



DUST  
COLLECTING  
SYSTEMS

Installation, operation  
and maintenance manual.



**MAXIVIBE™**

**AMV-170, AMV-270, AMV-350,  
AMV-450, AMV-540, AMV-570,  
AMV-700, AMV-810, AMV-900,  
AMV-1050, AMV-1140 & AMV-1350**

This manual is property of the owner. Leave with the unit when set-up and start-up are complete. AQC Dust Collecting Systems inc. reserves the right to change design and specifications without prior notice.

## Introduction

This manual refers to the *Maxivibe* dust collector and its shaker cleaning system. It includes important information on the installation, function and maintenance of your dust collector. You must read this manual thoroughly and apply all directives. You must also inform the personnel using the dust collector about the safety measures and maintenance instructions.

### Important notification!

The use or type of dust to be filtered may require the need of an explosion venting system. Dust collectors are not automatically equipped with such a device unless stated when ordered. Contact A.Q.C. Inc. If you have any doubt as to the use of your dust collector.

**Warning :** Injuries or material damages may occur if the directives are not applied and/or followed.

## Information on the dust collector

Model :	_____	Serial number :	_____
Delivery date :	_____	Date of installation :	_____
Name of customer :	_____		
Address :	_____		
	_____		
Type of filter :	_____		
Accessories :	_____		
Other :	_____		
	_____		

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## Presentation

The *Maxivibe* unit is a dust collector which is thoroughly cleaned by means of a shaker without the use of compressed air. The filter envelope is cleaned automatically (motor) or manually (handle) depending on the model ordered.

This dust collector may have different dust storage systems such as removable drawers (fig. 1.1), low silhouette with removable vat (fig. 1.2), hopper with barrel (fig. 1.3) or a cart on casters (fig. 1.4).

The filtration surface on *Maxivibe* units vary from 270 to 450 sq. ft. for a single cabinet type, 540 to 900 sq. ft. for a double cabinet type and 810 to 1350 for a triple cabinet type.

All *Maxivibe* units include:

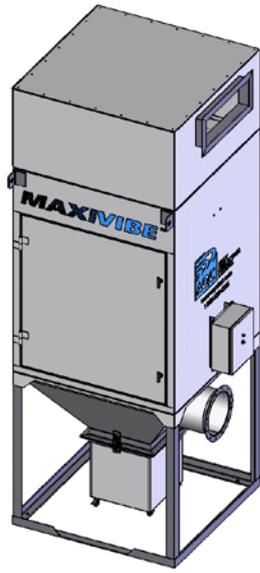
- Welded reinforced steel cabinet
- 1 to 3 filter envelopes each having from 270 to 450 sq. ft. of filter surface for a recommended air to cloth ration of 8 : 1
- Shaker cleaning system of the filter envelope
- Fan/Blower
- Acoustical casing
- Control panel for the fan and automatic cleaning system (if ordered)
- 3 step paint preparation: degreasing, primer and polyurethane base paint final coat.

The *Maxivibe* unit is delivered fully assembled or in sections (depending on model ordered) which will require field assembly.

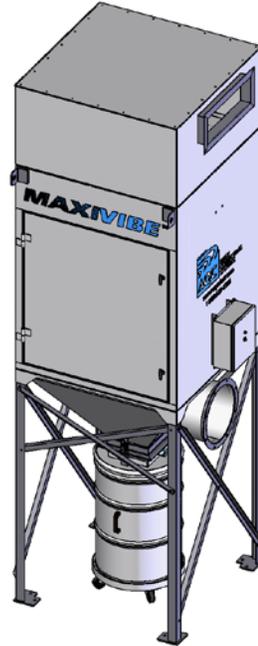
The electrical connection to the fan and automatic cleaning system must be performed on the jobsite when installing the dust collector.



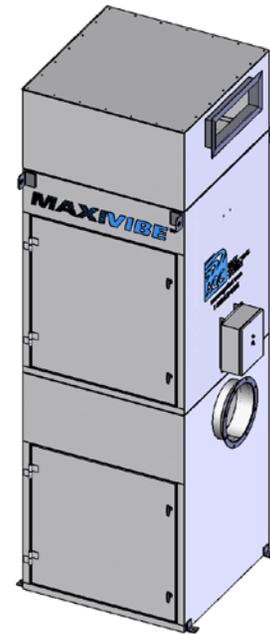
**Figure 1.1**



**Figure 1.2**



**Figure 1.3**



**Figure 1.4**

## Normal usage

The *Maxivibe* unit is designed to filter harmful dusts from the air resulting from a fabrication process. Each *Maxivibe* dust collector is built based on the request and information supplied by the customer for a given application and should not be used for any other application unless approved by A.Q.C. Inc.

The dust collector should be used at intervals in order for the filter envelope to be cleaned at the end of each cycle of usage.

### **Warning!**

Flammable and /or explosive solids and solvents consist of a fire or explosion hazard within the collector cabinet. Such matters should not be filtered unless the collector is designed to that effect an equipped with an explosion venting system and/or a fire extinguishing device. Special care is mandatory when the collector is used for flammable and/or explosive solids and solvents. Any object on fire or bearing a fire hazard such as sparks created by grinding/buffing or smoking material should not be allowed to enter the collector cabinet as it may cause a fire or explosion.

## Functioning

During normal use, the *Maxivibe* unit brings dust filled air toward the collector inlet. The smaller particles are vacuumed to the filter envelope and the larger particles fall into the dust storage compartment. The smaller particles are stored into the filter envelope and clean air is pushed toward the collector outlet.

### ***Cleaning of the filter envelope***

#### **Automatic shaker (optional)**

When the collector is shut down, a timer starts the shaker sequence after the fixed time delay of stopping the motor has expired. The shaker then starts for a predetermined run-time. Motor and control panel electrical power must be maintained to start the shaker sequence.

#### **Manual shaker**

When the collector is shut down, the operator must wait until the motor has stopped completely. The cleaning is made by vigorously shaking the handle on the side of the unit.

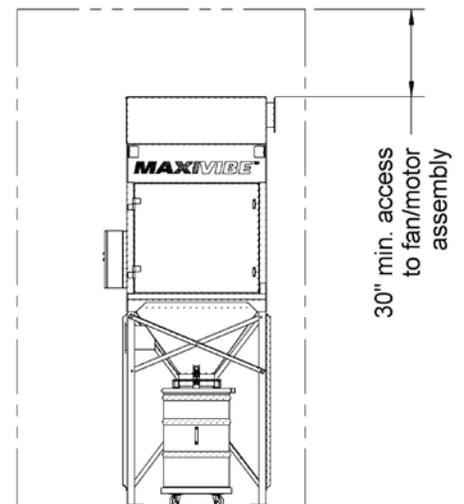
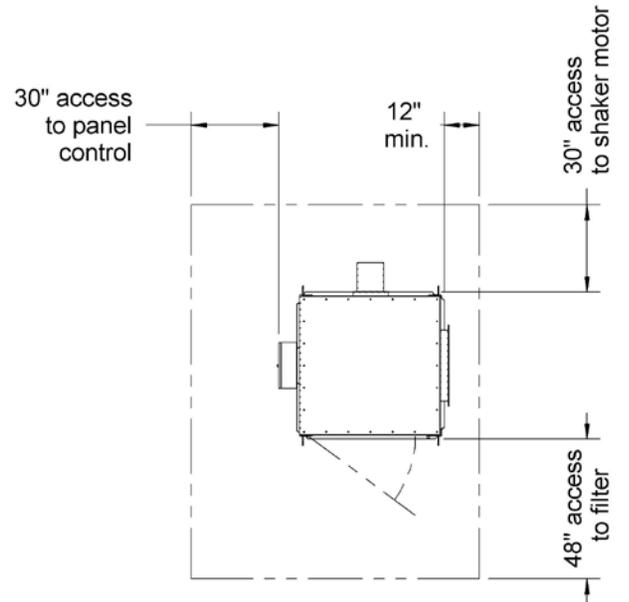
## Installation

### *Inspection of the material*

The *Maxivibe* unit is shipped on one (1) or multiple skids. Proceed with a visual inspection upon receiving the material for any damages or missing skid(s). **NOTE:** if damages are apparent upon receiving the material, indicate so on receiving slip (freight waybill) and confirm by having the truck driver sign the waybill with any discrepancy. A.Q.C takes photos of material prior to shipping. Generally, shipment includes a skid for the collector cabinet and another one for the dust storage system. Other optional devices such as an explosion venting system or flame front damper may also be shipped on separate skids.

### *Area of installation*

1. The area chosen to install the collector should be able to support its weight, its accessories, dust storage system and ventilation ducting. The construction of a solid flat surface such as a concrete pad may be needed.
2. Install the collector in a way to gain access to the control panel, the fan/motor assembly, shaker motor and filter envelope such as suggested in drawing # 2.



**Drawing # 2**

## Assembly

### Necessary tools

The following tools and equipment are recommended for the assembly of the dust collector :

Crane or fork lift  
 Swing jib  
 Chains  
 Shackles  
 Eye bolts  
 Tapered steel pins  
 Ratchet set  
 Spanners and/or wrenches  
 Power drill  
 Concrete drill bits  
 Concrete anchors  
 Nuts, washers and bolts  
 Self tapping crews  
 Silicone tubes

### Fitting

1. Prepare the area where the collector is to be installed. Ensure the area is clear of any obstacle or debris.
2. Using eye bolts and shackles, lift the dust storage compartment over the area where the collector is to be installed and gently lower into place.
3. Once this section is firmly into place, use a level to ensure the collector is straight. Install anchor bolts to secure the collector to the ground.
4. Install a grounding wire.

**Warning !**  
 Apply two (2) strips of adhesive on the flat part of the dust storage compartment, one (1) strip outside of the holes and the other inside of the holes. (drawing # 3).

5. Lift the collector cabinet using the eye bolts. Position above the dust storage compartment making you sure to align the hole pattern of the cabinet with the dust storage compartment hole pattern. Align temporarily into place using tapered steel pins.

**Warning!**  
 The use of a swing jib is recommended in order to avoid damages to the collector cabinet.

6. Gently lower the cabinet onto the dust storage compartment and keep the hole patterns aligned.
7. Tightly bolt the two (2) sections together using the nuts, bolts and washers. Collector has to be airtight.



Drawing # 3

**Multiple cabinet version:**

8. Collectors with double or triple cabinets, the installation of the acoustical enclosure and fan/motor assembly will be required.  
Lift the fan/motor assembly and position above the collector while aligning the fan inlet with the collector opening. Fasten the fan using the nuts, bolts and washers.
9. Locate the pre-installed fasteners that will be used to join the roof and acoustical enclosure around the roof of the collector and remove them.
10. Lift the acoustical enclosure and position above the collector cabinet. Align the acoustical hole pattern with collector cabinet hole pattern using tapered steel pins. Attach both components together using the fasteners.
11. Proceed with electrical connection.

## Electrical connections

### **Warning!**

The electrical connection must be performed by a certified electrician and by following the local building rules and regulations. For safety measure, disconnect all electrical power prior to installation.

The collector control panel controls the fan and the motorized shaker system.

The control panel may be installed directly on the *Maxivibe* unit, either the unit is located inside or outside of the building or it may also be remote.

1. Using the electrical diagram supplied with the control panel, carry out the electrical connection from the breaker (supplied by customer) to the control panel.
2. With double or triple *Maxivibe* collectors, the control panel is not wired to the fan motor assembly when shipped. The control panel is although pre-wired when

shipped. Connect the control panel to the motor.

3. Apply electrical power to the control panel and adjust time delays *T1* and *T2*. Refer to the *Maintenance* section, under control panel for instructions on time delay adjustments.
4. Check for proper motor rotation.

*Drawing # 4 shows the operation with a typical starter equipped with an automatic shaker system :*

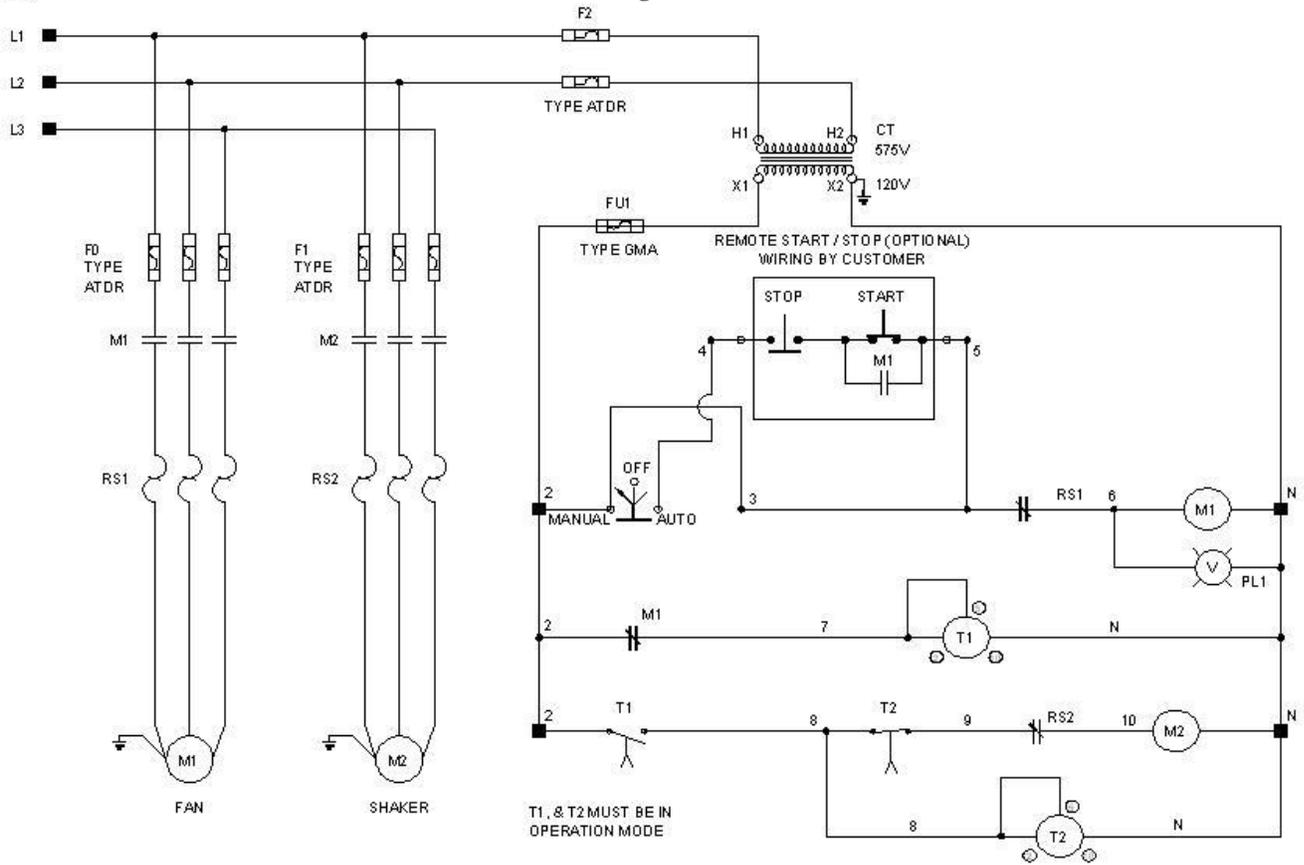
When the selector is in "MANUAL" position, the fan is on.

When the selector is in "OFF" position, the fan stops, *T2* runs its time delay, *T3* then starts its delay for the shaker motor operating time. You must switch the selector back to "ON" to restart the fan and the automatic cycle.

When the selector is in "AUTO" position, the fan starts only if the exterior connections complete the circuit. Then, *T2* runs its time delay, *T3* then starts its delay for the shaker motor operating time.

POWER AND  
OVERLOAD PROTECTION  
SUPPLIED BY CUSTOMER  
575/3/80

**Drawing # 4**



## Ducting systems

- The dust collector should be installed as close as possible to the machines creating the dust. This is to minimize the length of ductwork.
- If possible, do not install short radius elbows or bends.
- Install taps and branches having a 30 degree slope or less.
- Do not install straight 90 degree taps (T's).
- Join ductwork and branches using self tapping screws and silicone.

## Start-up

### Check list

Before starting the collector for the first time, the steps listed below should be followed to ensure the collector will work properly.

- Remove all objects in the vicinity of collector inlet and outlet.
- Check for proper installation of all accessories and optional equipment.

## Shaker system

- Check if filter envelope upper frame is in place.
- For automatic shaker systems, check if the connecting rod tied to the frame and reducer is fixed and solid.

## Electrical connection

### Warning!

The electrical connection must be performed by a certified electrician and by following the local building rules and regulations. For safety measure, disconnect all electrical power prior to installation.

- Check if electrical connections are watertight and proper electrical current.
- Check if all remote controls (if supplied) are connected to the control panel and all switches are at the "OFF" position.
- Supply power to the collector.
- Start the fan and shut it down immediately. Check motor rotation.

### Start/Stop procedure

#### Starting the unit with a new filter envelope

Shut inlet and outlet dampers (if installed) at about 50% before starting the unit. Allow a few hours for dust to penetrate the filter envelope before starting the shaker system. This will translate into better filtration efficiency and longer filter envelope lifetime.

#### Normal start-up

Start the collector and allow dust to enter the unit.

## Shutting the unit OFF

Shut down power to the collector and close all inlet and outlet dampers so that dust does not flow back into the unit. You may now access the collector for inspection or filter envelope replacement.

## Safety measures

### **Workers/Staff**

Any maintenance on the collector should be accomplished by a minimum of two (2) workers. When finished, retrieve all tools inside the collector.

#### **Warning!**

Never do maintenance tasks by an unaccompanied worker. All personnel must be accounted for before restarting the collector.

All maintenance staff should wear protective clothing or apparatus such as goggles, gloves, breathing equipment or such devices before working inside the collector.

## **Electrical components**

All Tous les composants électriques doivent être mis hors-tension lors de leur manipulation afin d'éviter tout choc ou court-circuit électrique de même que lors de l'accès à l'intérieur de l'enceinte.

## **Explosive dusts**

If stored dusts have an explosion or flammable risk once stored in dust storage compartment, an explosion relief venting system or a fire extinguishing device is necessary. *Should you have any doubt concerning filtered dusts, contact A.Q.C. or its representative.*

## **Anchors**

All sections of the collector should be firmly anchored to the ground in order to prevent tipping of the unit should an explosion occur or due to extreme winds.

## **Interior installation**

When a dust collector is installed inside of a building, the collector should be installed within 10 feet of an exterior wall and be connected to a vent duct connected to the exterior of the building. This vent duct system should possess the same pressure capabilities of the collector.

If the filtered air coming from the collector is recycled back into the building, certain precautions should be taken in order to exhaust air outside of the building in the event a filter envelope inside the collector should fail in its performance or other performance deficiency. A secondary filtration system should be considered to protect staff or personnel within the building.

Bursts of air exhausted out of the collector or of the explosion vent should be directed out of the way of pedestrian walkways, parking lots, offices or any other area where people could have access.

### ***Processes creating sparks***

If dusts or collected matter is present in the collector or in the equipment connected to the collector, no activity that could create sparks such as welding should take place until the system has been shut down and thoroughly cleaned. If similar operations should be performed in the area of the filter envelope, such filter should be removed and stored in a dry area.

## **Maintenance**

### **Warning!**

Refer to the *Safety measures* section before proceeding with the inspection or maintenance of the dust collector.

A scheduled preventive maintenance program will reduce downtime situations and increase lifetime of the unit. Charts shown in this chapter refer to maintenance and procedures related in solving malfunction. Timers and delays may be modified with conclusive experimenting of the system on a particular application.

### ***Replacing the filter envelope***

The lifetime of the filter envelope is directly linked to its resistance to the dust filtered and does not necessarily require a regular filter replacement.

However, if the filter envelope is torn or punctured, it needs to be replaced as soon as as possible.

### **Installation of the filter envelope**

1. Open access door to filter envelope and unhook the rubber bands holding the filter envelope to the shaker frame (photo 1).



**Photo 1**

2. Remove the rubber bands from the filter envelope.

3. Unbolt the lower frame of the filter cabinet (photo 2).



**Photo 2**

4. Remove the filter envelope and its frame from the cabinet (photo 3).



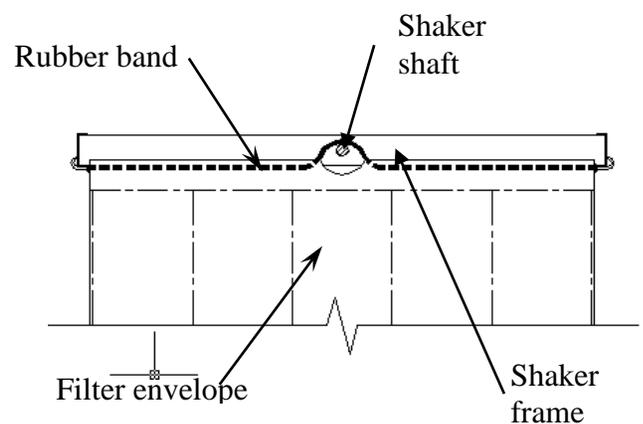
**Photo 3**

5. Unbolt stop bars from the frame (photo 4).



**Photo 4**

6. Align the new filter envelope with the frame and install the stop bars.
7. Install the filter envelope and frame back into the collector. Tighten the bolts securely to ensure the frame is sitting tightly onto the seal.
8. Slide the rubber bands back into the new filter envelope and hook onto the shaker frame. (drawing 5).



**Drawing 5**

9. Close and lock access door.

## **Control panel**

The control panel is designed to start the fan and shaker system. It allows the start of an automatic shaker sequence every time the unit is shut down.

It is possible to set the duration of the shaker time and the delay between the shutdown of the fan and the start of the shaker sequence.

## **Programming instructions**

The shaker settings are adjusted at the factory.

To modify the settings, turn timer knob *T1* to the desired setting. To modify the duration of shaking mechanism, turn timer knob *T2* to the desired setting. Values shown on knobs are in seconds.

## **Explosion vent**

*A. Q. C., Inc.* will not be held liable for injury or damages caused by a fire, a blast or an explosion as per the agreement made upon the construction of the collector.

However, the collector is built as per NFPA-68 standards concerning explosion venting systems. The total surface of the venting system is calculated using this norm. The explosion vent is held shut using special handles specially designed to pop open if a sufficient pressure is applied. The handles are adjusted at the factory following the requirements of the manufacturer, the surface of the explosion vent and attachment method.

### **Warning!**

The explosion vent must face toward an area away from workers, offices, pedestrian walkways or any other area which may be accessible to persons, close to vegetation or any other substance that may be damaged in the event of an explosion.

## Inspection and maintenance

The chart indicated below shows different inspections and the frequency at which they should be performed.

Frequency of operations	Component	Procedure
Daily	Dust collector	Examine air outlet for possible dust or smoke accumulation. Refer to <i>Troubleshooting</i> section.
Weekly	Filter envelope	Check for leaks on the filter envelope. Repair or replace if necessary. Ensure the filter envelope is securely fastened.
	Automatic shaker	Examine the shaker mechanism for any unusual noise or vibration, broken parts or loose components.
Semi-annually/Annually	Dust collector	Examine, clean and apply paint touch-ups if necessary. If needed, lubricate the shaker and shaft rocking system using lithium base grease.

## Troubleshooting

Problem	Possible cause	Solution
Smoke or dust escaping from the clean air outlet	Filter envelope not installed correctly	Tighten fasteners on filter frame to ensure proper seal
	Leak in filter envelope	Repair or replace filter envelope
	Damaged seal	Repair or replace seal
Drop in filter efficiency	Shaker system not functioning correctly	Examine the shaker system (motor, reducer, shaft, frame) Repair or replkae if necessary. Increase frequency of shaker actions.
	High level of humidity within the collector	Check humidity level or relative humidity within the collector. A slightly higher humidity level may be corrected by closing some gates and starting the cleaning cycle. If the humidity level is too high, take necessary measures to dry the air before it enters the collector.
	Air volume too low or too high	Check for speed and motor rotation, the position of gates and air volume at collector outlet. Make necessary adjustments to obtain original specifications.
	Filter envelope not suited for dust to be filtered	Replace filter envelope with a filtration system according to the dust entering the system.
	Filtered air temperature is higher than normal	Check temperature of air to be filtered. Bring necessary adjustments to obtain satisfactory temperature.
	Static electricity builds up in collector	Check for appropriate grounding wires of collector, components and ducting system. Increase relative humidity of air to be filtered if lower than 50% R.H. until the dust to be filtered is affected.

<b>Problem</b>	<b>Possible cause</b>	<b>Solution</b>
Pressure differential is too high	Air volume is too high	Check for speed and rotation of motor, the position of gates and air volume at collector outlet. Make necessary adjustments to obtain original specifications.
	Ineffective cleaning system	Increase frequency or duration of cleaning sequence. Check cleaning system.
	Humidity clogs the filter envelope	Lower humidity level and replace filter envelope if damaged.
	Presence of dusts in clean air ducting system	Clean ducting system, check seals and replace if necessary. Look for filter envelope leaks and check for dust on clean air side of collector. Replace filter if necessary.
	Presence of static electricity within the collector	Ensure grounding wire is connected. Increase relative humidity of air to be filtered if lower than 50% R.H. until the dust to be filtered is affected.
	Incorrect rotation speed of fan/motor assembly	Check for fan/motor rotation and correct.
Air volume through the collector is less than original design	Pressure differential is too high	Refer to section above on <i>Pressure differential</i>
	Air leaks in the system	Check doors, ducting and seal leaks.
	Air leaks in the collector	Examine dust storage section, access doors, explosion vents and inlets to and from collector. Seal all leaks
	Air is minimal or not sufficient	Check filter envelope (any debris, clogged filter, obstruction in airflow) Remove or clean.

<b>Problem</b>	<b>Possible cause</b>	<b>Solution</b>
Rapid deterioration of filter envelope	Temperature is higher than normal in collector.	Check and evaluate filtered air temperature. Do not exceed such temperatures.
	Dust filtered is not compatible with filter envelope	Check for dust properties to be filtered. A.Q.C. representative or consultant will guide you for compatible filter. Replace if necessary.
	Presence of humidity in filtered air	Reduce or modify humidity factor. Replace filter envelope.
	Clog in hopper section	Find clog and clean hopper.
	Incorrect installation of filter envelope	Examine the filter envelope and locate damages caused by a faulty installation. Repair or replace filter envelope if necessary.
	Abrasion of filter envelope due to high inlet velocity	Examine the filter envelope for holes or punctures. If so, install a diffuser at air inlet.





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