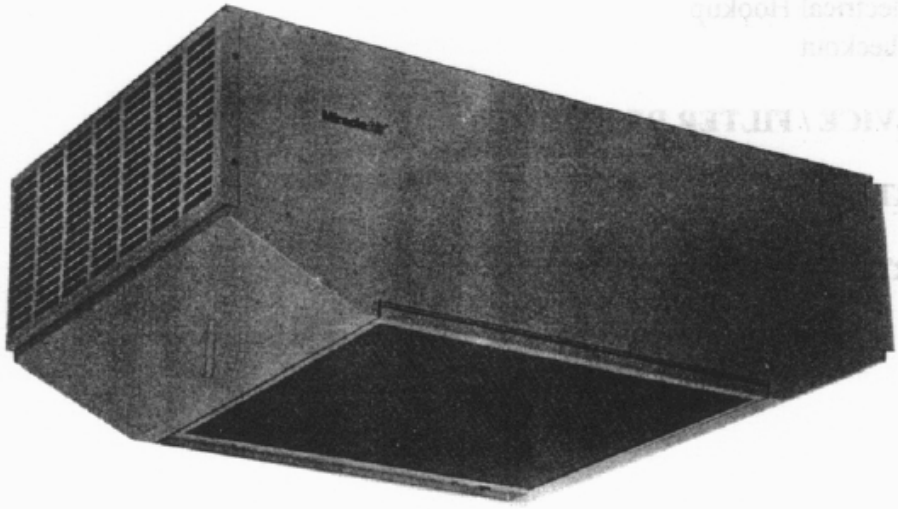
COMMERCIAL INDOOR AIR QUALITY SOLUTIONS

New!

MiracleAir™

High Performance HEPA-Type Air Cleaner



MiracleAir model CM-12 is the ultimate solution for indoor air pollution capturing both particulate and gaseous contaminants. Odors, tobacco smoke, pollen, dust, vapors and many other irritants are removed by high efficiency, long lasting disposable filters.

For further information:

BERRIMAN ASSOCIATES
1-800-480-3630
www.berriman.com

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Made with pride in the USA!

MiracleAir™
High Performance HEPA-Type Air Cleaner

PRINCIPLES OF OPERATION

The new MiracleAir™ model CM-12 is a comprehensive, self-contained HEPA-Type air filtration system that addresses odor, vapor and particulates for assured indoor air quality, the ultimate solution for indoor air pollution. The $^1/_2$ inch aluminum mesh prefilter captures large particulates which would otherwise shorten the life of your HEPA-type filter. Fine particulates are then captured in the high efficiency, HEPA-Type primary filter. In the final stage, gaseous contaminants and odors are adsorbed into the activated carbon filters.

TECHNICAL SPECIFICATIONS

IMPORTANT

THE SPECIFICATIONS GIVEN IN THIS PUBLICATION DO NOT INCLUDE NORMAL MANUFACTURING TOLERANCES, THEREFORE, THIS UNIT MAY NOT MATCH THE LISTED SPECIFICATIONS EXACTLY. ALSO, THIS PRODUCT IS TESTED AND CALIBRATED UNDER CLOSELY CONTROLLED CONDITIONS, AND SOME MINOR DIFFERENCES IN PERFORMANCE CAN BE EXPECTED IF THOSE CONDITIONS ARE CHANGED. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE IN THE INTEREST OF CONTINUING DEVELOPMENT.

Model: MiracleAir CM-12

Dimensions: Length 39", Width $22^5/_8$", Height $13^1/_4$"

Weight: 90 Lbs. Installed*
115 lbs. Shipping*
* Add 34 lbs. to the above weights if the optional carbon modules are ordered

Electrical Rating: 115 Vac, 5.6 Amps, 60 Hz

Air Volume: 850 CFM Maximum Speed
650 CFM High Speed

Prefilter: The standard prefilter is a $^1/_2$" thick washable aluminum mesh prefilter. Optional Higher efficient disposable filters are available

Fine Particle Filter: The standard particle filter has a minimum of 90 square feet of media and will be a minimum of 95% efficient at 0.3 micron.

Odor/Vapor Filter: The standard CM-12 comes with two disposable activated carbon filters. The deluxe version has two modules, each containing 10 disposable panels for a total carbon weight of 20 lbs.

Motor: $^1/_2$ Horse power, permanent split capacitor with sealed ball bearings

Blower Wheel: Forward curved, direct drive, $12^1/_2$" x 4" single inlet wheel

PLANNING THE INSTALLATION

WARNING

EXPLOSION HAZARD. CAN CAUSE PROPERTY DAMAGE, SEVERE INJURY OR DEATH.

1. Do not install where there is any danger of gas, vapor, or dust explosion

2. Do not install if explosion - proof electrical appliances or fixtures are specified

APPLICATION AND OPERATION

The MiracleAir model CM-12 is designed to be installed on the ceiling where overhead air cleaning is required. Typical applications include offices, designated smoking areas, computer rooms, data processing rooms, etc.

Because it provides its own circulation, the MiracleAir model CM-12 may be used in almost any application requiring the removal of airborne contamination from an enclosed space. **The MiracleAir model CM-12 must only be used in areas which are ventilated for human occupancy.**

MAKE-UP AIR

Recommended quantities of clean outdoor ventilation air for various applications are described in Table 2 of the ASHRAE Standard 62-89 "Ventilation for Acceptable Indoor Air Quality." ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. Phone # 404-636-8400) notes that these recommended outdoor quantities may be reduced by the use of clean, recirculated air if the IAQ Procedure 6.2 is used. Appendix E of ASHRAE 62-89 includes recommendations for the use of clean recirculated air. However, in most cases, adequate control of carbon dioxide generally requires a minimum clean outdoor air quantity of no less than 15 cubic feet of air per minute per person.

Additional ventilation may be required for toxic contaminants. In any event, the air cleaner must be used only in areas which are ventilated for human occupancy.

SIZING

Air Cleaners are generally best sized according to the use of the area and the volume of the room (Air Changes per Hour Method).

Secondary factors to consider in applying air cleaners include:

- type of contamination
- number of occupants
- outside air quality
- anticipated fan setting
- rate of contaminant generation

By considering these factors, the number of air cleaners required can be adjusted up or down to account for abnormalities in operating conditions.

Follow Steps 1 through 4 below to determine the number of air cleaners required:

Step 1 - Measure the length, width and height of the room in feet.

Step 2 - Determine the Air Changes per Hour required. See Chart A below.

Step 3 - Determine the C.F.M. (Cubic Feet per Minute of Air). See Chart B on the next page.

Step 4 - Enter the figures from Steps 1-3 into the sizing formula on the next page and calculate the number of air cleaners required.

CHART A - Air Changes per Hour		
Load	Description of Application	Air Changes
Light	General offices and computer rooms	4-5
Average	Conference and break rooms	6
Heavy	Designated smoking areas, bingo halls, bars & extra smoky areas	8-10

SIZING CONTINUED

Chart B - Cubic Feet of Air per Minute		
The air cleaner has a variable speed fan motor. Use the CFM that corresponds to the speed that the air cleaner will operate on normally.		
Model CM-12	Low	High
C.F.M.	250	650
SIZING FORMULA		
LxWxH of room x Air Changes / Hr = # CM-12s CFM of Air x 60 Min.		

CHOOSE LOCATION

The CM-12 should be mounted on the ceiling near the center of the room. Divide larger rooms into sections and use a CM-12 in the center of each section.

The CM-12 should be installed at the ceiling in nearly all applications. This is especially important when the air cleaner is used for smoke control. Visible smoke contains very small particles, so small in fact, that they are not noticeable affected by gravity. Smoke usually rises to the ceiling and hangs there.

Check the existing air circulation in the room. The CM-12 should be installed so that it aids the circulation already established. When airflow patterns are not immediately apparent, observe the smoke from a cigarette in various locations within the room.

CEILING MOUNTING

The mounting holes in the CM-12 are spaced 16 inches between centers and 32 inches between centers to make it east to fasten the air cleaner directly to the ceiling framework with 3 inch lag screws. Leave space for the power supply cord to run between the top of the CM-12 and ceiling. The power supply cord must not be concealed above ceilings or behind walls.

Be sure that you select a strong structural part of the ceiling. Do not fasten it to a false ceiling, plaster or plasterboard. In some cases, it may be necessary to construct some type of framing strong enough to support the weight of the CM-12.

The CM-12 may also be mounted using $^{3}/_{8}$ in. [10 mm] diameter threaded steel rods available in many hardware stores. Four steel rods will be required.

WIRING

The 120V, 60 Hz CM-12 has a standard 3-prong plug on a ten foot[3 m] power cord. It requires only a standard grounded outlet for electrical power. Route the power cord so that it will be out of the way of the building's occupants.

PERMANENT WIRING

To permanently wire the CM-12, follow these instructions exactly. All wiring must comply with applicable codes and ordinances. Wire the CM-12 using the built-in junction box. It is recommended that No. 14 gauge or heavier wire be used to complete the wiring from the junction box to the external power source. However, be sure to comply with local codes.

1. Open the inlet grille of the CM-12 and remove the primary particle filter by supporting the filter near the turnstiles and rotating the two turnstiles to the open position.

2. Remove the access panel inside the CM-12 cabinet. This panel is the galvanized unpainted panel on the side the door opens from. This will allow you access to speed control wires.

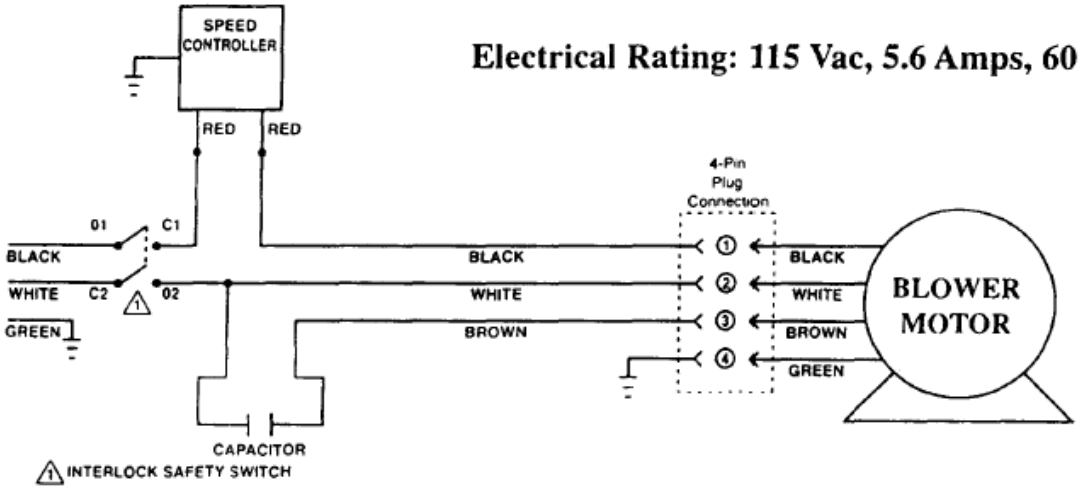
3. Disconnect and discard the power cord, the solderless connectors and strain relief. Plug the power cord hole with the plug provided.

4. Run conduit from power supply to the appropriate knockout. Fish wires to the speed control wires in the junction box. Note that you may gain better access to the junction box within the cabinet through the discharge end of the air cleaner. This can be accomplished by removing the discharge louver with a Philips screwdriver and removing the carbon filter.

5. Connect lead wires with solderless connectors including ground (green) wires. Proper grounding of this device is mandatory for correct operation and safety.

ELECTRICAL SCHEMATIC

MiracleAir™ HIGH EFFICIENCY AIR CLEANER
MODEL CM-12



Electrical Rating: 115 Vac, 5.6 Amps, 60 Hz

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PN 51694

CHECKOUT

Before leaving the installation, check to be sure that the CM-12 is properly installed and operates correctly.

MOUNTING

- ☐ The CM-12 is correctly and securely fastened to the ceiling.
- ☐ It is mounted where it *will not* interfere with normal occupant traffic.
- ☐ Unit is properly oriented for good air circulation.

ASSEMBLY AND OPERATION

- ☐ Be sure that the prefilter, primary particle filter and carbon filters are all properly installed.
- ☐ Be certain the electrical junction box cover is reinstalled.
- ☐ Turn the air cleaner on using the knob near the intake grille. Make sure that the blower energizes and creates airflow into the intake grille.

MAINTENANCE

CAUTION:

1. The power must be shut off before servicing the filters.
2. When servicing the air cleaner, stand on a stable work platform or ladder.

FREQUENCY OF FILTER MAINTENANCE

The MiracleAir model CM-12 is designed to have a very long filter maintenance interval. This is accomplished because of the large volume of media used in both the particle filter and the odor/vapor module. See specifications for details.

The exact maintenance interval is determined by the specific application of the MiracleAir unit. In an office application, the prefilter could require cleaning ever 2-3 months. The primary particle filter may last 1-2 years and the odor/vapor filters should be replaced every 6 to 9 months in the standard unit.

Because of the different variables with each application, it is recommended that the prefilter be inspected every two weeks during the first couple of months of operation. When there is a noticeable accumulation of dust and dirt, clean the filter. After inspecting the unit for a one or two month period, you will have established the proper cleaning interval for the prefilter. When the MiracleAir unit no longer removes odors from the air, it is time to replace the disposable filters within the odor/vapor modules. When there is a noticeable reduction in airflow with the prefilter clean, it is time to replace the primary particle filter. It is a good idea to keep track of how long a period of time the primary particle filter and odor/vapor filters lasted so that you can anticipate how long the new filters will last. The first filters will likely require changing sooner than subsequent filters due to dust that may have settled in areas with poor air circulation as well as furniture and walls off-gassing from previous exposure to higher levels of contamination.

Please note that your MiracleAir unit is equipped with a variable speed controller. If you are running your unit on medium blower speed, you can increase the blower speed to compensate for the filter plugging with contaminant. If you are operating your unit on the maximum speed setting and your airflow is reduced, you will need to replace the primary particle filter.

CLEANING THE PREFILTER

The prefilter is removed from the air cleaner by opening the intake grille. Push the two buttons on the grille and guide the grille to the open position, the grille will hang down towards the floor on its hinges.

Shake out or vacuum the accumulated contaminants from the prefilter. If necessary, the prefilter can be soaked in an alkaline detergent solution. Do not soak in an acid detergent solution or use high pressure water, air or steam to clean the prefilter. Doing so will damage the prefilter and shorten its life.

REPLACING THE PARTICLE FILTER

The particle filter is removed from the air cleaner by:

1. Opening the intake grille
2. With one hand supporting the filter near the turnstiles, rotate the two turnstiles to the open position.
3. Remove the filter from the unit and discard. It can not be vacuumed, washed or reverse air blasted.
4. **Be extremely careful when handling the new filter. A damaged filter will compromise the air cleaning efficiency.**

REPLACING THE ODOR/VAPOR FILTERS OF CM-12 STANDARD UNITS

The standard CM-12 comes with two disposable filters that must be replaced on a periodic basis. These filters are located at the exhaust ends of the air cleaner, just inside the discharge grilles.

1) Remove both of the discharge louvers. This requires a Philips screw driver. Handle louvers with care.

2) Remove the odor/vapor filters by sliding them out from the discharge ends of the air cleaner. The filters are resting in tracks inside the cabinet, there is no locking mechanism to release.

REPLACING ODOR/VAPOR FILTERS OF THE CM-12 DELUXE UNITS

The standard Miracle Air Model CM-12 comes with two VOC filters that must be replaced on a periodic basis. These filters are located at the exhaust ends of the air cleaner, just inside the discharge grilles.

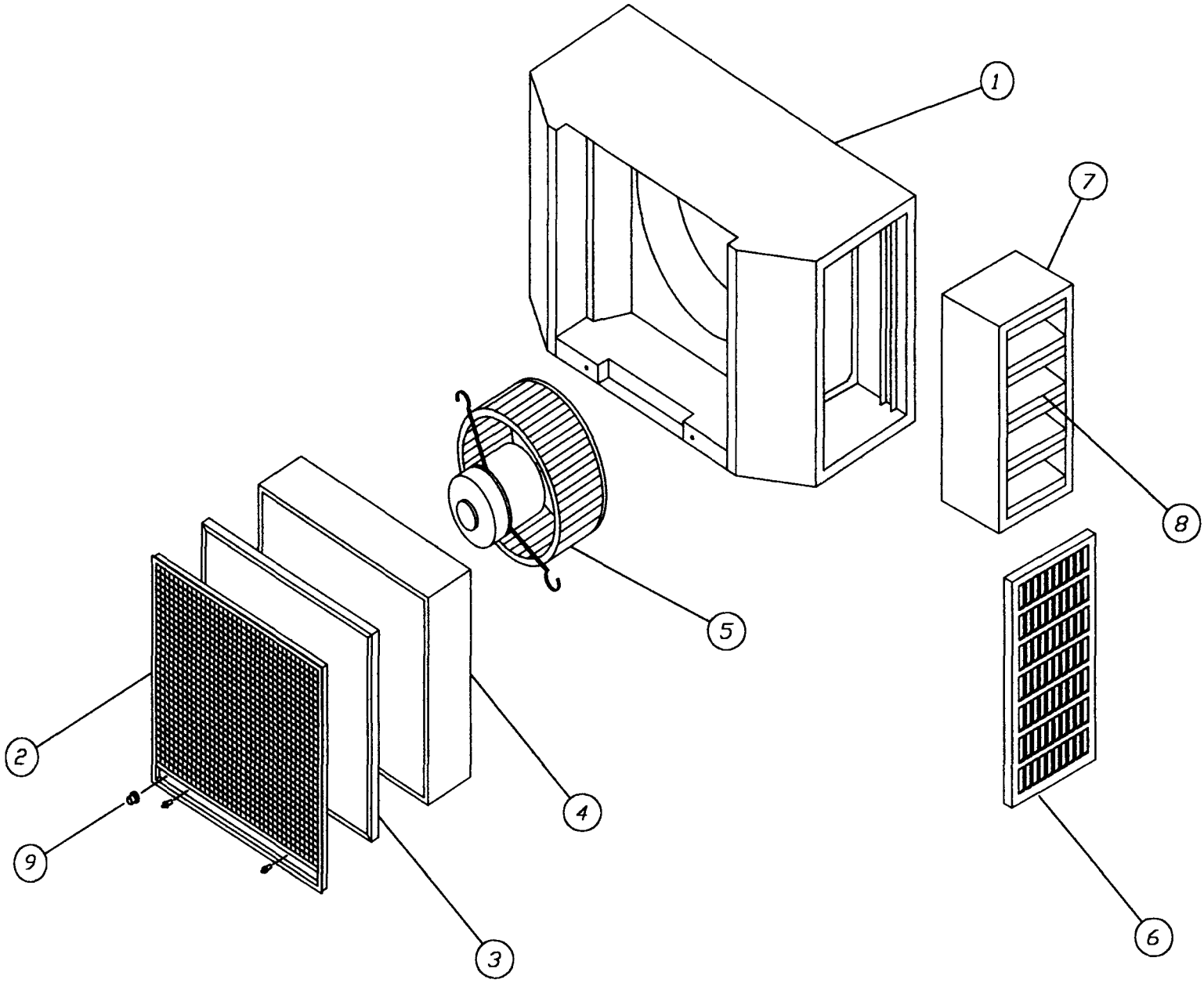
1) Remove both of the discharge louvers. This requires a Philips screw driver. Handle louvers with care.

2) Remove the odor/vapor filters by sliding them out from the discharge ends of the air cleaner.

3) Place the filter module on a table top or work bench. Unscrew the two thumb screws and remove the retaining bracket. Slide the 10 disposable filter panels out of each module and replace with new filter panels.

4) Slide the odor/vapor filter back into the air cleaner until it hits the stops in back.

5) Replace the discharge louvers. Make sure it is securely fastened.



Item number	Description	Part number
1	Cabinet	05512
2	Grille Assy	05519
3	Alum mesh prefilter	41194
4	Main Filter	41190
5	Motor Assy with Blower	05459
6	Louver Grille	21906
7	Carbon Module, includes frame & 10 filters (2 Required)	41193
8	Disposable Filter Kit, includes 20 disposable filters for two PN 07163	07163
9	Control Switch	7156
10	Remote Switch (Not Shown)	7136

MiracleAir™	PN 07171 CM-12 Wall Mount Kit Instructions

APPLICATION

The PN 07171, CM-12 Wall Mount Kit is used for supporting the CM-12 when mounting it to the ceiling is not possible.

The kit includes two wall brackets, four 5/16-18 x 1 inch bolts, four 5/16 inch lock washers, twelve 5/16-18 hex nuts and six 5/16 x 3 inch lag screws.

WHEN INSTALLING THIS PRODUCT

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.

2. Check the ratings given in the owners manual and on the product to make sure the product is suitable for your application.

3. Installer must be a trained, expierienced service technician.

4. After installation is complete, check out product operation as provided in the owners manual.

INSTALLATION

1. Turn the power off to the air cleaner.

2. Remove the exhaust louvers and carbon filters from the two ends of the CM-12.

3. Mount the two brackets on the wall 32 inches between centers so that the six-inch long bolts will line up with the air cleaner mounting holes. The brackets should be securely fastened to the wall studs using the six 5/16 x 3 inch lag screws. On masonry wall, use appropriate masonary anchors.

4. Install four 5/16-16 x 1 inch bolts into the wall mount brackets. Raise the air cleaner through the mounting holes, and push tight against the bracket. Install four locknuts on the bolts from the inside of the CM-12.

5. Reinstall the carbon filters and exhaust louvers into the cabinet.

6. Turn the air cleaner power back on, and check its operation.