AIR QUALITY ENGINEERING

SUPPLYING CLEAN AIR TO INDUSTRY

Mist Control 850-MB & 1000-MB

Machine Mountable Mist & Smoke Collection

Installation and Operation Manual

Protected by U.S. Patent Numbers 6,428,611 and 7,717,984

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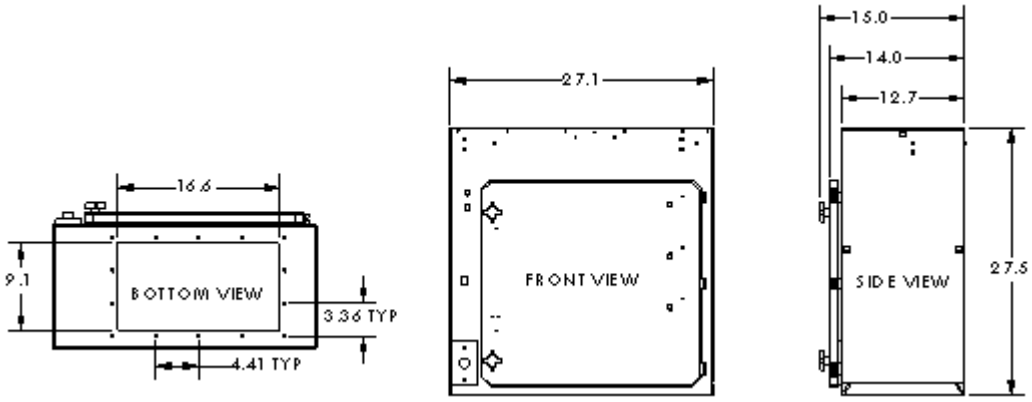
850-MB SPECIFICATIONS

- 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.

DIMENSIONS:	Cabinet – 27.10” L [690mm] x 12.68” W [381mm] x 27.5” H [700mm] See Fig.1
INLET OPENING:	16.62” [422mm] x 9.08” [231mm]. See Fig. 3
WEIGHT:	99 lbs. installed weight; 111 lbs. shipping weight.
CABINET:	16-gauge steel cabinet with a chemical resistant baked enamel, smooth finish
AIRFLOW:	850cfm [1444cmh] @ 0.8”wg [199Pa] top discharge
EFFICIENCY:	Up to 99.5% efficiency on submicron particles per ASHRAE 52.2 standard test
FILTRATION:	**1st Stage** – 4" aluminum mesh impinger **2nd Stage** – AQE Advantage® (Long Life) Electronic Cell **3rd Stage** – AQE Advantage® (Long Life) Electronic Cell **4th Stage** – AQE Advantage® (Long Life) Electronic Cell
POWER SUPPLIES:	Two self-regulating, dual voltage, solid-state power supplies
MOTORIZED IMPELLER:	Backward curved, vibration-free, direct drive rated at 1000cfm @ 0” w.g.
POWER:	200-240 Vac, 60 Hz, 2.21 Amps
POWER CORD:	Ten-foot power cord with NEMA twist lock



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

Figure 1: Overall Dimensions

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

1000-MB 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.

DIMENSIONS:	Cabinet – 27.10” L [690mm] x 12.68” W [381mm] x 32.375” H [822mm] See Fig.2
INLET OPENING:	16.62” [422mm] x 9.08” [231mm]. See Fig. 3
WEIGHT:	125 lbs. installed weight; 135 lbs. shipping weight.
CABINET:	16-gauge steel cabinet with a chemical resistant baked enamel, smooth finish
AIRFLOW:	850cfm [1444cmh] @ 0.8”wg [199Pa] top discharge
EFFICIENCY:	Up to 99.5% efficiency on submicron particles per ASHRAE 52.2 standard test
FILTRATION:	**1st Stage** – 4" aluminum mesh impinger **2nd Stage** – AQE Advantage® (Long Life) Electronic Cell **3rd Stage** – AQE Advantage® (Long Life) Electronic Cell **4th Stage** – AQE Advantage® (Long Life) Electronic Cell **5th Stage** – AQE Advantage® (Long Life) Electronic Cell
POWER SUPPLIES:	Two self-regulating, dual voltage, solid-state power supplies
MOTORIZED IMPELLER:	Backward curved, vibration-free, direct drive rated at 1000cfm @ 0” w.g.
POWER:	200-240 Vac, 60 Hz, 2.21 Amps
POWER CORD:	Ten-foot power cord with NEMA twist lock

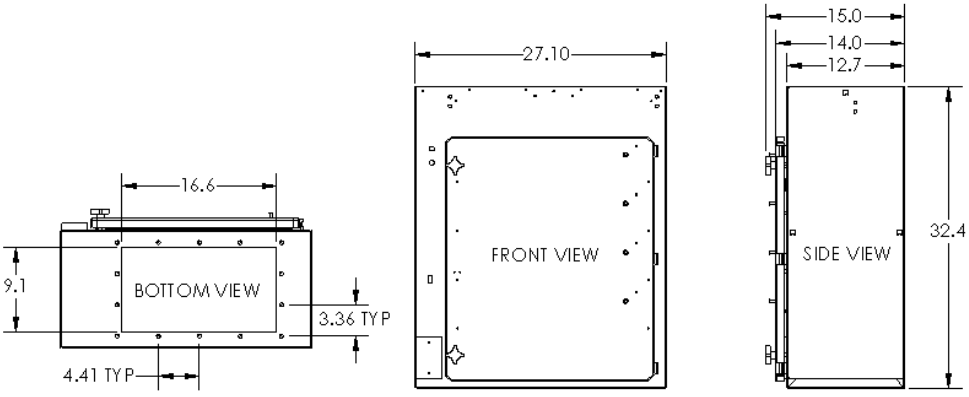


Figure 2: Overall Dimensions

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

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

INSTALLATION

Contact Marubeni Citizen-Cincom support (support@mctz.com) for machine specific installation instructions. The following instructions are for general application when machine specific adapters are not available.

Inspection

The Mist Control air cleaner should be checked for any shipping damage that may have occurred during shipping. Any damage should be noted and the carrier notified immediately.

Tools & Equipment Required

The following is a list of tools that would be needed for typical installations:

- Reciprocating saw
- Drill
- Screwdriver
- Wrenches
- Fork truck / Crane

Planning The Installation

1. The Mist Control mist collector should be located with consideration for convenience of maintenance and electrical compartment access.
2. The filter access door on the Mist Control should not be obstructed. A minimum of 24" is needed in front of the filter access door.
3. The side access cover (left hand) should also be accessible, if possible. This will make it easier to access the electrical components such as the switches and high voltage power supplies.
4. Mount the Mist Control as far from the chip conveyor opening as possible. This will minimize the amount of clean shop air from being drawn into the enclosure.

Direct Mount to Machine Tool Enclosure

The Mist Control can be mounted directly to the enclosure on a machine tool. The collected mist droplets simply drain back into the machine tool through the air inlet of the Mist Control.

Installation Direct Mount

Remove all filters and electronic cells from the Mist Control. Carefully position the Mist Control on the machine tool in the desired location. Refer to Planning the Installation for guidelines in positioning the Mist Control on the machine tool.

1. Use the inlet opening and the mounting hole pattern on the bottom of the Mist Control as a template to mark the inlet opening and holes to be drilled into the machine tool enclosure. If the machine tool enclosure has been designed with a provision for mist collection, you may not need to cut an inlet opening. NOTE: The inlet opening in the machine tool does not need to be as large as the inlet of the Mist Control. It is recommended that the inlet opening be a minimum of 30 sq in.
2. Use a .281" [7mm] diameter drill bit to drill the mounting holes for the 1/4-20 bolts used to secure the Mist Control to the machine tool.
3. There are fourteen mounting holes in the Mist Control. It is recommended that a minimum of four holes be drilled to secure the Mist Control to the machine tool.
4. Apply the silicone provided on both sides of the bolt holes. Overlap the gasket on the corners. Carefully position the Mist Control over the opening and bolt the unit in place.
5. The Mist Control comes complete with a 10'[3048mm] power cord. Plug the unit into the appropriate grounded outlet.
6. Replace the impingers and the electronic cell. Please make sure the arrows on the cells and filters are pointing up

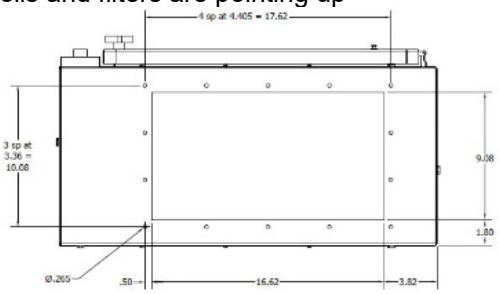


Figure 3: Mist Collector Mounting Holes

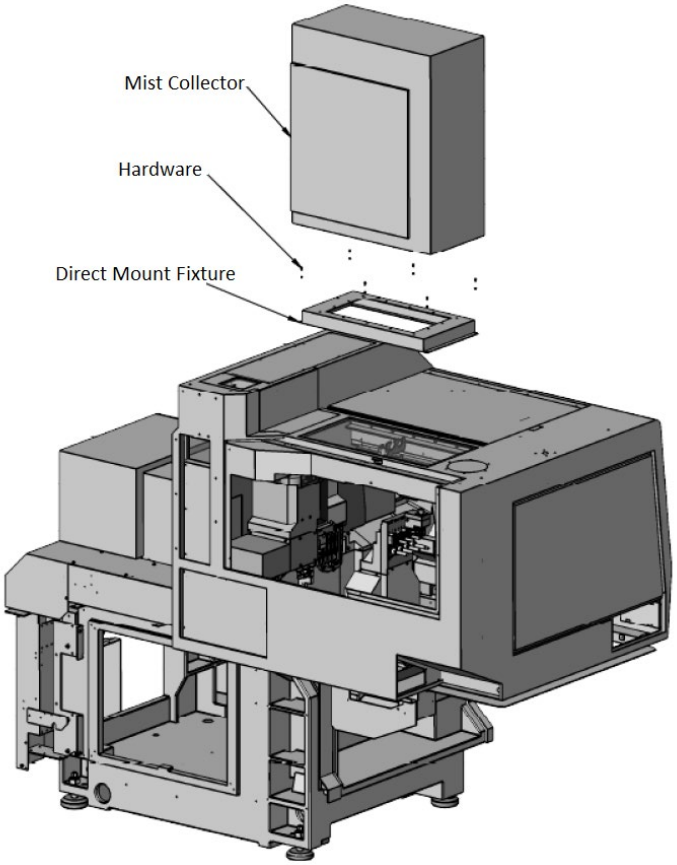


Figure 4: Mist Collector Mounting Example

DRAIN INSTALLATION

1. The Mist Control plenum has a 1/2” female pipe fitting drain that requires a P-trap and a drain hose to return the metalworking fluid to the machine tool.
2. Prime the P-trap with the metalworking fluid that will be collected to avoid air being drawn through the plenum drain. See Figure 5.

Pipe Trap

Coil hose trap
Minimum 8” [230mm] Dia Loop

Figure 5: P-Trap Options

ELECTRICAL INSTALLATION

⚠ WARNING

All electrical work must be done by a qualified electrician and with accordance to local codes and regulations.

Be certain that the power source is compatible with the model ordered. See the rated voltage on the inside of the filter access door.

Proper grounding of the Mist Control is essential for safety and operation.

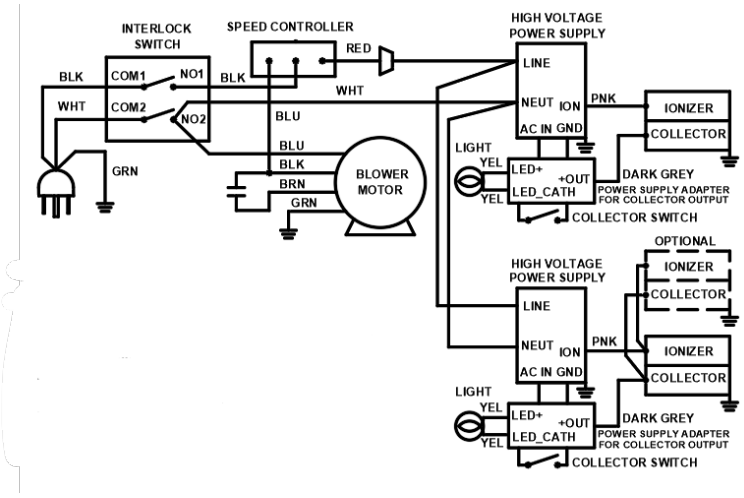
Cord Connected

The Mist Control is equipped with a 10-foot [3048mm] power cord with a NEMA twist lock plug. Route the power cord so that it is out of the way of the building's occupants and so that it does not interfere with the machine's operation.

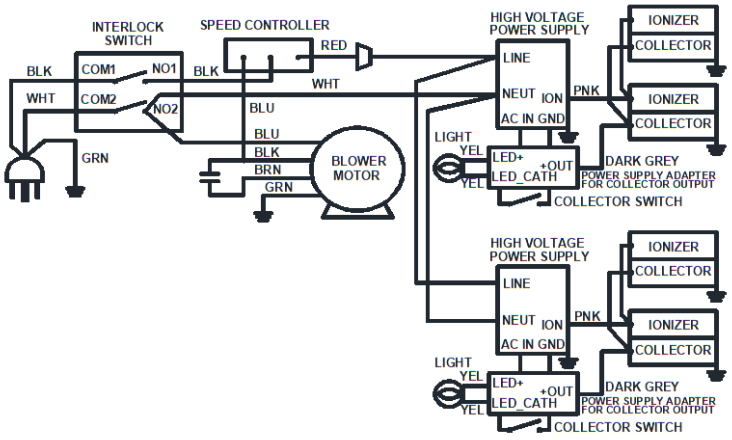
Conduit Connected

The Mist Control can be hard wired. **All wiring must comply with applicable codes and ordinances. All work must be done by a qualified electrician.**

850-MB SCHEMATIC



1000-MB SCHEMATIC



START UP

1. Start up the Mist Control by rotating the control knob clockwise. **Set the airflow at the minimum airflow setting that will maintain the proper negative pressure. In most cases, the three o'clock setting on the speed controller will provide enough airflow to maintain negative pressure.** This will reduce noise and maintenance and will increase efficiency.

2. The performance indicator light should be on when the blower is running

3. Push the test button to momentarily short out the collector on the electronic cells. Arcing indicates that the cells are energized properly.

4. The coolant selector switch on the front of the Mist Control is used to compensate for nuisance arcing that occurs with some water soluble synthetics. Switch to oil mode to run on the highest voltage, if nuisance arching occurs, switch the toggle to water mode.

ROUTUNE MAINTENANCE

⚠ WARNING

Be extremely careful when working with the electronic cell. The edges of the collector plates and the ionizing wires on the cell may be sharp.

When cleaning the cell, be sure to wear appropriate protective gear, especially goggles and gloves. Skin contact with alkaline detergent solution should be avoided. See warning label on the detergent.

The electronic cell must be handled with care to avoid damage.

The direct mount Mist Control captures mist droplets from machine tools using either petroleum or synthetic machining fluids. The collected fluids drain directly back into the machine tool through the inlet opening. This draining process helps to keep the impingers and electronic cells clean.

The mist impingers and electronic cell will need to be cleaned periodically. The exact maintenance interval is determined by each specific application.

Water soluble and synthetic machining fluids will require more frequent cleaning than petroleum machining fluids. During the first few months of operation, inspect the impingers and electronic cell. When you have an excessive buildup on the mist impingers and electronic cell, they will need to be cleaned.

Parts Washer Method

The mist impingers and electronic cells can be cleaned with a parts washer. Make sure that the cleaning fluid used is aluminum safe and the maximum pressure does not exceed 60 psi [414kPa].

Manual Cleaning the Mist Impingers

Soak impingers in a solution of hot water and alkaline detergent for 10-15 minutes. Thoroughly rinse with hot water to remove any residual detergent.

Manual Cleaning the Electronic Cell

1. Fill the wash tub with cell cleaning detergent and hot water per the detergent manufacturer's instructions.
2. Immerse the cell in cleaner solution for five minutes.
3. Thoroughly rinse the cell with very hot water. Make certain no residue remains on the cell.
4. Inspect the collector plates for cleanliness. Repeat wash procedure, if necessary. Check for broken wires and bent collector plates. The cell can be installed back into the Mist Control. The indicator light may remain off for the normal two-hour drying time.

NOTE: If water-soluble machining fluids are used, it would be best to coat the cell with AQE Cell Coat after washing the cell. See the Parts List section for the part number for the detergent and cell coat.

CELL PARTS

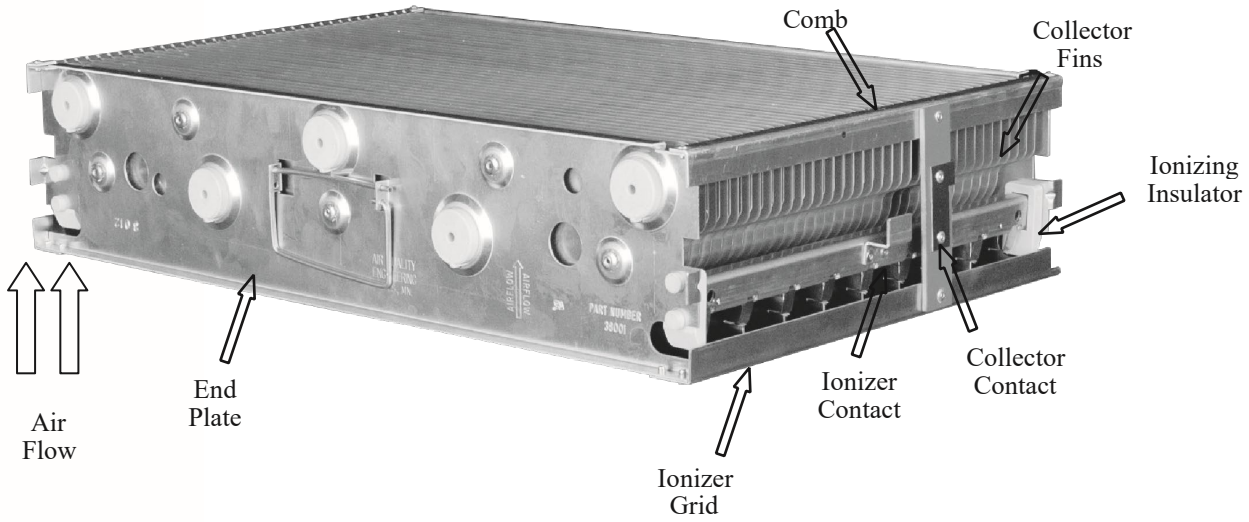


Figure 6: Cell Components

TROUBLESHOOTING

⚠ WARNING

Make sure the power to the unit is OFF before attempting to work on any electrical component

NOTE: The blower and motor in the Mist Control are integrated. The unit will not function unless the door interlock switch is depressed (i.e. the filter access door is closed.)

Indicator Light Is on And Motor Does Not Run

1. Inspect the motor by checking to see if the motor spins freely by hand. If the motor does not spin freely by hand check for obstructions or replace motor as necessary.
2. If the motor spins freely by hand, try spinning the motor clockwise or counterclockwise then with the motor spinning, turn the unit on. If the motor runs and the fan speed can be adjusted by the speed controller replace the motor capacitor.
3. Try bypassing the speed controller by hooking the supply voltage going into the speed controller directly to the wire that goes from the speed controller to the motor (see schematic). If the motor works with the speed controller bypassed, replace the speed controller.

Indicator Light Is Off And Motor Runs

1. Remove all electronic cells, close the access door and turn the unit back on. If the indicator light remains out and the motor continues to run, replace the high voltage power supply.
2. If indicator light comes back on when the electronic cells are removed, there is a short circuit in at least one of the electronic cells. Wash and inspect the cell. For instructions on how to wash the cell, see the routine maintenance section of the owner's manual.

Inspect the cell for the following:

- Damaged or bent collector plates
- Damaged or bent ionizer grid fins
- Broken ionizing wires
- Dirt accumulation on the insulators
- Dirt accumulation on the collector plates
- Damaged or corroded electrical contacts
- Small metal shavings from machining
- Deformation of the cell
- The collector plates are properly seated into the slots of the comb on the cell
- Excessive corrosion on the cell

An ohmmeter may be used to check resistance between the outside frame of the cell and both the ionizer and collector contacts. In each case, the resistance should be infinite (open circuit). Anything that is bridging the gap or shrinks the gap between the energized collector plates or the energized ionizing wires can cause the indicator light to extinguish or constantly blink due to the electricity shorting out to ground. Occasional snapping or the occasional light blinking is normal.

Indicator Light Is Constantly Blinking And The Motor Runs

1. If coolant selector switch is in oil mode, move coolant selector switch to the water-based mode.
2. If indicator light flashes in both the water based and the oil mode, remove all electronic collector cells, close the door and energize the unit again.
3. If indicator light continues to flash even without the electronic cell(s) installed, clean or replace the contact boards mounted in the cabinet. Note – clean the red, phenolic material of the board, not the electrical contacts themselves.
4. If the indicator light blinks in either the water soluble or oil mode, and stops blinking when the electronic cells are removed, there is a problem with at least one of the electronic collector cells. Wash and inspect the cell. For instructions on how to wash the cell see the routine maintenance section of the owner's manual.

Inspect the cell for the following:

- Damaged or bent collector plates
- Damaged or bent ionizer grid fins
- Broken ionizing wires
- Dirt accumulation on the insulators
- Dirt accumulation on the collector plates
- Damaged or corroded electrical contacts
- Small metal shavings from machining
- Deformation of the cell
- The collector plates are properly seated into the slots of the comb on the cell
- Excessive corrosion on the cell

Indicator Light Is Off and Motor Does Not Run

1. Make sure the unit is getting power and is getting the correct voltage.
2. Check to make sure the interlock switch is working properly. Make sure there is voltage passing through the interlock switch when the button for the interlock switch is depressed. With the power disconnected to the unit, an ohm meter can be used to check if the interlock switch has continuity when the switch is depressed. The interlock switch has two sets of contacts that are individually switched and will not have continuity between the two separated contacts. If there is no continuity replace interlock switch as needed.
3. With the unit on, check to see if the power supply and motor are getting voltage. If the interlock is functioning properly and there is no power reading to the power supply or motor, check wiring and replace the speed controller as needed.

Indicator Light Is On and Motor Does Not Change Speed

1. Adjust the speed controller fine adjustment. To get to the fine adjustment on the speed controller, pull the knob off the speed controller and slide the silver plate behind the speed controller knob up (there is no fasteners holding the speed controller knob or the silver plate on). There is a small hole next to the main adjustment for the speed controller that you can insert a small screwdriver to adjust.
2. If adjusting the fine adjustment does not change the fan speed, replace the speed controller.

Indicator Light Is On, Motor Runs, and Mist/Smoke Is Coming Out The Exhaust

1. Try reducing the speed of the motor to increase the amount of time the electrostatic cells have to collect the mist / smoke.
2. If the application that the unit was installed for has changed (i.e. higher coolant pressure, shorter cycle times, machine has changed, etc.), the unit might not be able to handle the increased load.

Indicator Light Is On, Motor Runs, And Mist/Smoke Is Not Being Evacuated/Captured

1. Make sure there are no obstructions in the ducting or the unit.
2. Make sure there is proper airflow. If the unit is installed too close to openings on the machine cavity the unit will pull in fresh air from the opening and not move / draw into the unit from where the mist / smoke is being generated.
3. If long lengths of ducting / tubing are used, the airflow can be drastically reduced. The same issue can result when using ducting / tubing that has a very small diameter.

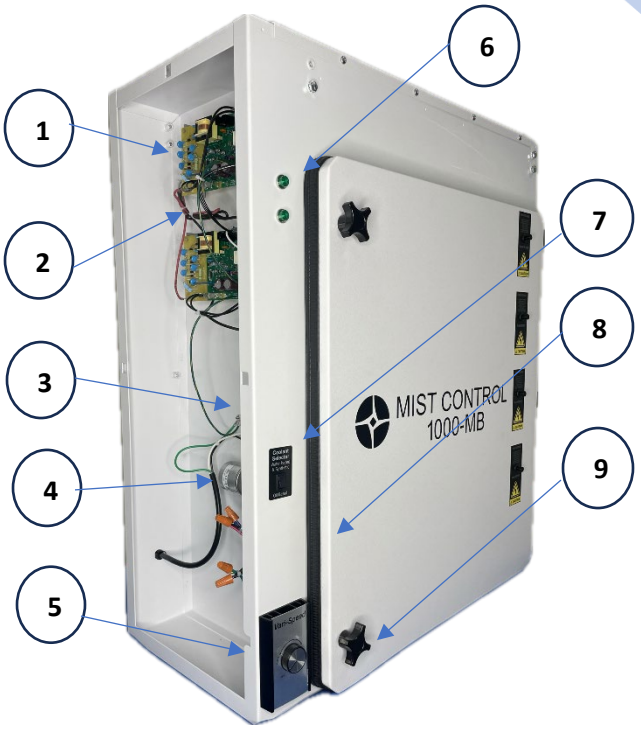
For additional assistance with troubleshooting or to order replacement parts, please contact your local sales office or call **1-800-328-0787** for the manufacturer.

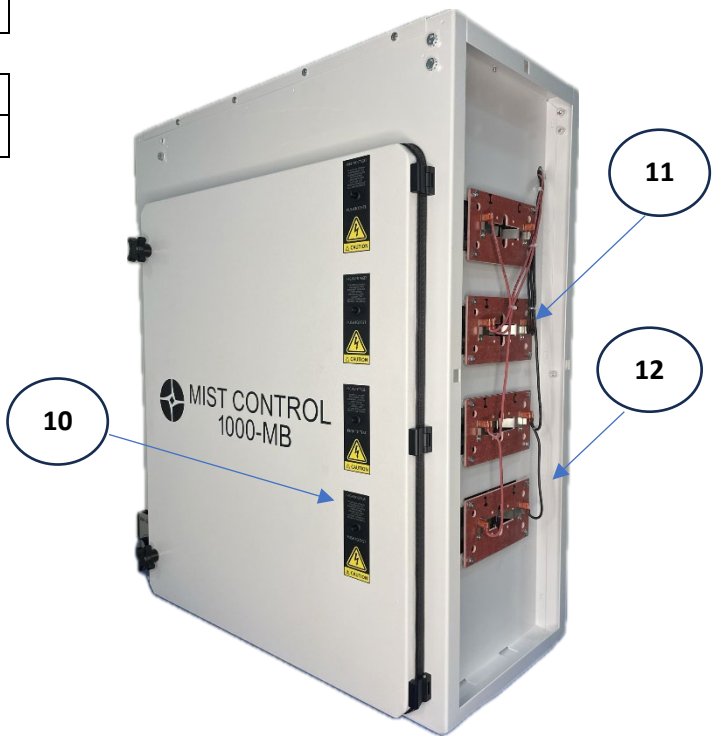
SPARE PARTS LIST

ITEM	PART #	DESCRIPTION
1	07436	Power Supply Replacement (120/240V)
2	07727	1000-MB High Voltage Wire Kit
3	10106	Interlock Switch
4	Call for Part #	Capacitor
5	10253	Speed Control Switch
6	10324	Indicator light
7	10349	MB Coolant Selector Switch
8	65028	Door gasket (Sold by ft)
9	30903	Door Knob
10	07399	MB Test Button Single Tab Kit
11	05754	Contact Board Assembly
12	30788	Nylon Standoff
Not Shown	07381	240V Motor/Impeller Replacement
Not Shown	07317	AQE Advantage Cell
Not Shown	41205	2 Impinger
Not Shown	30794	Retainer Door Knob
Not Shown	38027	Ionizing wires (sold in increments of 5)

Optional Accessories

Not Shown	07178	HEPA Post Filter Kit
Not Shown	07728	HEPA Bracket Kit





Certificate of Warranty

LIMITED THREE-YEAR WARRANTY

Air Quality Engineering, Inc., (AQE) warrants the Mist Control Air Cleaner to be free from defects in workmanship or materials, under normal use and service, for a period of three (3) years from date of purchase by the consumer. If, at any time during the warranty period, the product is defective or malfunctions, AQE shall repair or replace it (at AQE's option) within a reasonable period of time.

If the product is defective:

(i) return the unit or defective component, with a bill of sale or other dated proof of purchase, to the retailer from which you purchased it, or

(ii) package the unit or component, along with proof of purchase (including date purchased) and a short description of the malfunction, and mail or ship, postage or freight prepaid, to the following address:

AIR QUALITY ENGINEERING, INC.
Warranty/Return Goods Department
7140 Northland Drive North
Minneapolis, Minnesota 55428 USA

The repaired or replaced part or unit will be shipped by AQE to the purchaser, freight collect, with the purchaser to be responsible for all freight charges. The warranty on any repaired or replacement part shall be for a duration of time no longer than the remaining or unexpired term of the original warranty. This warranty does not cover any labor or other service charges incurred by the purchaser.

This warranty shall not apply if it is shown by AQE that the defect or malfunction was caused by damage which occurred while the product was in the possession of the consumer.

AQE'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 PRODUCT. Some 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 that vary from state to state.

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MANUFACTURER & WORLDWIDE DISTRIBUTOR OF SMOKEMASTER® AIR CLEANING SYSTEMS
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Made in the USA PN 51892

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