SUPPLYING CLEAN AIR TO INDUSTRY

MistBuster 500®

Installation and Operation Manual

Protected by U.S. Patent Number 6,428,611

Machine Mountable Mist & Smoke Collector

AIR QUALITY ENGINEERING

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TOLL FREE: 1-800-328-0787

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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 – 25"[635mm]L x 13-1/2"[343mm]W x 18-3/8"[467mm]H. See Fig. 1.
INLET OPENING:	16.62[422mm]" x 9.08"[230mm]. See Fig. 2.
WEIGHT:	71lbs.[157kg] installed weight 82lbs.[181kg] shipping weight. Ships UPS!
CABINET:	16-gauge steel cabinet with a chemical resistant baked enamel, textured finish.
AIRFLOW:	50-500cfm[85-850m^3/H] @ 0.6"[4.1kPa]wg top discharge
EFFICIENCY:	Up to 99.8% efficiency per ASHRAE 52.2
FILTRATION:	**1st Stage -** 4"[102mm] thick aluminum mist impingers **2nd Stage -** ESP cell – 52.9ft^2 [4.9m^2] of surface area. Minimum voltage gradient is 20,000 volts per inch. **3rd Stage -** 1"[25mm] thick aluminum mesh **4th Stage -** Optional HEPA filter – 99.97% efficient on 0.3 micron particles
POWER SUPPLY:	Self-regulating, dual voltage, solid-state power supply
MOTORIZED IMPELLER:	Backward curved, vibration-free, direct drive rated at 710 cfm[418M^3/H] @ 0" wg
POWER:	115 Vac, 60 Hz, 2 Amps 230 Vac, 60 Hz, 1 Amp
POWER CORD:	10'[3.05m] power cord with standard molded plug
SOUND LEVELS:	74 dBA @ 3'[.9m] on maximum 70 dBA @ 6'[1.8m] on maximum

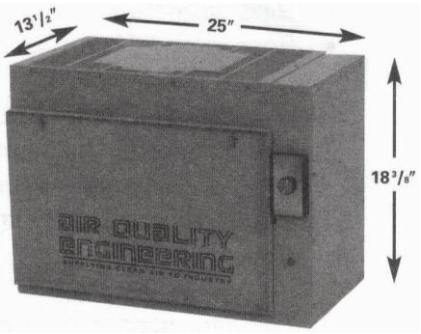


FIGURE 1

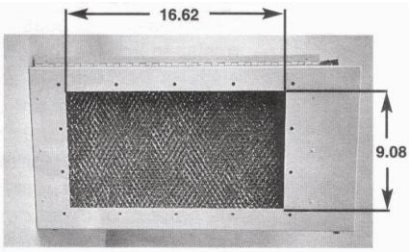


FIGURE 2

FIGURE 4

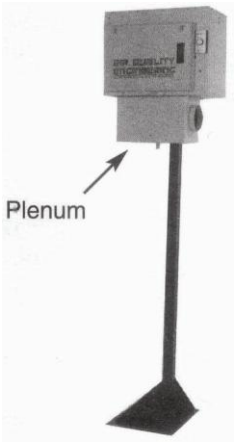


FIGURE 3

Optional pedestal stand adjustable from 7'7"[2.3m] – 10'8"[3.3m] from the top of the unit.

INSTALLATION

INSPECTION
The MistBuster 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
- Pipe wrenches
- Fork truck / Crane

PLANNING THE INSTALLATION

1. The MistBuster mist collector should be located with consideration for convenience of maintenance and electrical compartment access.

2. The filter access door on the MistBuster should not be obstructed. A minimum of 16"[406mm] is needed in front of the filter access door.

3. The side access cover (right 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 supply.

4. Mount the MistBuster as far from the chip conveyor opening as possible. This will minimize the amount of clean shop air from being drawn into the MistBuster.

DIRECT MOUNT TO MACHINE TOOL ENCLOSURE

FIGURE 5 – SHOWN INSTALLED ON CNC SWISS LATHE

The MistBuster Model 500 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 MistBuster.

FIGURE 6 – SHOWN ON CNC HORIZONTAL MACHINING CENTER

INSTALLATION DIRECT MOUNT
Remove all filters and the electronic cell from the MistBuster. Carefully position the MistBuster on the machine tool in the desired location. Refer to Planning the Installation for guidelines in positioning the MistBuster on the machine tool.

1. Use the inlet opening and the mounting hole pattern on the bottom of the MistBuster 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 MistBuster. It is recommended that the inlet opening be a minimum of 30 square inches[19350mm^2].**

2. Use a .281"[7mm] diameter drill bit to drill the mounting holes for the 1/4-20 bolts used to secure the MistBuster to the machine tool.

3. There are fourteen mounting holes in the MistBuster. It is recommended that a minimum of four holes be drilled to secure the MistBuster to the machine tool.

4. Apply the silicone provided on both sides of the bolt holes. Overlap the gasket on the cor-

ners. Carefully position the MistBuster over the opening and bolt the unit in place.

5. The MistBuster comes complete with a 10'[3.05m] power cord. Plug the unit into the appropriate grounded outlet.

6. Replace the mesh impingers and the electronic cell. Please make sure the arrows on the cell and filters are pointing up.

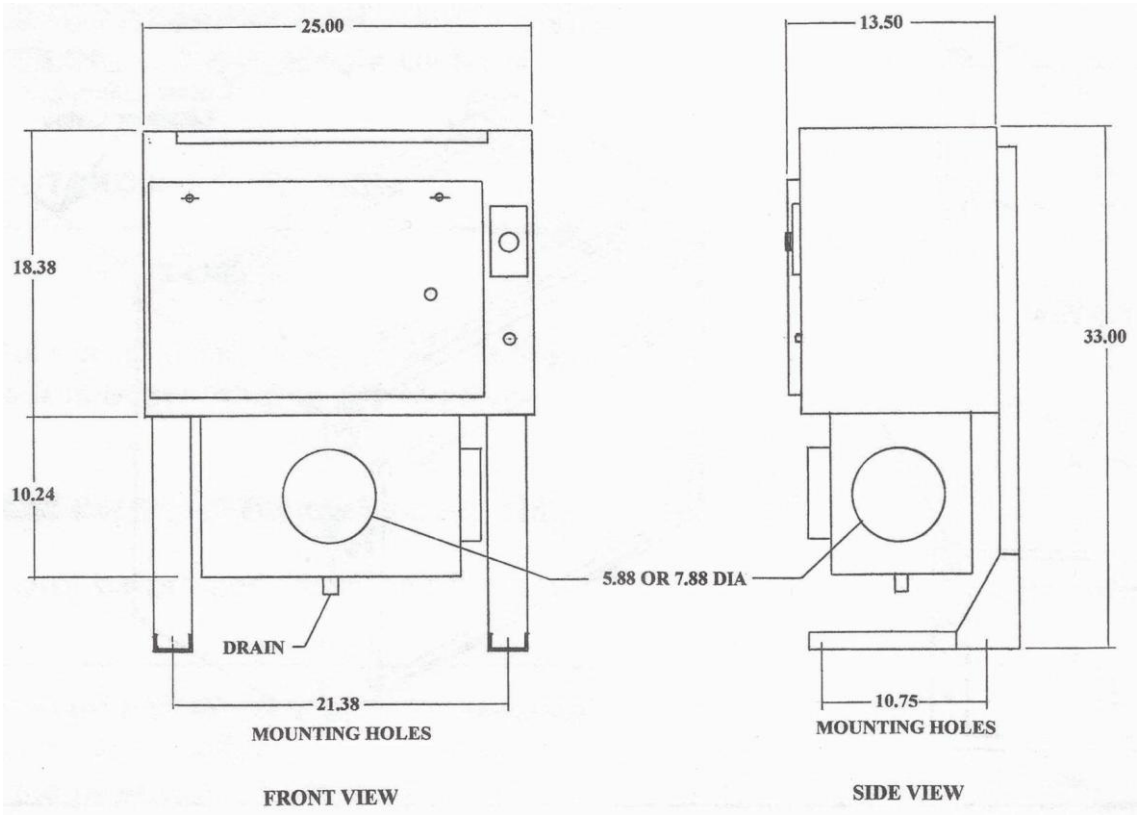


FIGURE 7

DUCTED INSTALLATION

When direct mounting the MistBuster is impossible or not desired, the MistBuster can be installed with a plenum and ducting.

Ducted installation option will require our standard plenum (PN 07175). The MistBuster plenum has holes on three sides and comes standard with two covers and one six-inch inlet collar. See Figure 7.

Although we recommend direct mounting when possible and minimizing duct length when ducting is necessary, the MistBuster can be connected to two machine tools. Additional ports can be ordered in 4"[102mm], 6"[152mm] and 8"[203mm] diameters.

INSTALLING THE PLENUM

1. Install the supplied covers and collar to the plenum using the supplied silicone sealant and #8 screws.

2. Attach the plenum to the inlet opening on the MistBuster using the supplied silicone sealant and 1/4-20 bolts and nuts. Note that the plenum may be rotated 180° for the desired port orientation.

MACHINE MOUNT STAND

FIGURE 8

1. Remove the six 1/4” bolts on the back of the MistBuster and install the two L-brackets.

2. Carefully drill the required four holes in the machine tool to attach the L-brackets from the machine mount stand using a 13/32”[10mm] drill bit.

3. Use a crane or fork truck to lift the assembled MistBuster onto the machine tool. **CAUTION: Make sure the MistBuster is secured to the crane or forklift to avoid personal injury or damage to the unit.** Bolt the MistBuster to the machine tool using the supplied 3/8” nuts, bolts and lock washers.

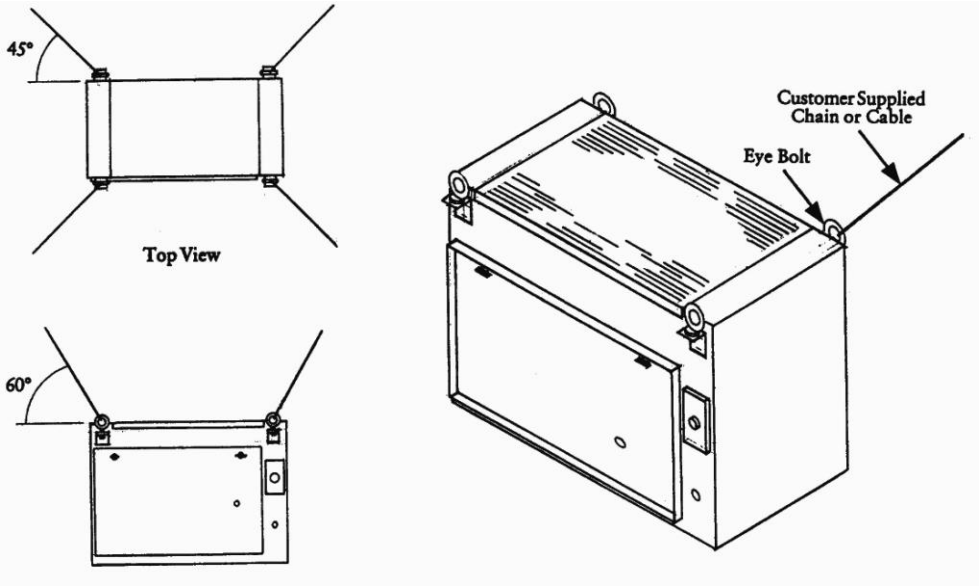


FIGURE 9

CEILING MOUNT

> **⚠ WARNING**
>
> **The overhead structure must be strong enough to support the weight of the Mist-Buster, plenum and ductwork.**
>
> **Risk of severe injury could result from improper installation.**
>
> **Make sure that whenever using a fork truck, hoist or lift that the MistBuster is properly secured to prevent tipping.**
>
> **Use caution not to damage the MistBuster or plenum with the fork truck, hoist or lift.**

1. Attach the four angle brackets to the front and back of the MistBuster using the eight supplied 1/4-20 bolts and lock washers. Fasten the four 3/8” eyebolts to the four brackets using the supplied hardware. See Figure 9.

2. Install the supplied covers and collar to the plenum using the supplied silicone sealant and #8 screws. Attach the plenum to the inlet opening on the MistBuster using the supplied silicone sealant and 1/4-20 bolts and nuts. Note that the plenum may be rotated 180° for the desired port orientation.

3. Install the MistBuster using cable or chain to suspend the unit from each eyebolt. Make sure that the cable or chain is rated for the appropriate weight of the MistBuster and accessories. Position the chains or cables so that they form a 60° angle with the top of the unit and a 45° angle from the side surfaces. This will make the unit more stable.

4. Level the MistBuster in all directions.

FIGURE 10 – CEILING KIT & PLENUM OPTION SHOWN

PEDESTAL STAND INSTALLATION

> **⚠ WARNING**
>
> **The pedestal stand must be anchored to the floor before it is assembled to the MistBuster to prevent tipping.**
>
> **Do not extend the top of the stand over 128"[3.25m].**
>
> **Level the stand before securing the anchor bolts.**

1. Slide the upper part (T-section) of the pedestal stand into the lower section (lower section contains the base which bolts to the floor). See Figure 11.

2. Secure the base of the pedestal stand to the floor using four 1/2"[13mm] anchor bolts (not supplied). Anchor bolts must be secured before the MistBuster is assembled to the stand. Anchor bolts must extend 1-1/2"[38mm] above the floor to ensure adequate length.

3. Assemble the upper and lower pieces together by inserting the four 3/8-16 x 3.5 inch long bolts through the flat washers, lower section of the stand and lock washers as pictured below. To adjust the height of the pedestal stand, loosen the four 3/8-16 x 3.5 inch long bolts from the lower part of the stand and slide the upper section of the desired height. **Do not adjust the top of the stand over 128"[3.25m] high.** Tighten the bolts to create enough tension to secure the stand in place.

4. Remove the 1/4-20 bolts and lock washers from the back of the MistBuster. Remove the electronic cell and impingers from the MistBuster and lift the unit up to the pedestal stand. Align the MistBuster and insert and tighten the 1/4-20 bolts with lock washers to secure the MistBuster to the pedestal stand. Install the plenum per the instructions in the Installing the Plenum section.

5. Re-check all bolts to make sure they are securely fastened.

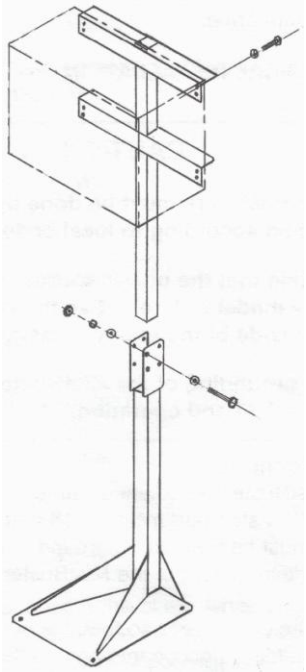


FIGURE 11 – PEDESTAL STAND

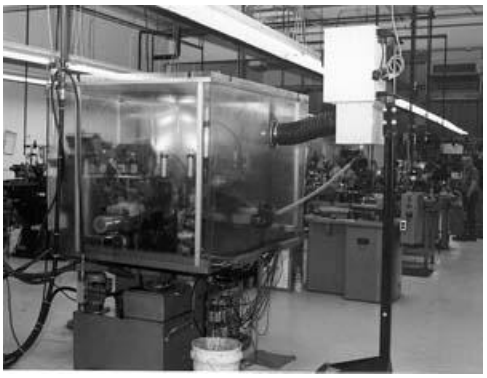
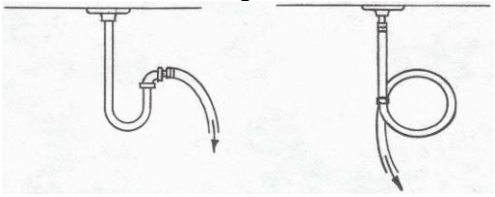


FIGURE 12 – PEDESTAL STAND & PLENUM OPTION SHOWN

DRAIN INSTALLATION

The MistBuster plenum has a 1/2"[13mm] female pipe fitting drain that requires a P-trap and a drain hose to return the metalworking fluid to the machine tool.

Prime the P-trap with the metalworking fluid that will be collected to avoid air being drawn through the plenum drain. See Figure 13.



Pipe Trap

Coil Hose Trap
Min 8"[203mm] Dia. Loop

FIGURE 13 – 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 MistBuster is essential for safety and operation.**

Cord Connected

The MistBuster is equipped with a 10'[3.05m] power cord with a standard molded (15 amp rated) plug. There must be a standard grounded outlet provided within 10'[3.05m] of the MistBuster.

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 operation.

Conduit Connected

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

The wiring compartment is on the same side as the variable speed switch. Removing the side cover accesses it.

Remote Mounted Controller Option

The MistBuster can be ordered with the variable speed controller shipped separately. In place of the switch on the MistBuster, there is a 2"[51mm] x 4"[102mm] electrical box and cover.

Install a field supplied electrical box in the desired location and run three 14-gauge wires from the remote mounted electrical box to the MistBuster.

NOTE: When the MistBuster is ordered with a remote option, it will run on high speed only until the remote switch wiring is complete.

Mcode Speed Controller Option

The MistBuster 500 can be ordered with the Mcode speed control shipped separately. In addition to the standard onboard speed control there will be an extra speed control in a NEMA box with inputs from the machine tool. The NEMA box can be mounted to the side of the MistBuster. When the Mcode speed controller option is ordered separate instructions will be provided for operation.

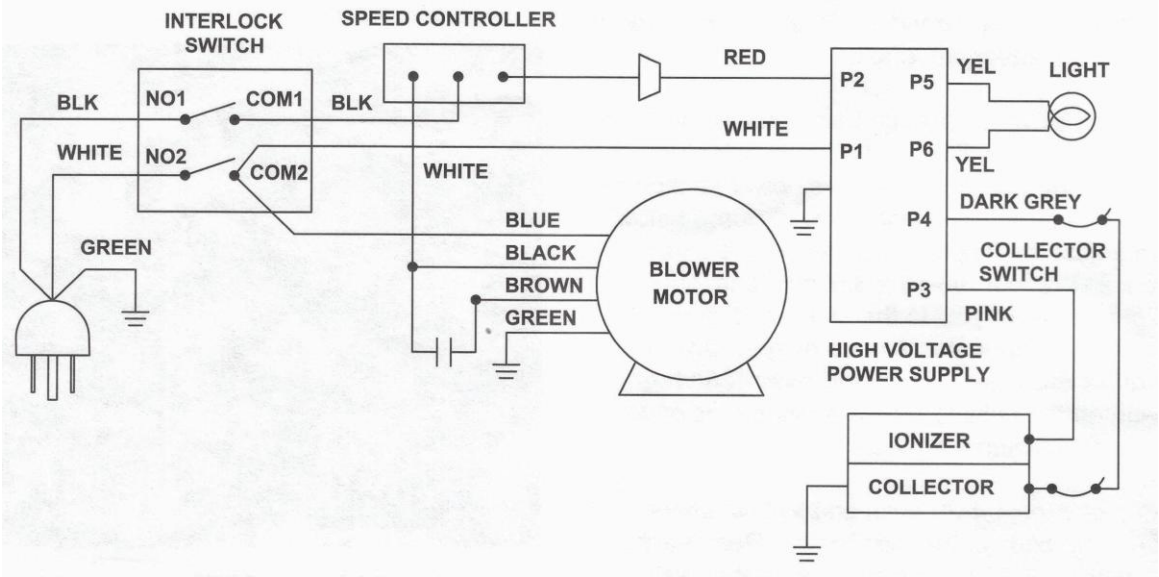


FIGURE 14 – SCHEMATIC, 120 OR 208-230, SINGLE PHASE

INSTALLATION INSTRUCTIONS TO ADD MISTBUSTER CELL MODULE TO A MISTBUSTER

Preparing MistBuster 500 (MB)

1. Turn off power, and unplug from line-in source
2. Remove the right side cover plate using a Phillips screwdriver.
3. For retrofitting units, place MB on top of Double Pass Module (DPM) and trace 7/8”[22mm] diameter hole on bottom of MB. (For units purchased after 6/30/02, push out knockout in bottom of MistBuster.)
4. Drill out 7/8”[22mm] diameter hole.

Preparing MistBuster Cell Module (DPM)

1. Remove the right side cover using Phillips screwdriver.
2. Apply silicone glue to the top of the module around the outside of the bolt pattern

Assembling the Two Units Together

1. Set the MistBuster 500 on top of the DPM module making sure the 7/8”[22mm] diameter holes line up between MistBuster and DPM module.
2. Using the (14) supplied 20 x 1”[25mm] long bolts and nuts, fasten the two units together finger tight.
3. Using the supplied strain relief, push it through the 7/8”[22mm] dia. hole and tighten. Tighten all of the rest of the 1”[25mm] long bolts.

Connecting the AC Electrical Power Together

1. First familiarize yourself with the Electrical Schematic, SEE FIGURE 15. Locate the black, white and green wires that are wire tied together in the module cabinet, and push them through the 7/8”[22mm] strain relief.
2. In the existing MistBuster 500 electrical enclosure there is a high voltage power supply with the terminals labeled P1 and P2 for the 120 volt version. (On the 240 volt version there is a transformer with two terminals not labeled, use these as P1 and P2.)
3. Unplug the red wire from P2. Plug in the black wire from DPM interlock switch to P2 of MistBuster. Notice that the black wire has a piggyback connector. (Similar to the existing piggyback connector on P2.)
4. Connect the red wire back to the piggyback connector, P2 of MistBuster.
5. Locate the white wire coming to P1 of power supply
6. Unplug this wire from P1. Plug in the white wire from the DPM interlock switch to P1 of MistBuster. Notice that the white wire has a piggyback connector.
7. Connect the white wire back to the piggyback connector, P1 of MistBuster.
8. Now connect the green wire with the round terminal connector to the other green wires that are screwed to the cabinet near the top of the cabinet with a Philips screw.
9. Reattach side covers to both units reusing Philips screws.

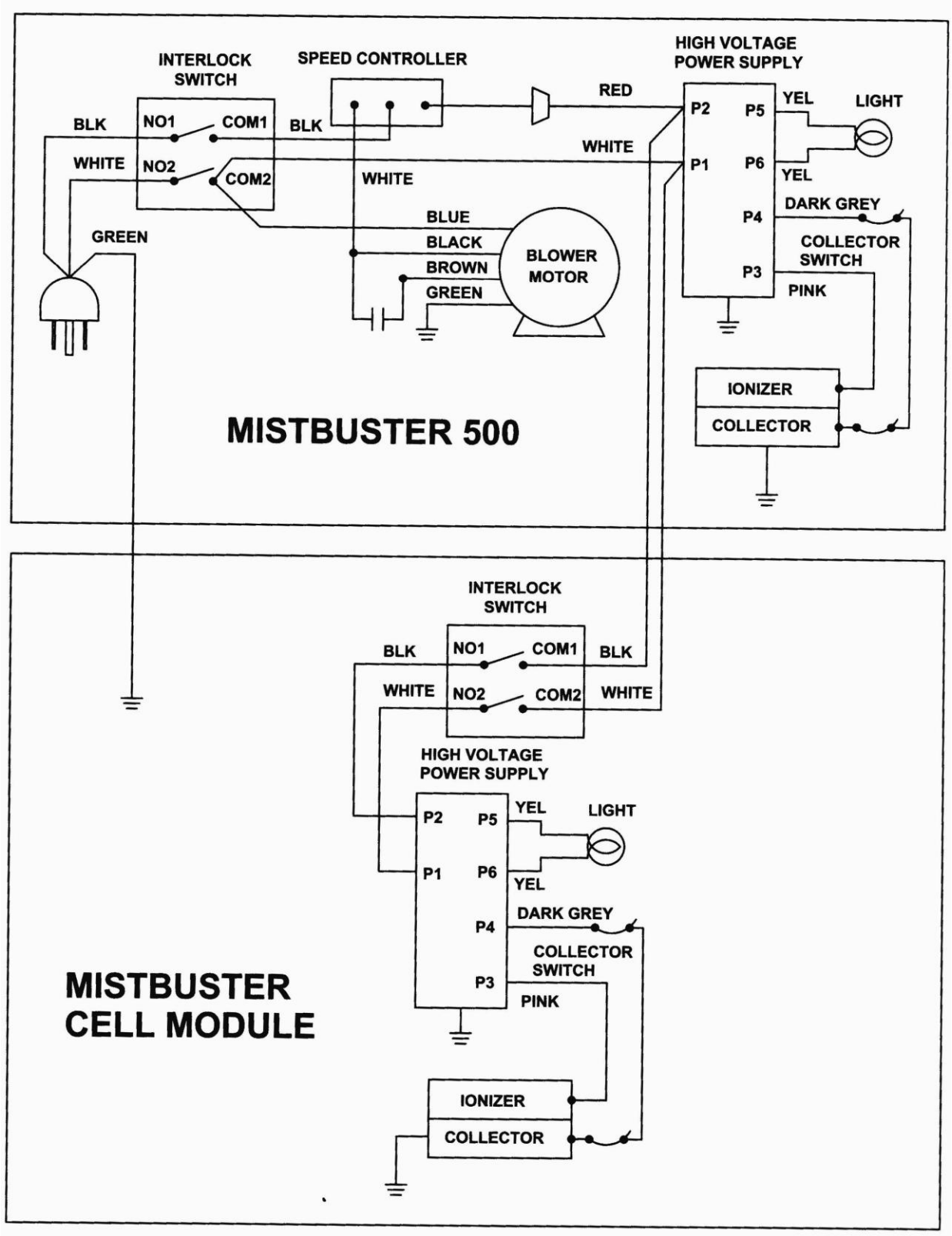


FIGURE 15 – SCHEMATIC FOR DOUBLE PASS MODULE

START UP

1. Start up the MistBuster by rotating the control knob clockwise. **NOTE: Run the MistBuster at the lowest possible speed setting.** 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 MistBuster is equipped with a variable motor speed controller. **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.**

5. The coolant selector switch should be adjusted out for oil metalworking fluid and in for water-based & synthetic metalworking fluid.

ROUTINE MAINTENANCE

⚠ CAUTION

1. **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.**

2. **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 detergent warning label.**

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

The direct mount MistBuster 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 cell 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 will 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. It is very likely that the mist impingers will require cleaning more often than the electronic cell since the mist impingers are the first stage of cleaning.

Parts Washer Method

The mist impingers and electronic cell can be cleaned with a parts washer. The cleaning fluid used should be aluminum safe and the maximum pressure should not exceed 60 psi [8.7kPa].

Manual Cleaning the Electronic Cell and Impingers

1. Fill the wash tub with cell cleaning detergent and hot water per the detergent's instructions.

2. Immerse in solution for five minutes.

3. Thoroughly rinse with very hot water. Make certain no residue remains.

4. Inspect the collector plates for cleanliness. Repeat wash procedure, if necessary. Check for broken wires and bent collector plates. The cell and impingers can be installed back into the MistBuster wet. The indicator light may remain off for the normal two hour drying time.

Total Oil Cleaner

Air Quality Engineering, Inc. offers Total Oil Cleaner. This detergent was specifically designed for most water soluble and synthetic high tech cutting oils.

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 numbers for the detergent and cell coat.

HEPA FILTER OPTION

NOTICE

Handle the HEPA filter carefully to avoid damage to the filter media.

The HEPA filter weighs 25 lbs.[55kg] clean and adds an additional 12"[305mm] to the height of the MB.

1. Install the two anchor brackets to the center of both sides of the MistBuster cabinet by removing the two bolts/washers (on each side of the MistBuster). Position the anchor bracket and bolt into place using the same bolts/ washers.

2. Center the HEPA filter on top of the MistBuster exhaust grille with gasket side down. **(NOTE: Airflow arrow points up towards ceiling).**

3. Install the HEPA retainer brackets by hooking one end to the filter frame and bolting the other end to the anchor brackets. See Figure 16.

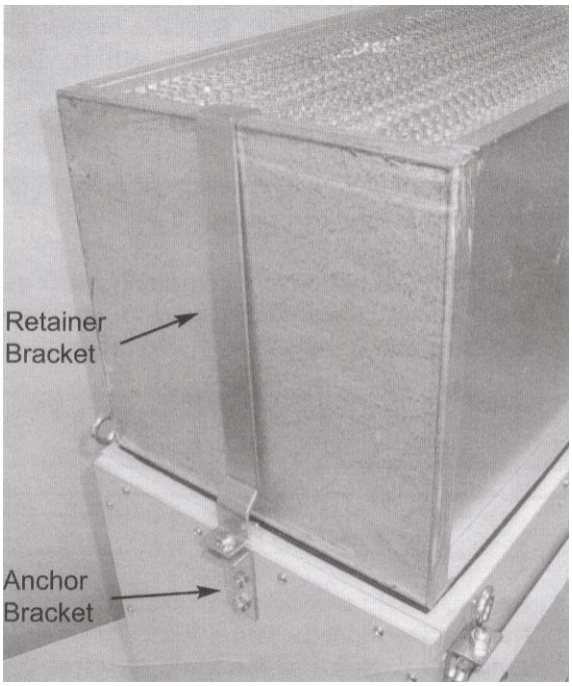


FIGURE 16

TROUBLESHOOTING

⚠ WARNING

The following instructions are intended for qualified service personnel only. Dangerous line voltage circuits are exposed during this procedure. Disconnect power at fuse before servicing the unit.

The Motor Won't Start

The motor and blower utilized in the MistBuster are integrated and should spin easily by hand. Be sure the blower wheel spins freely. If it does not, check for obstructions or replace as necessary. Check that the correct voltage has been applied. Be sure the interlock switch is depressed. Note that the unit will not function if the interlock switch is not depressed (i.e. The filter access door is open.)

The Indicator Light is Out

Remove the electronic cell from the MistBuster. Close the filter access door and re-energize the unit. If the indicator light still fails to light, replace the power supply. If the indicator light comes on now, check the electronic cell for a short.

Checking the Electronic Cell

Visually inspect the cell for –

- Bent collector plates
- Broken ionizing wires
- Dirt accumulation on insulators
- Dirt accumulation on collector plates
- Broken or damaged electrical contacts
- Small metal shavings from machining

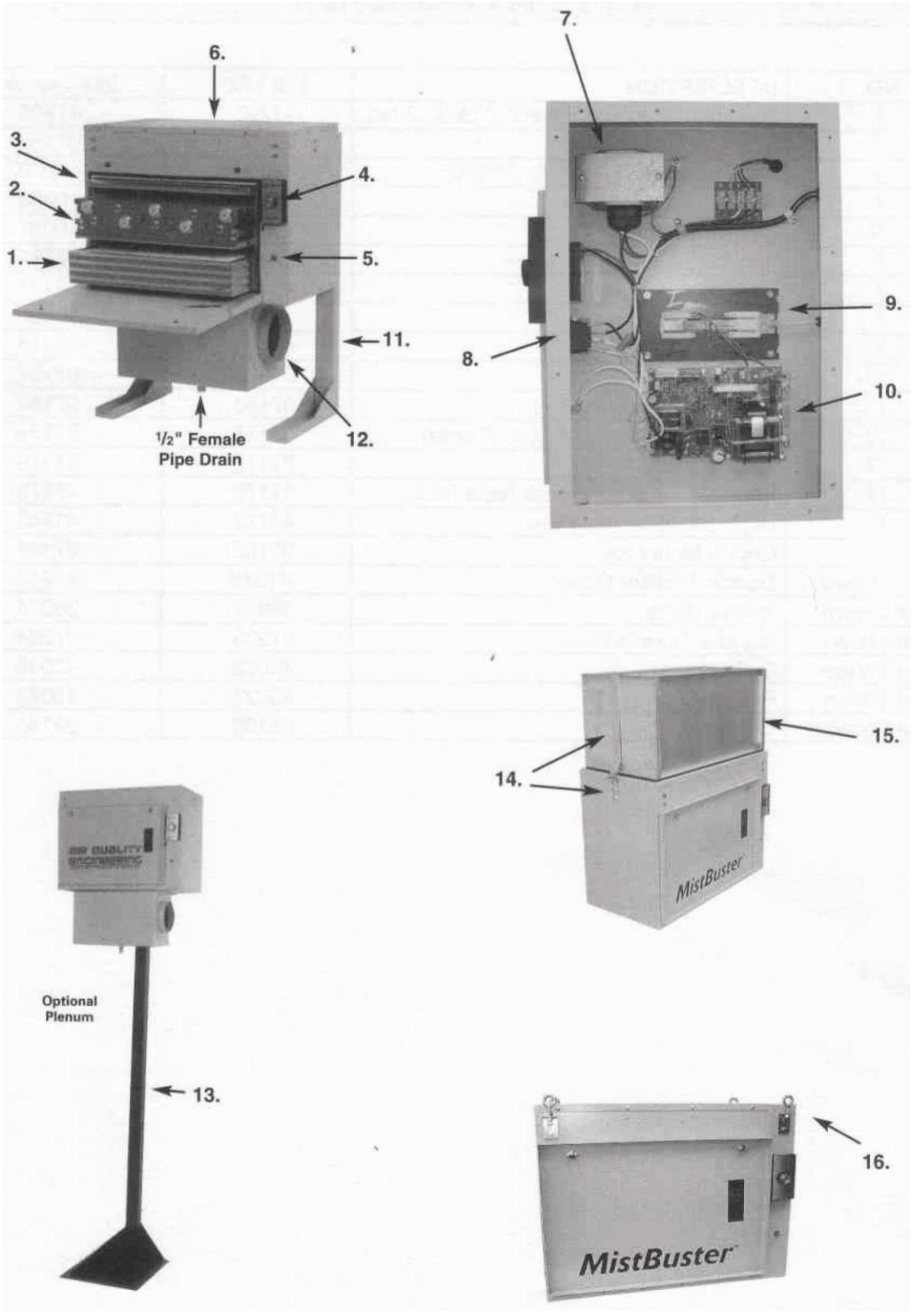
An ohmmeter may be used to check resistance between the outside frame of the cell and both the ionizer and collector contacts. In each case, the resistance should be infinite (open circuit).

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.

PARTS LIST

NO.	DESCRIPTION	120 VAC	208-240 VAC
1	Aluminum Mesh Impingers, 2”[51mm] think 2 req.	41205	41205
2	ESP Cell	07192	07192
3	Aluminum Mesh Impingers, 1”[25mm] think 1 req.	41050	41050
4	Speed Controller	10251	10253
5	Indicator Light	10097	10097
6	Motor / Impeller	07184	07185
7	Capacitor	40104	40104
8	Interlock Switch	10106	10106
9	Contact Board	46113	46113
10	Power Supply	07190	07191
11	Machine Mount Stand	07180	07180
12	Plenum, includes 2 covers, 6”[152mm] port	07175	07175
13	Pedestal Stand	07176	07176
14	Hepa Option Kit, includes hepa filter	07178	07178
15	Hepa Replacement Filter	41142	41142
16	Ceiling Mount Kit	07186	07186
Not Shown	Dacron Prefilter Option	41215	41215
Not Shown	Ionizer Wires (SUPER WIRES)	38027	38027
Not Shown	Double Pass Module	07205	07206
Not Shown	Diffuser	22183	22183
Not Shown	½”[13mm] Male Elbow	30709	30709
Not Shown	½”[13mm] tubing	67139	67139
Not Shown	4”[102mm] Port	05554	05554
Not Shown	6”[152mm] Port	05537	05537
Not Shown	8”[203mm] Port	05538	05538
Not Shown	4”[102mm] Hose	07252	07252
Not Shown	6”[152mm] Hose	07228	07228
Not Shown	8”[203mm] Hose	07229	07229
Not Shown	4”[102mm] hose clamp	30774	30774
Not Shown	6”[152mm] hose clamp	30684	30684
Not Shown	8”[203mm] hose clamp	30033	30033
Not Shown	Wash container	30182	30182
Not Shown	Detergent	45008	45008
Not Shown	Total Oil Cleaner	45036	45036
Not Shown	Cell Coat	45023	45023

- See next page for part locations


6.
3.
2.
1.
4.
5.
11.
12.
½" Female
Pipe Drain
7.
8.
9.
10.
14.
15.
MistBuster
Optional
Plenum
13.
16.
MistBuster

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., 7140 Northland Drive North, Minneapolis, Minnesota 55428-1520 within 30 days of original purchase.

2. AUTHORIZATION: The purchaser will contact AQE at (763) 531-9823 for authorization, returned goods number (RGA) 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 (RGA) clearly displayed on the outside of the 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 PRODUCT. Some states do not allow the exclusion or limitation of consequential damages so this limitation may not apply to you.

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