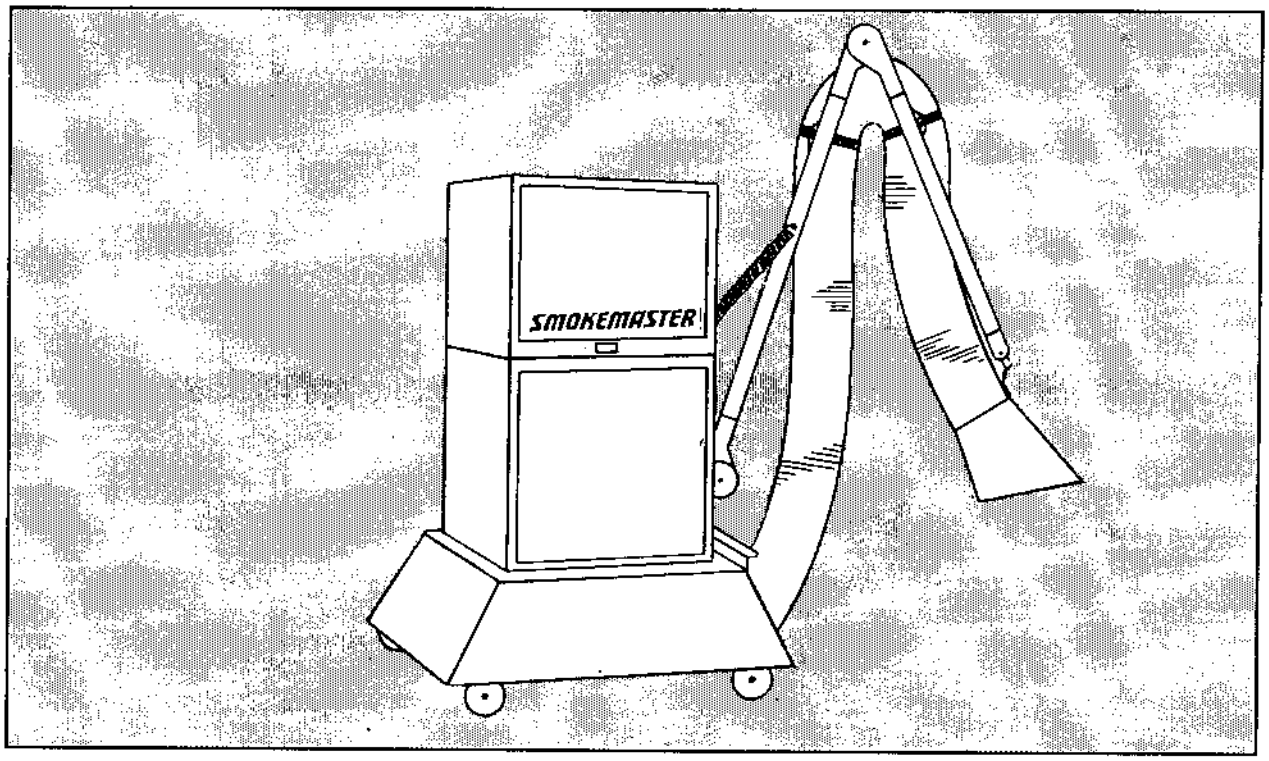
SMOKEMASTER®
MODEL M33V
INDUSTRIAL ROLL-AROUND MEDIA AIR CLEANER



THE SMOKEMASTER M33V IS A SELF-CONTAINED MEDIA AIR CLEANER FOR USE IN SOURCE CAPTURE APPLICATIONS IN INDUSTRY. THE AIR CLEANER IS DESIGNED FOR PORTABLE OPERATION ON ITS OWN CASTERS, ALLOWING THE AIR CLEANER TO BE MOVED TO THE SOURCE OF CONTAMINATION.

- Permanently lubricated, ball bearing, one horsepower motor requires no maintenance.
- Unique roll-around feature allows movement of the air cleaner to the source of contamination.
- Factory installed pressure gauge provides filter status at a glance.
- Filter configurations available with up to 98% efficiency.
- Powered from standard grounded outlet. All models equipped with a 10-foot power cord.
- All models allow one, two, or three stage filtration.
- Blower constructed with sealed bearings for reduced maintenance.

OM-0046 Rev. A
(800)-328-0787

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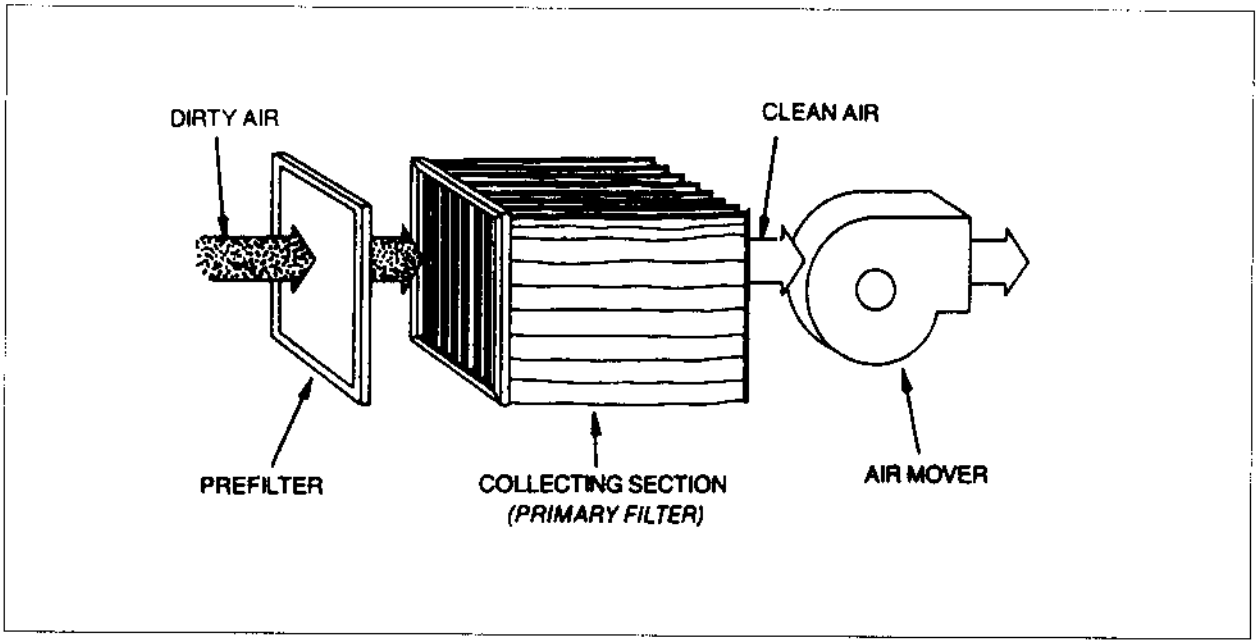
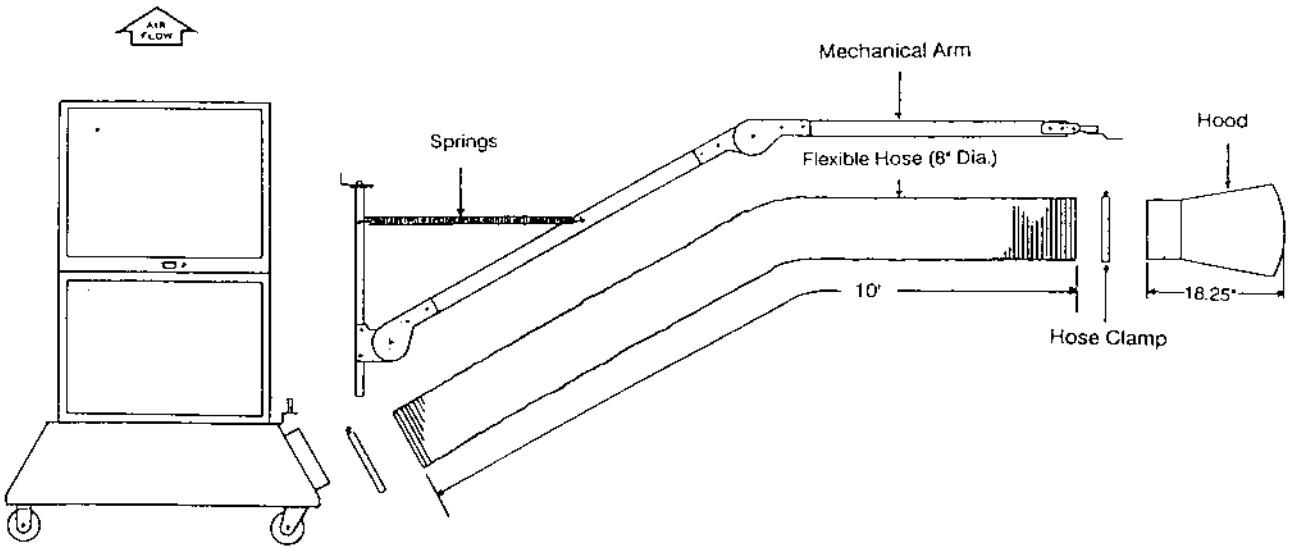
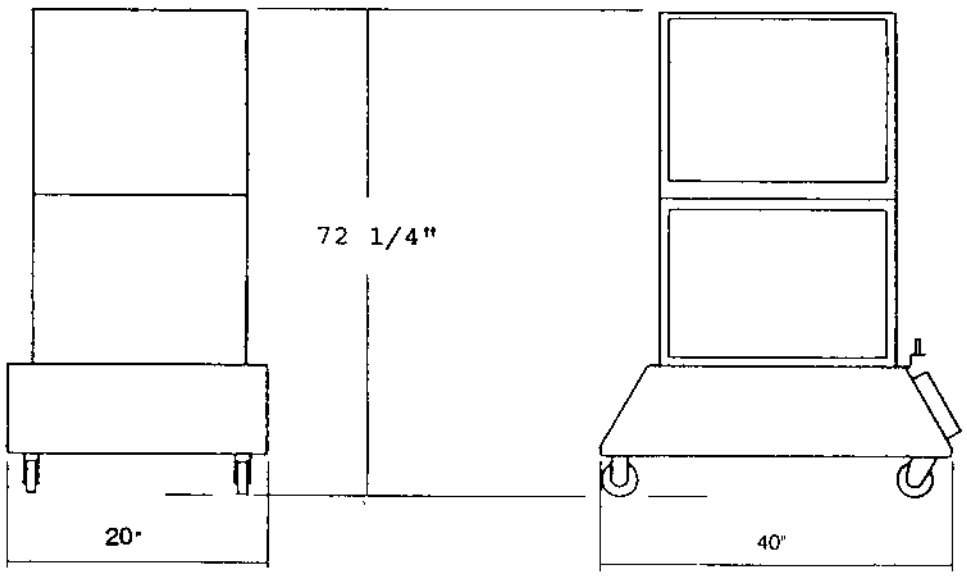
HOW AIRBORNE CONTAMINATION IS REMOVED

Dirty air passes through the prefilter. Large particulate, such as lint, is removed by the prefilter. The remaining smaller particulate is then captured by the primary filter. As the contaminant load on the filters increases, the filters become more efficient in capturing the smaller particles. At the same time, however, the dirty filter allows less air to pass through resulting in less particle collection and a decrease in the overall effectiveness of the air cleaner.







METRIC CONVERSION	FORMULA
Ins. to mm	Ins. x 25.4
Lbs. to kgs.	Lbs. x .455
Ins. w.g. to kPa	Ins. w.g. x .2488
CFM to m^3/h	CFM x 1.6992
Ft^2 to m^2	Ft^2 x .0929

FIGURE 1 - M33V DIMENSIONS

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:

Dimensions: 73" H x 20" W x 40" L

Weight: 274.5 lbs. installed weight
324 lbs. shipping weight
Optional carbon module adds 44 lbs. to the installed and shipping weight.

Cabinet: 16 gauge welded steel cabinet with a baked enamel, textured coated finish. Built-in sump and drain connection for oil mist removal. Four heavy-duty swivel locking casters.

Power Input:

Model	Vac	Hz	Ph.	Amps	Watts
M33V1003	120	60	1	12	1100
M33V1011	208-240	60	1	6.6-6	1100

Motor: 1 HP, ball bearing

Blower: Forward curved, ball bearing, belt driven, centrifugal blower. This blower is capable of moving 2250 cfm free air.

Instrumentation: Dirty Filter Gauge - Factory-installed pressure gauge designed to determine filter replacement cycle.

Indicator Light - Light indicates that the blower motor is energized properly.

Mechanical Arm: Ten-foot externally supported arm swings 180° on its axis and reaches from floor to 11' high. Once this arm is positioned, the hood and hose remain in place until moved.

Hose: Eight-inch diameter EPDM rubber hose with an enclosed wire helix. This hose is 10' long.

Filter Options:

Prefilter: 30-35% efficiency, pleated, 12" x 24" x 4".

Primary Filter Options:

Filter PN	Filter Efficiency *	(CFM=Cubic Feet/Minute) Air Flow, 1 HP, Single Arm
41128	95-98% Bag	1020 CFM
41129	85-90% Bag	1060 CFM
41130	65-70% Bag	1075 CFM
41121	45-50% Bag	1097 CFM

*Efficiency based on ASHRAE Dust Spot 52-76.

Carbon Filter Option - PN 07125: Twenty-two lbs. activated, refillable carbon module. If the carbon filter module is to be used as the third stage of filtration behind the prefilter and primary filter, then the optional rigid filter will be substituted for the standard bag to allow room for the carbon filter. Please note that the maximum air flow rating for the carbon module is 500 cfm. If the carbon filter is ordered, the air flow will be factory set at 500 cfm.

Noise Levels:

Distance in Feet	1 HP
9 Feet	67 dBa
15 Feet	66 dBa

Air Quality Engineering, Inc., has a policy of continuing product improvement and reserves the right to make changes in design and specifications without notice.

This unit is be used exclusively for source control in industrial applications in California.

PLANNING THE INSTALLATION

WARNING

The M33V Industrial Roll-around Media Air Cleaner is not explosion-proof. It must not be located or used where there is any danger of gas, vapor, or dust explosion.

INTRODUCTION

Clean air is the subject of numerous laws and regulations. Typical requirements in the United States are those put out by the Occupational Safety and Health Administration (OSHA). Private groups, such as the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), have also published numerous recommendations.

Normally, clean air is defined in regulations and recommendations as air having a limited amount of contaminant in it, commonly expressed as parts per million, or milligrams per cubic meter. Approved counteractions are intended to lower or eliminate the amount of contaminants in the air. One of the more common methods of achieving this goal is through the use of media air cleaners.

At no time should a media air cleaner be placed where there is a potential for explosion due to the presence of explosive dusts, gases, or vapors. Contact the nearest Smokemaster representative for assistance in determining the correct application of a media air cleaner.

SIZING
Sizing is the process of determining the amount of air cleaning necessary in any given application. Since the M33V is a source capture air cleaner, the sizing process is relatively simple--provide one source capture hood per contaminant source.

LOCATION
For most efficient operation, the M33V source capture hood should be placed as close to the contaminant source as possible. The maximum distance between the contaminant producer and the source capture hood should not exceed 18 inches. Therefore, in locating the M33V, be sure that the mechanical arm is capable of extending the source capture hood to within 18 inches of the contaminant source.

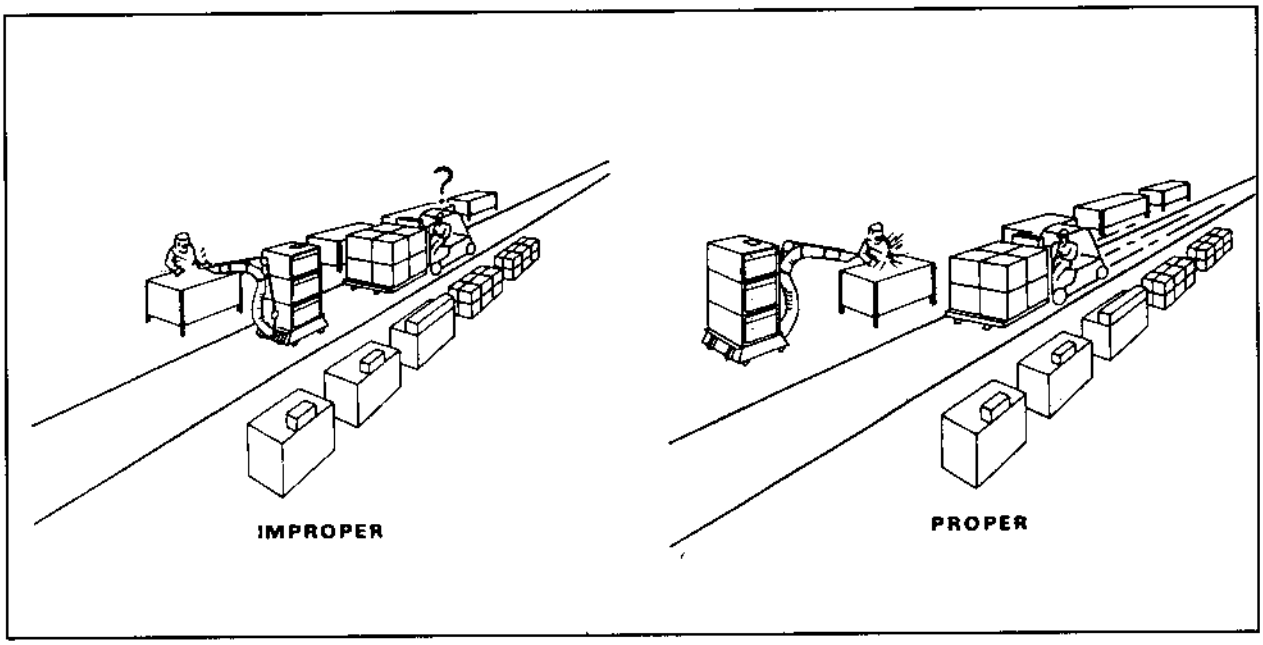


FIGURE 2 - EXAMPLES OF PROPER AND IMPROPER M33V LOCATIONS

ASSEMBLY

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

2. Check the electrical ratings given on the air cleaner schematic to the power source to insure compatability.

3. After assembly is complete, check out the product operation as provided in these instructions.

CAUTION

1. Do NOT connect the power source until the air cleaner is completely assembled.

2. If the air cleaner must be turned on for an electrical check, be extremely careful in avoiding electrical shock. Also, take care to avoid the air cleaner's moving parts.

UNPACKING
The M33V is shipped completely assembled except for the mechanical arm. The mechanical arm assembly is packaged in a separate box. Remove all shipping cardboard and banding. Be sure to inspect the packaging material before discarding it.

ASSEMBLING THE M33V
Tools needed:
1. Standard screwdriver
2. Phillips screwdriver
3. 7/16" wrench

NOTE: See Figure 1, Page 3, when assembling the M33V.

Step 1
Remove the two Phillips screws and lock washers from the side of the M33V. Set the support tube on the arm assembly onto the 7/8" pin on the cart. Fasten the support bracket of the arm to the M33V cabinet using the two Phillips 1/4-20 screws and lock washers.

Step 2
Mount the hood to the end swivel bracket of the arm using the two 1/4-20 hex head bolts and 1/4-20 nuts.

Step 3
Attach the two counterbalance springs from the studs on the 1" x 2" aluminum tube to the studs on the one-inch square support tube.

Step 4
Slip the hose and clamp over the opening flange on the roll-around cart. Slip the end of the hose and second clamp over the hood flange three to four inches and tighten the clamp.

Step 5
Tie the hose to the mechanical arm using the two nylon belts provided.

WIRING
The M33V has no special wiring requirements. It comes equipped with a 10-foot power cord and plug. The power source must be compatible with the voltage and frequency of the M33V. The rating on the M33V is located on the schematic on the inside of the filter access door. Route the power cord so that it is out of the way of the building's occupants. Do not use an extension cord.

CHECKOUT AND OPERATION

CHECKOUT
Before operating the M33V, check out the installation using the following procedures:

1. Make sure the air cleaner is oriented for good air circulation where it will not interfere with personnel and material traffic. Keep out of fire lanes and away from overhead cranes.

2. Check that the tension on the arm joints is correct so that the arm maintains a proper position. If not, readjust the tension adjustment screws (two adjustment screws).

3. Be sure that the source capture hood can be placed within 18 inches of the contamination.

4. Make sure that the prefilter and the primary filter are properly oriented and the airflow arrows are pointing toward the blower.

5. Make sure the filter change gauge (manometer) is level. See the spirit level in the right hand corner of the gauge.

6. Check the oil level in the filter change gauge, and adjust the zero knob so the oil level is at zero inches of water when the M33V is turned off.

OPERATION
1. Turn on the air cleaner control switch. Make sure the blower is providing a strong discharge. Please note that the M33V air flow was factory set at the maximum, considering the filter efficiency and other options ordered, such as impingers and plenums.

If decreased air flow is desired, it can be accomplished by adjusting the variable sheave on the motor. It is very important to measure the amperage before and after the adjustments are made on the variable motor sheave to insure that the motor is not overloaded. The rated amperage is listed on the schematic on the filter access door. To adjust the motor sheave, see Adjustments on Page 7.

2. The indicator light should be on whenever the blower is on.

3. The filter gauge should be level and should read zero when the M33V is turned off. If it does not read zero, adjust the reading with the adjustment knob on the gauge.

CALIBRATION OF THE DIRTY FILTER GAUGE
After the air cleaner has been installed and is ready for operation, the air filter gauge must be calibrated. See the following simple steps:

Step 1
Check that the filter gauge is level. See the spirit level in the right hand corner of the gauge.

Step 2
Check the red oil level, and adjust the zero knob so that the oil level is at zero inches of water when the air cleaner is turned off.

Step 3
Turn the air cleaner on with the clean filters in place. Place the green arrow adjacent to the point at which the red oil rises. The green arrow will indicate clean filters.

Step 4
Place the red arrow on the gauge scale one inch higher (according to the scale) than the green arrow. This will indicate dirty filters. A one-inch rise in static pressure indicates a reduction in air flow of approximately twenty-five percent.

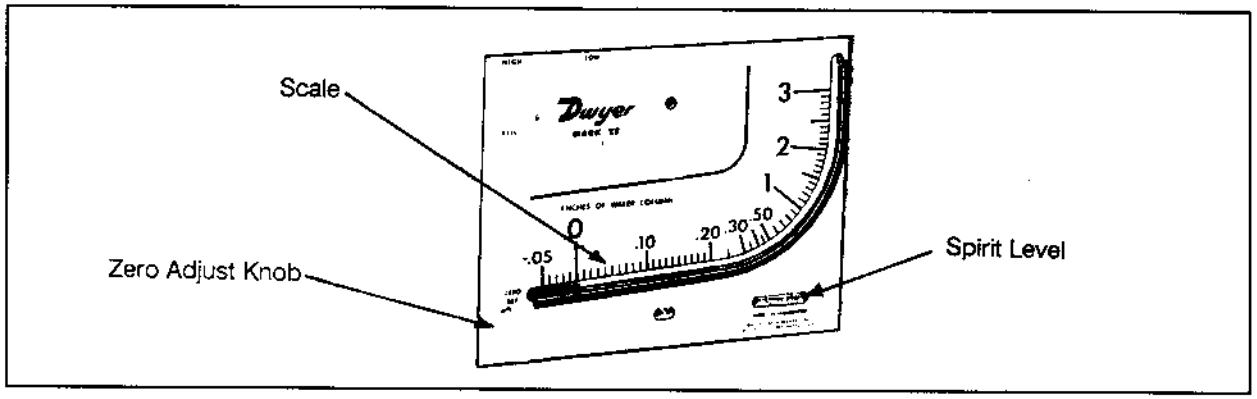


FIGURE 3 - DIRTY FILTER GAUGE

ADJUSTMENTS

AIR FLOW VOLUME (CFM)
The air flow for the M33V is factory set at the maximum volume of air. If reduced air flow is desired, it can be accomplished by adjusting the variable motor sheave.

TO ADJUST THE BLOWER CAPACITY:
1. Turn the air cleaner off, and open the access door to the blower and motor section of the air cleaner.

2. Loosen the two bolts locking the end of the motor rail in position. Remove the belt.

3. Loosen the Allen setscrew on the face of the motor sheave.

4. Rotate the sheave into a position which gives the desired blower capacity.

5. Measure the amperage after the sheave adjustment to insure that you do not exceed the rated amperage.

NOTE: When the sheave is rotated all the way into the shaft, the blower capacity is at its maximum. When the sheave is rotated five turns out on the shaft, the blower capacity is at its minimum. DO NOT ROTATE THE ADJUSTABLE SHEAVE MORE THAN FIVE TURNS OUT ON THE SHAFT. The sheave may already be adjusted one or more turns out on the shaft.

CAUTION

Adjusting the variable sheave changes the load on the motor. Do not exceed the rated amperage for the motor.

MAINTENANCE

CAUTION

Always disconnect the power to the M33V before working on or near the air cleaner.

FILTER MAINTENANCE/REPLACEMENT
Dirty air passes through the prefilter. Large particulate, such as lint, is removed by the prefilter. The remaining particulate is then captured by the primary filter.

As the contaminant load on the filters increases, the filters become more efficient in capturing the smaller particles. At the same time, however, the dirty filter allows less air to pass through, resulting in less particle collection and a decrease in the overall effectiveness of the air cleaner.

The M33V Air Cleaner is equipped with a pressure gauge which indicates the restriction to air flow caused by the filters loading with particulate. When the air filter gauge reaches the red arrow or a noticeable reduction in air flow occurs, it is time to clean or replace the prefilter and possibly the primary filter.

Step 1
Turn off the air cleaner. Open up the filter access doors, and slide out the prefilter.

Step 2
If the particulate is dry, the standard four-inch pleated prefilter can be cleaned by shaking or vacuuming. If the prefilter does not come clean after vacuuming or is saturated with oil, the prefilter should be replaced.

Step 3
Replace the prefilter, and turn on the air cleaner. The reading on the air filter gauge should be at or near the green arrow. If no performance improvement is evident after cleaning or replacing the prefilter, the primary filter will have to be replaced. In most cases, the prefilter can be replaced several times before the primary filter will need to be replaced.

NOTE: An increase of one inch on the gauge would be approximately a 25% decrease in air flow. If the reduction in air flow is not a problem, the air cleaner can be operated beyond this point. The red arrow can be moved to the point at which the decrease in air flow becomes a problem.

GAUGE MAINTENANCE
Check the oil level occasionally, and adjust the zero knob as required. Be sure all pressure is removed by turning the air cleaner off before adjusting the zero knob. If it becomes necessary to add more oil to the gauge, be certain to use only Dwyer Red Oil which is provided with the air cleaner. Other fluids may damage the gauge. To fill the gauge, back out the zero adjust knob until it stops, then turn in approximately three full turns so there is room for adjustment in either direction.

Clean the gauge with a soft cloth using a little pure soap and water. Use of a small brush will aid in cleaning the knobs. Avoid cleaning fluids and liquid soaps which may have chlorinated solvents in them, as they may damage the gauge.

CARBON MODULE MAINTENANCE (OPTIONAL)
The M33V can be ordered with an optional carbon module. This module is refillable.

WARNING

It is the customer's responsibility to determine the suitability of the carbon filter for any particular application or purpose. The effectiveness of activated carbon must be routinely monitored. In addition, certain substances can combine in the carbon which can result in a fire hazard. Air Quality Engineering accepts no liability for the activated carbon effectiveness or fire hazard.

1. Open the filter access door.

2. Slide the used carbon module out of the filter track which is behind the primary filter track. Caution - the carbon module weighs approximately 50 lbs. Use appropriate means to support the carbon module during service.

3. Refill the carbon module by removing the cover held on by four screws and pouring out the used carbon in an appropriate container. This used carbon must be reactivated or disposed of in the proper manner. Pour in the new or reactivated carbon, and replace the cover and four screws.

4. Slide the module back into the filter track, and close the filter access door.

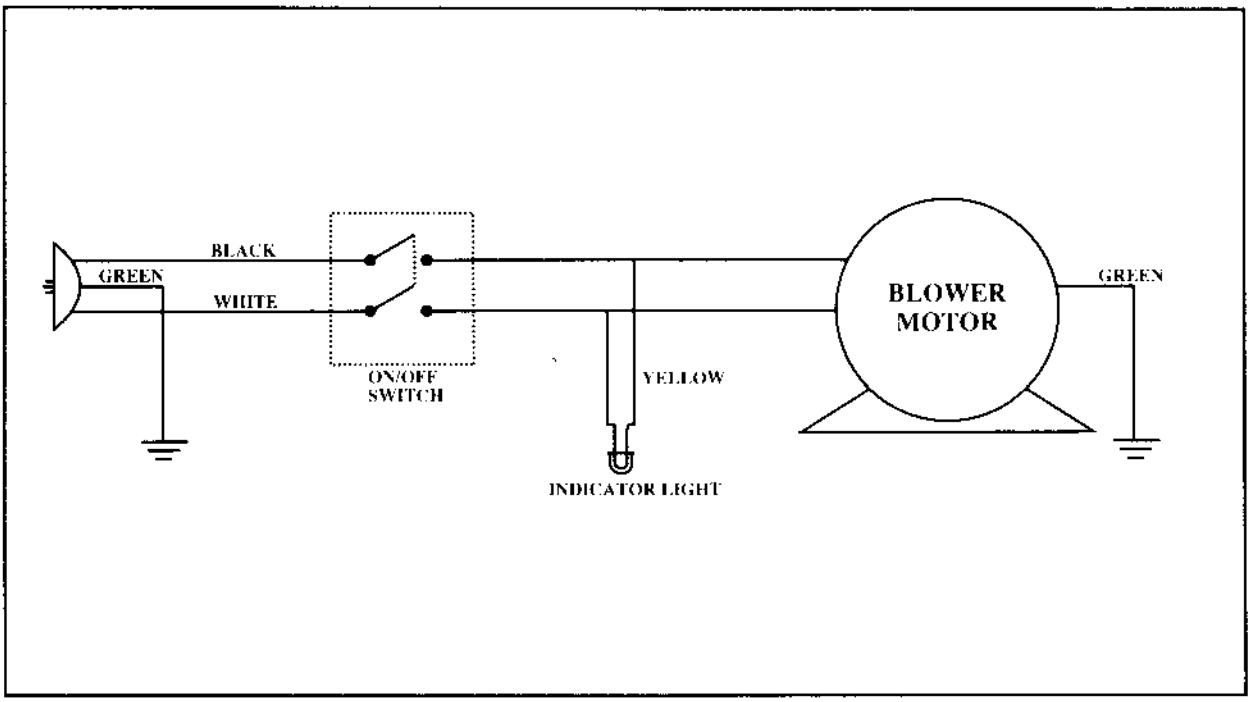


FIGURE 4 - ELECTRICAL SCHEMATIC

PARTS LIST

NO.	DESCRIPTION	PART NO.
1	On/Off Switch	10140
2	Indicator Light	10097
3	Dirty Filter Gauge	10205
4	Prefilter, 4" Pleated	41124
5	Blower Sheave	30601
6	Belt	30011
7	Motor, 1 HP	40013
8	Blower	37020
9	Exhaust Grille	30530
10	Motor Sheave, Variable	30166
11 Primary Filter Choices	Bag Filter, 12" x 24" x 26", 95% Bag Filter, 12" x 24" x 26", 85% Bag Filter, 12" x 24" x 26", 65% Bag Filter, 12" x 24" x 26", 50%	41128 41129 41130 41131
12	Hood	05356
13	Hose, 8" diameter x 10' long	30021
14	Mechanical Arm	05391
15	Strap	30513
16	Casters, Swivel	30041
17	Hose Clamp	30033
18	Springs	30512

OPTIONAL EQUIPMENT:

19	Carbon Module, 22 lbs.	07125*
20 Rigid Filter Options	Rigid Filter, 12" x 24" x 12", 95%, 29 sq. ft. Media Rigid Filter, 12" x 24" x 12", 85%, 29 sq. ft. Media Rigid Filter, 12" x 24" x 12", 65%, 29 sq. ft. Media	41125 41126 41127
21 Extended Svc. Filter Options	Extended Service Filter, 12" x 24" x 12", 95%, 100 sq. ft. Media Extended Service Filter, 12" x 24" x 12", 85%, 100 sq. ft. Media Extended Service Filter, 12" x 24" x 12", 65%, 100 sq. ft. Media	41136 41137 41138
22	Impinger Assembly	07072

* Rigid filter or extended service filter must be used in place of the standard 26" deep bag filter when used with carbon filter.

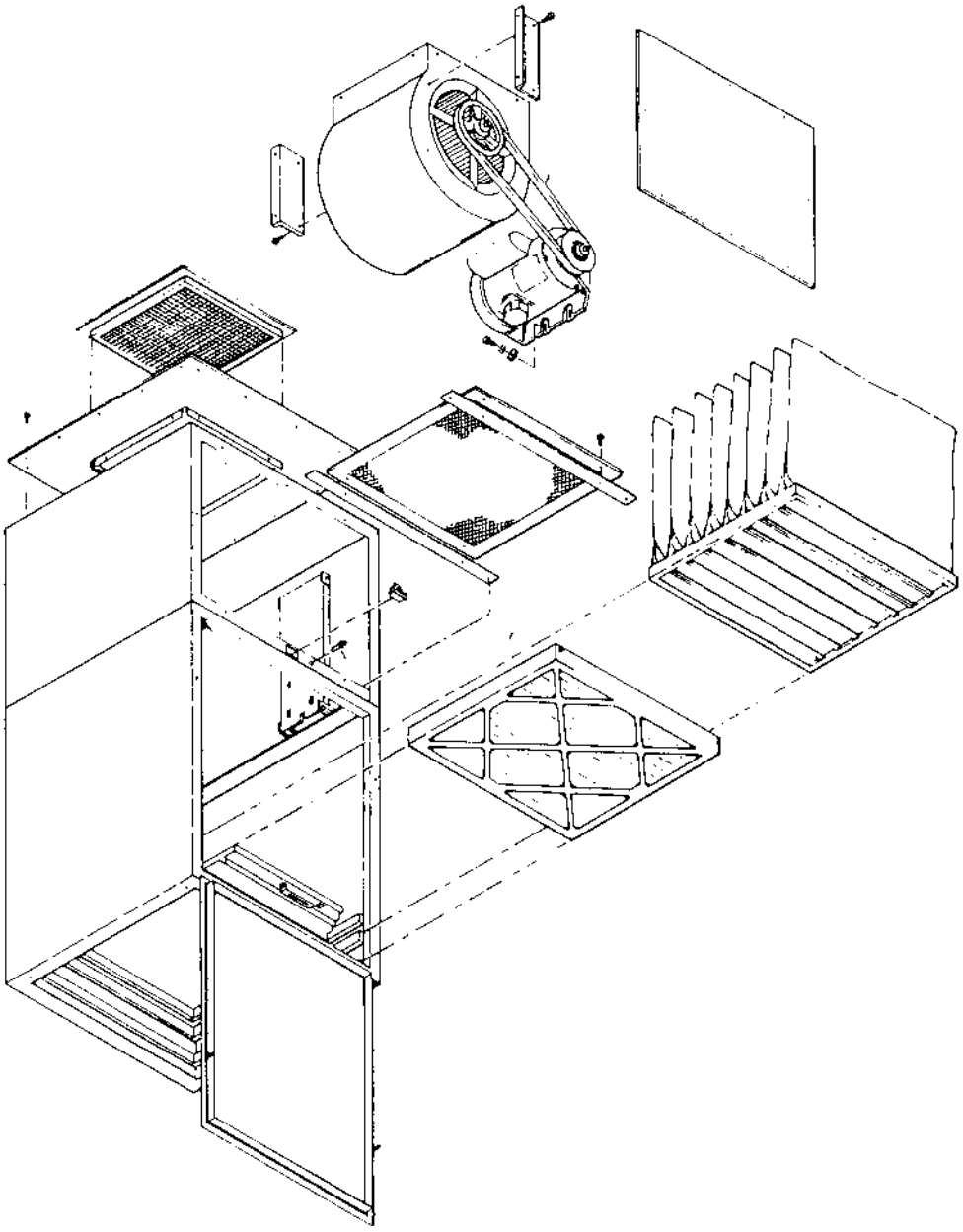


FIGURE 5 - EXPLODED VIEW OF M33V AIR CLEANER

CERTIFICATE OF WARRANTY

THREE-YEAR LIMITED WARRANTY

Air Quality Engineering, Inc., (AQE) warrants to the original purchaser, subject to the conditions below, that if the "Product" covered by this warranty should fail to perform by reason of improper workmanship or material, AQE will during the period of three (3) years from the date of original purchase, either, (i) replace the product or (ii) provide all necessary parts to repair the product without charge. The decision to replace the product or the necessary parts shall rest solely with AQE. This three-year limited warranty does not apply to main filter elements. AQE will replace without charge the main filter elements during the period of (thirty) 30 days from the date of original purchase if the main filter elements fail to perform by reason of improper workmanship or material. This warranty is valid only under the following conditions:

CONDITIONS

1. REGISTRATION: The purchaser's completion and mailing of the Registration Card to Air Quality Engineering, Inc., 3340 Winpark Drive, Minneapolis, Minnesota, 55427 within 30 days of original purchase.

2. AUTHORIZATION: The purchaser will contact AQE at (612) 544-4426 for authorization, returned goods number (RTA), and the shipping address. AQE will direct the purchaser to either return the necessary parts or the product at AQE's option.

3. PROPER DELIVERY: The shipping, freight prepaid, or delivery of the parts or the product to AQE in either its original carton or in a carton assuring similar protection of the product with the returned goods number (RTA) clearly displayed on the outside of carton.

4. UNAUTHORIZED REPAIR: A showing by the original purchaser that the product has not been altered, repaired or serviced by anyone other than an authorized service technician using genuine AQE parts.

5. UNAUTHORIZED PARTS: A showing by the original purchaser that the product has had only genuine AQE parts and filters used in its operation and maintenance.

6. SERIAL NUMBER INTACT: A showing by the original purchaser that the serial number has not been altered or removed.

7. MISUSE: A showing by the original purchaser that the product has not been involved in an accident, freight damaged, misused, abused or operated contrary to the instructions contained in the Owner's Manual.

Air Quality Engineering, Inc.'s, sole responsibility shall be to repair or replace the product within the terms stated above. AQE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, EXPRESS OR IMPLIED, APPLICABLE TO THIS PRODUCTSome states do not allow the exclusion or limitation of consequential damages so this limitation may not apply to you.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED BEYOND THE THREE YEAR DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts so the above limitation may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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MANUFACTURER & WORLDWIDE DISTRIBUTOR OF SMOKEMASTER® AIR CLEANING SYSTEMS

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