembly	1
60156	Lamp F96 T12 CW HO	2
23132-25	Speed Control Assembly	1
69286-012	HEPA Filter 24" x 48" x 5-7/8"	2
60036	Prefilter 16" x 20" x 1"	3
60360	Prefilter 16" x 12" x 1"	3
60077	Capacitor	2
OBSOLETE	Square Pilot Light	2
OBSOLETE	Square Pushbutton Switch	2
60081	Lamp Socket (fixed)	2
60082	Lamp Socket (plunger)	2
30229	Light Lens	4
30226	Lens Support Channel	3
63585	Rocker Switch w/ Pilot Light	2
24506	Replacement Control Panel	1

* For obsolete parts order a new Replacement Control Panel.

To place parts order call: 800.884.0002 or locate your local Rep by visiting www.envirco.com.

Installation & Service Manual

8. TESTING

9.1 Supply Airflow

9.1.1. The average airflow shall be 90 feet per minute (FPM) \pm 10 FPM measured 6" below the light lens.

_____	_____	_____
_____	_____	_____
_____	_____	_____

Average velocity _____ FPM

9.2 Exhaust Capacity

9.2.1. Proper unit operation requires the customer to provide an exhaust system capability equal to 125% of M-2 Air Supply Module CFM. Makeup air must compensate for air exhausted and final exhaust balancing must be accomplished by customer-provided modulation in external exhaust duct.

Model No	Opening, inches		Intake CFM @ 105 FPM	Supply CFM @ 90 FPM	Total Exhaust Volume CFM
	Width	Height			
METD 424	46.94	11.00	376	720	1096
METD 624	70.94	11.00	569	1080	1649
METD 824	94.94	11.00	761	1440	2201

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10. LIMITED WARRANTY

ENVIRCO Corporation ("ENVIRCO") warrants the equipment will be free of defects in materials and workmanship under normal use for a period of one (1) year. The High Efficiency Particulate Air (HEPA) filter shall only be warranted against loading for a period of one (1) years when operated in clean room conditions. ENVIRCO's sole obligation under this warranty is to repair or replace any parts of the equipment which are defective for a period of one (1) year from the invoice date, provided that the repair or replacement is actually performed within the one (1) year period from the invoice date. The Buyer agrees to assume any incidental expenses including but not limited to the cost of transporting the defective equipment to ENVIRCO's repair facility. The Buyer's sole remedy under this limited warranty is the repair or replacement of any defective part of the equipment.

ENVIRCO disclaims any implied warranties including warranties of merchantability and fitness for a particular purpose. In no event shall ENVIRCO be liable for punitive, incidental, or consequential damages arising out of this sale, including, but not limited to damage to a person or property, loss of use, loss of time, inconvenience, equipment rental, loss of earnings or profit or any other commercial loss. This warranty excludes certain expendable items such as light tubes, prefilters, etc. ENVIRCO expressly disclaims and excludes from the warranty any responsibility for equipment failures and/or defects attributable to improper maintenance, abuse, accident or modification of equipment (such as application of an adjustable frequency drive).

Clean air solutions built for you.

MORE INFORMATION AVAILABLE AT WWW.ENVIRCO.COM

Industrial

Cleanroom Products

- » MAC 10[®] Original
- » MAC 10[®] IQ™
- » MAC 10[®] IQ™ LAF
- » MAC 10[®] LEAC™
- » MAC 10[®] LEAC2™
- » MAC 10[®] LEDC™
- » Ducted Ceiling Module:
DCM & RSR
- » AC or DC Control Systems
- » MAC-T Ceiling Grid System

Hospital & Healthcare

Hospital & Healthcare

- » IsoClean[®] and IsoClean
with Ultraviolet Light
- » AirCeil[®]
- » Hospi-Gard[®] Room
Pressure Monitor

Enviramedic Products

- » HOR Horizontal Flow
Enclosure
- » HCF Horizontal Flow
Surgery Room
- » VOR Vertical Flow Surgery
Isolator

Pharmaceutical

Pharmaceutical & Medical Device

- » Unimodule M2 Vertical
Laminar Flow Workstation
- » METD 100% Exhausted
Vertical Flow Workstation
- » Laminar Downflow Module

Laboratory & Research

Laboratory & Research

- » 100-Plus Horizontal or
Vertical Flow Clean Bench
- » Unidirectional Flow
Horizontal Flow Bench (LF)
- » TT Table Top Horizontal
Flow Clean Bench
- » EnviraLab Sterility Module:
ESM

ENVIRCO MAC 10 is a registered trademark of ENVIRCO, USA. Specifications subject to modifications or changes without notice. US patents 4,560,395 and 5,470,363. Other patents issued and pending in foreign countries.



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