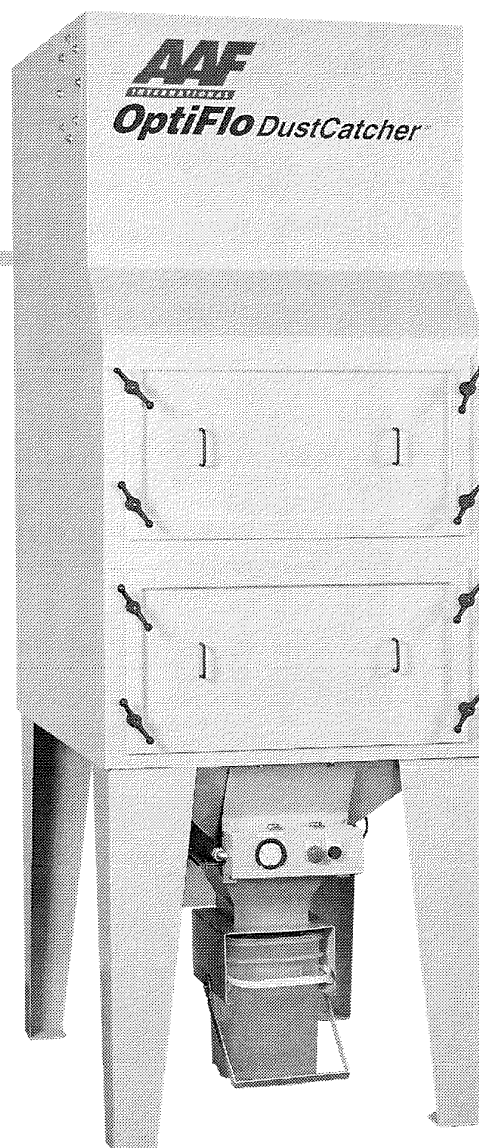




# **OptiFlo DustCatcher™ Complete In-Plant Dust and Fume Collector**

*Installation, Operation,  
and Maintenance Instructions*



## CONTENTS

|             |  |           |
|-------------|--|-----------|
| <b>1.0</b>  | <b>INTRODUCTION</b>                                  | <b>3</b>  |
| 1.1         | About This Document                                  | 3         |
| 1.2         | Shipping and Receiving                               | 3         |
| 1.3         | Assembly   | 3         |
| <b>2.0</b>  | <b>GENERAL DESCRIPTION</b>                           | <b>4</b>  |
| <b>3.0</b>  | <b>INSTALLATION INSTRUCTIONS</b>                     | <b>4</b>  |
| 3.1         | Space Requirements                                   | 4         |
| 3.2         | Foundation and Anchoring                             | 4         |
| 3.3         | General Erection Procedure                           | 4         |
| 3.4         | Ductwork   | 4         |
| 3.5         | Electrical Controls and Wiring                       | 5         |
| 3.6         | Compressed Air Connection                            | 5         |
| 3.7         | Installing Filter Cartridges                         | 5         |
| <b>4.0</b>  | <b>INSTALLATION OF OPTIONAL COMPONENTS</b>           | <b>6</b>  |
| 4.1         | Connection of 55-Gallon Drum Dust Container          | 6         |
| 4.2         | Fume Extractor Arm                                   | 6         |
| 4.3         | Casters  | 7         |
| 4.4         | Second Stage HEPA Filter                             | 7         |
| 4.5         | Explosion Vent                                       | 7         |
| 4.6         | Spark Proof Fan and Explosion Proof Motor            | 7         |
| 4.7         | Pressure Demand Control and Rotary Disconnect Switch | 7         |
| <b>5.0</b>  | <b>INITIAL STARTUP INSTRUCTIONS</b>                  | <b>7</b>  |
| 5.1         | Preparation for Startup                              | 7         |
| 5.2         | Timer Control  | 8         |
| 5.3         | Pressure Demand Control                              | 8         |
| <b>6.0</b>  | <b>MAINTENANCE</b>                                   | <b>9</b>  |
| 6.1         | As Necessary   | 9         |
| 6.2         | Daily  | 9         |
| 6.3         | Monthly  | 9         |
| 6.4         | Six Months   | 10        |
| 6.5         | Filter Cartridge Replacement                         | 10        |
| <b>7.0</b>  | <b>TROUBLESHOOTING</b>                               | <b>10</b> |
| 7.1         | High Pressure Drop Reading                           | 10        |
| 7.2         | Visible Discharge                                    | 10        |
| 7.3         | Insufficient Hood Control                            | 10        |
| 7.4         | Filter Cartridge Problems                            | 11        |
| 7.5         | Back Pulsing   | 11        |
| <b>8.0</b>  | <b>DUCT AREAS</b>                                    | <b>11</b> |
| <b>9.0</b>  | <b>SPARE PARTS</b>                                   | <b>12</b> |
| <b>10.0</b> | <b>GENERAL PRODUCT INFORMATION</b>                   | <b>12</b> |

## 1.0 INTRODUCTION

### 1.1 ABOUT THIS DOCUMENT

This document contains the information necessary to properly receive, assemble, install, operate, and maintain the OptiFlo DustCatcher self-contained dust collector. The purchaser, installer, and operator of the OptiFlo DustCatcher **MUST** read this document in its entirety prior to installation of the equipment.

#### CAUTION

**These instructions are specific to the OptiFlo DustCatcher dust collector. All ancillary tasks including, but not limited to, electrical and mechanical work, equipment handling, and safety procedures must be performed in accordance with industry accepted practice and all relevant local, state, and federal codes.**

### 1.2 SHIPPING AND RECEIVING

The OptiFlo DustCatcher is packaged for domestic transit and shipped FOB factory.

Obtain a copy of the purchase order, the product drawing that was submitted for the order, and a copy of the bill of lading along with any other shipping papers. Upon receipt of the OptiFlo DustCatcher, these documents should be used to ensure that the correct product has been received.

Complete the following steps upon receipt of the OptiFlo DustCatcher:

- Inspect the shipment and all associated documentation. Notify the carrier immediately if there is any damage to the shipment, or a discrepancy in the shipping papers.
- Confirm that the equipment received agrees with the shipping documents.
- Confirm that the shipping documents agree with the purchase order (P.O.). Refer to the product drawing submitted for the order, as necessary.
- Confirm that the document package, consisting of this *Installation, Operation, and Maintenance Manual*, and the electrical connection diagram, has been received with the shipment.
- If it is determined that any equipment specified on the P.O. has not been delivered, and is not accounted for in the shipping documentation, contact AAF International immediately by calling 800-477-1214.

Each shipment consists of a fully assembled, individually palletized, and plastic wrapped OptiFlo DustCatcher. The standard product is completely self-contained. The fan, all controls, and the dust collection pail ship installed on the collector.

Some components do ship loose with the OptiFlo DustCatcher for installation at the job. These are as follows:

- ✓ The filter cartridges which are packed in sturdy cardboard boxes.
- ✓ Filter cartridge sealing mechanisms (one per filter cartridge).
- ✓ An inlet baffle for insertion into the OptiFlo DustCatcher at the location that the inlet duct connects to the collector.
- ✓ The pressure regulator with gauge which is used for controlling the compressed air pressure to the OptiFlo DustCatcher.
- ✓ The lid for the 5-gallon dust collection pail.

#### NOTE

**Anchor bolts for bolting the equipment to the foundation are not included as part of the OptiFlo DustCatcher and must be supplied by others. The hardware used to attach the inlet opening cover plates and the outlet panel may be used for the connection of inlet and outlet ducts.**

Some optional items may ship loose for installation at the job. Examples of these include:

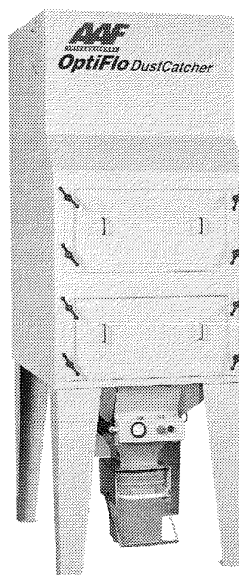
- ✓ Attachment kit for connecting 55-gallon dust collection drum to the hopper outlet. Note that the 55-gallon drum is not included as part of the OptiFlo DustCatcher and must be supplied by others.
- ✓ Fume extractor arm.
- ✓ Casters.
- ✓ Second stage HEPA filter.
- ✓ Alternate controls for remote mounting.

Consult your P.O. to determine if any such items are included in your shipment.

### 1.3 ASSEMBLY

The OptiFlo DustCatcher is a self-contained product and consequently minimum assembly is required. Assembly will generally be limited to the installation of optional components. Refer to *Section 3.0 Installation Instructions*, of this manual, for further details. Consult with an experienced installer to obtain an accurate estimate of the time and equipment that will be required. Any job-site assembly will be limited to bolting components together. **NO WELDING WILL BE REQUIRED.** Following is an outline of the assembly required for a standard OptiFlo DustCatcher. Detailed instructions regarding each of these operations are provided in subsequent sections of this manual.

1. Remove the protective plastic covering. Detach the OptiFlo DustCatcher from its pallet and, if necessary, hoist it into a vertical position (both the Size 4 and the Size 6 OptiFlo DustCatcher will ship horizontally).
2. Anchor the support legs. An exception to this would occur when the Size 2 OptiFlo DustCatcher is to be used with casters.
3. Connect the plant compressed air supply to the compressed air manifold connection on the underside of the OptiFlo DustCatcher. Ensure that the pressure regulator supplied with the OptiFlo DustCatcher is installed in the supply line adjacent to the OptiFlo DustCatcher.
4. Connect power wiring to the electrical panel on the rear of the OptiFlo DustCatcher.
5. Connect inlet air duct. Inlet duct will be supplied by others.
6. Connect outlet air duct (only if required). Outlet duct will be supplied by others.
7. Install filter cartridges.
8. Install optional components.



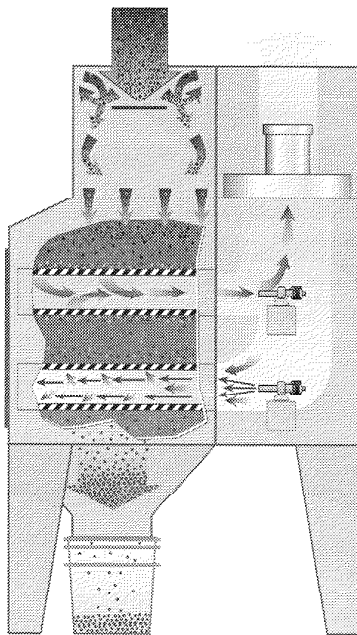
## 2.0 GENERAL DESCRIPTION

The OptiFlo DustCatcher is supplied in three standard sizes rated to move nominal airflow's of 600, 1200, and 1800 cfm of air. It provides a choice of four (4) inlet air openings, one (1) on each side and two (2) on the top.

The contaminated air enters the collector through one or more of the inlets. An internal baffle deflects and evenly distributes the dust laden air which is then drawn downwards through the collector and the filter cartridges. The dust is captured by the filter cartridges while the cleaned air passes through. The cleaned air is drawn by the fan through the clean side of the collector and discharged through the outlet. The filter cartridges are periodically cleaned by bursts of compressed air which are expelled from the compressed air surge tank/s which are located on the clean air side of the filter cartridges. The release of these compressed air "pulses" is controlled by valves mounted on the surge tank. The compressed air is directed into the filter cartridge in the opposite direction to the direction of normal airflow.

The dust that is pulsed from the filter cartridge then falls to the dust collection pall attached to the hopper where it collects until it is removed. Only a single filter cartridge is pulsed clean at any one time.

The filter cartridges are cleaned in sequence with cleaning pulses occurring at regularly timed intervals. Cleaning is continuous on the standard OptiFlo DustCatcher. An option is available which regulates the cleaning cycle based upon the pressure differential across the filter cartridge.



The OptiFlo DustCatcher features a NEMA 12 control panel on the front of the collector. The control panel includes stop and start push-buttons, and a pressure gauge which indicates the differential pressure across the filter cartridges. The pressure gauge has a range of 0 to 10" w.g. An electrical connection panel is located in a NEMA 12 enclosure on the rear of the collector. This contains the magnetic motor starter, the solid state sequencing timer board that controls the pulse cleaning of the filter cartridges, the solenoid valves that activate the pulse valves, a dry contact to allow conversion for remote stopping and starting of the collector, and all fusing.

Each of the three sizes of the OptiFlo DustCatcher is supplied, as standard, with all controls and electrical components fully mounted and wired.

The pulse mechanism comprises a compressed air surge tank and two (2) ¾" pulse valves which are connected directly to the tank. Each row of two (2) cartridges is serviced by an individual tank.

The access door on the top of the fan enclosure lifts off to reveal the fan and motor. The fan and motor assembly is designed for easy removal. The fan discharges air vertically through the top of the enclosure. An adjustable damper on the outlet allows the air volume to be regulated.

## 3.0 INSTALLATION INSTRUCTIONS

Consult the product drawing that was submitted for this order before proceeding.

### 3.1 SPACE REQUIREMENTS

A minimum of 24" clear space must be available at the rear of the collector and 36" clear space at the front for access to perform routine maintenance. Additional space may be required for inlet and outlet ductwork.

### 3.2 FOUNDATION AND ANCHORING

The foundation must be designed to be adequate to support the collector's operating weight, seismic and other loads (if any), collected dust, and any optional equipment, in accordance with appropriate codes. Ensure that the foundation is level. Consult the product drawing for anchor bolt spacing and size. Secure all anchor bolts to ensure that the collector is firmly attached to the foundation.

### 3.3 GENERAL ERECTION PROCEDURE

The OptiFlo DustCatcher ships mounted on a pallet for protection. It is recommended that it remain on its pallet until it has been moved to its final location. Remove the restraints which connect the collector to its shipping pallet and, if necessary, hoist the collector into a vertical position (both the Size 4 and the Size 6 OptiFlo DustCatcher will ship horizontally). Spreader bars must be used at all times when handling the OptiFlo DustCatcher to normalize loads and to prevent any possibility of damage. These shall be connected to the four (4) lifting eyes provided on the top of the collector for this purpose. Only personnel experienced in rigging and handling heavy equipment shall be employed for this task.

Locate the collector on a properly prepared foundation and anchor it firmly at each of the four legs using appropriate anchor bolts.

### NOTE

The inlet duct shall be sized to provide a minimum duct velocity of 4000 feet per minute.

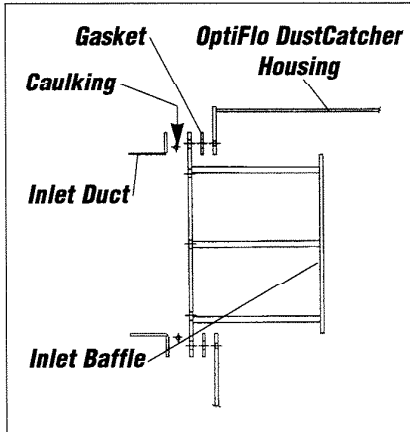
### 3.4 DUCTWORK

All ductwork shall be of sufficient gauge and structural strength to withstand the system design pressure and shall be independently supported. Prepare to connect the inlet duct to either of the inlets on the collector. First, remove the inlet cover plate provided, while retaining the hardware and gasket. The tapped holes provided to support the cover plate will also be used to connect the inlet duct. Now, obtain the inlet baffle plate that has been provided with the collector.

The baffle plate is connected to a flange which, when the installation is complete, will be sandwiched between the inlet duct and the collector wall. The hole pattern on the flange matches that on the collector.

### 3.0 INSTALLATION INSTRUCTIONS - CONTINUED -

Place the gasket, that was previously set aside, between the collector wall and the inlet baffle plate flange and insert the baffle. Liberally caulk the joint between the inlet baffle flange and the flange of the inlet duct to ensure an airtight seal. A butyl, RTV or similar caulk (to be provided by others) is acceptable for this purpose. Finally, bolt the inlet duct and the baffle plate to the collector using the hardware supplied with the inlet cover plate.



Consult *Industrial Ventilation, A Manual of Recommended Practice*, published by the American Conference of Governmental Industrial Hygienists, for information on designing ducts. Close coupling a duct elbow to the collector inlet will result in an uneven velocity profile. This condition may result in less than optimum collector performance. A straight run of duct immediately before the inlet provides the best airflow distribution at the inlet. A straight run of duct equal in length to 5 - 10 duct diameters is recommended.

The OptiFlo DustCatcher is designed to be used with or without an outlet duct. If the user wishes to utilize an outlet duct, it is recommended that the plate containing the outlet opening and the outlet damper be removed and that an outlet transition duct (to be supplied by others) be bolted directly to the collector using the existing tapped bolt holes and connecting hardware. Caulk the joint between the outlet duct flange and the collector to ensure an airtight seal. If this is done, an alternate means of regulating airflow must be provided.

#### ■ 3.5 ELECTRICAL CONTROLS AND WIRING

##### **WARNING WARNING WARNING**

**Potential shock hazard. Disconnect power before servicing. Only qualified electrical personnel should work on this system.**

The standard OptiFlo DustCatcher ships fully wired and ready for operation. The only electrical connection required will be the installation of power wiring. Before connecting the power wiring, obtain and review a copy of the wiring diagram (a copy is shipped inside the electrical connection panel mounted on the rear of the collector). Also review the purchase order and the product drawing that was submitted for the order before proceeding, to determine the correct line voltage to be used.

##### **CAUTION**

**Use of the incorrect line voltage may result in irreparable damage to electrical components.**

The power wiring connects to the electrical panel mounted on the rear of the collector. A knockout has been provided in the electrical enclosure for this purpose. The standard enclosure is rated NEMA 12.

##### **CAUTION**

**An electrical disconnect shall be incorporated into the power wiring and mounted adjacent to the collector so that power to the collector can be cut when required during startup and maintenance. The disconnect shall be supplied by others.**

The pulse interval and duration are controlled by the solid state timer. The pulse interval is factory set at 120 seconds, and the pulse duration at 50 milliseconds on the Size 2 and 100 milliseconds on the Size 4 and 6 collectors. These settings will be satisfactory for most installations, however, because dust loading, media velocity, and other factors vary; it may be necessary to readjust the pulse interval to meet individual requirements. Your AAF representative will provide guidance on this, if necessary.

##### **CAUTION**

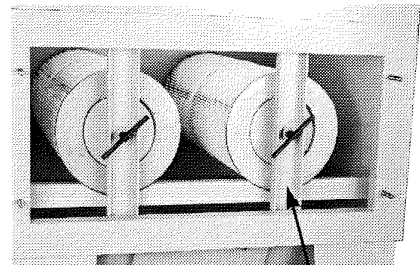
**The pulse duration should not be adjusted without consulting your AAF representative.**

#### ■ 3.6 COMPRESSED AIR CONNECTION

Air at 80 to 100 psig pressure must be supplied to the OptiFlo DustCatcher. The connection for the compressed air, a 1/2" NPT female coupling, can be found on the underside of the collector towards the rear right hand side. The compressed air supply shall have a minimum diameter of 1/2". A pressure regulator with a gauge is supplied with each OptiFlo DustCatcher and shall be installed in the compressed air line adjacent to the collector.

The compressed air must be clean and dry to prevent failure and plugging of the pulse valves and filter cartridges. Compressed air filters shall be provided for removal and automatic discharge of minute particulate contaminants and coalesced liquids. The compressed air supply shall not be allowed to exceed 100 psig at any time.

#### ■ 3.7 INSTALLING FILTER CARTRIDGES



**Sealing Mechanism**

Filter cartridges ship separate with the OptiFlo DustCatcher for installation in the collector after the collector has been fully assembled, installed, and is ready for operation. The filter cartridges are installed through the door/s located on the front of the collector. Two cartridges are installed inside each door opening. Cartridge installation shall proceed as follows:

1. Locate the filter cartridges that shipped with the collector.
2. Locate the filter cartridge sealing mechanisms that shipped with the collector. Each sealing mechanism consists of a painted steel channel with a freely rotating circular compression plate permanently attached to it. One mechanism is supplied for each cartridge.
3. Unscrew the four latches which secure each access door in place and remove the doors.

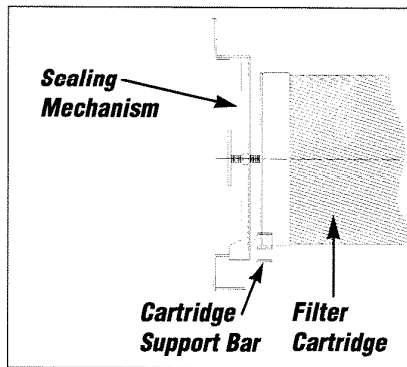
### 3.0 INSTALLATION INSTRUCTIONS - CONTINUED -

4. Remove each filter cartridge, in turn, from its cardboard box. The filter cartridge will have one open end and one closed end. The open end is fitted with a gasket which has been formed into a circle and securely attached to the end plate of the filter cartridge. Inspect the cartridge for any shipping damage. Do not install damaged filters into the collector.

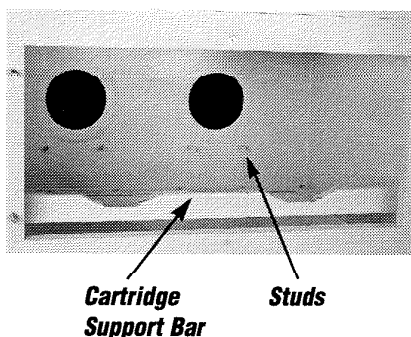
5. The filter cavity inside the collector features a rear wall with circular openings. Beneath each opening, two welded steel studs support the front (open) end of the filter cartridge. Inside the access door there is a horizontal bar which extends the full width of the collector and which includes indentations for supporting the rear (closed) end of the filter cartridge.

Ensure that the rear wall is clean and free of all dust, particularly in those areas that

will be contacted by the filter cartridge gasket. If necessary, wipe the wall down with a clean cloth. Dust that is allowed to remain in place between the rear wall and the filter cartridge gasket may result in leaks. It is particularly important that close attention be paid to this step when replacing filters.



6. Insert the filter cartridge into the collector, open end first, until the front of the filter rests on the support studs, the rear of the filter is supported by the indentations in the horizontal bar, and the gasket is in contact with the rear wall. Now insert the sealing mechanism so that the protruding flange on one end of the channel rests on the internal flange above the access door and the lower portion of the channel rests between the horizontal filter support bar and the door opening.



Locate the circular plate attached to the sealing mechanism directly behind the filter cartridge. Turn the screw handle to bring the circular plate into contact with the back of the filter cartridge and to force the filter cartridge gasket against the rear wall of the collector.

Continue to tighten the handle until the gasket has been compressed to approximately 50% of its original depth. The filter cartridge sealing mechanism is designed to adequately seal the filter using hand pressure only.

**DO NOT USE TOOLS TO TIGHTEN THE FILTER CARTRIDGE SEALING MECHANISM.**

#### CAUTION

Do not over compress the filter cartridge gasket. Too much compression may damage the filter media and cause dust to leak through the filter.

7. When the first filter cartridge has been fully installed and sealed in place, proceed to installation of the second filter cartridge and so on, until all filters have been installed.
8. Replace the collector access doors and re-install and tighten the screw-on latches.

### 4.0 INSTALLATION OF OPTIONAL COMPONENTS

#### 4.1 CONNECTION OF 55-GALLON DRUM DUST CONTAINER

The standard OptiFlo DustCatcher is supplied with a 5-gallon pail for collection and removal of the accumulated dust. An option is available which allows the use of a 55-gallon drum for collecting and removing the accumulated dust. If this option has been ordered, the OptiFlo DustCatcher will be supplied with extended support legs and a barrel top adapter kit. The barrel top adapter kit ships separately with the OptiFlo DustCatcher for assembly at the job and consists of:

- A support assembly connected to the hopper outlet flange.
- A barrel top adapter with positive seal clamps to attach to a standard 55-gallon drum.

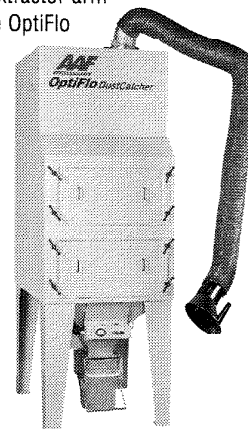
- A flexible hose to connect between the support assembly and the barrel top adapter.
- Two (2) hose clamps to attach the flexible hose.
- A hardware packet.

#### 4.2 FUME EXTRACTOR ARM

If ordered, the optional fume extractor arm ships separately for installation to the OptiFlo DustCatcher at the job-site. The fume extractor arm is intended to be mounted to one of the two air inlets on top of the collector. The bolt pattern at the inlet is designed to accommodate the bolt pattern on the fume extractor arm. Remove the inlet cover plate and retain the gasket and the connection hardware for sealing and attaching the fume extractor arm to the collector. Install the inlet

baffle. Assemble and attach the fume extractor arm to the OptiFlo DustCatcher in accordance with the manufacturer's instructions which are contained in the shipping box. Two sizes of the fume extractor arm are offered with the OptiFlo DustCatcher:

a 10' long arm and a 14' long arm. The 10' arm is the minimum length recommended for use with the Size 2 collector and the 14' arm is the minimum length recommended for use with the Size 4 collector.



## 4.0 INSTALLATION OF OPTIONAL COMPONENTS - CONTINUED -

### ■ 4.3 CASTERS

Optional casters are available to convert the OptiFlo DustCatcher into a mobile collector. They are recommended for use only on the Size 2 collector. Casters ship separate with the collector and must be installed at the job-site. Hoist the collector so that there is adequate clearance beneath the mounting feet to insert the casters into the  $\frac{5}{8}$ " mounting hole and hand tighten the connecting bolt. Two of the casters supplied will be equipped with brakes, these should be mounted on the front legs of the collector for easy access. Lower the collector so that it is resting on the casters making sure that the brakes on the front casters are fully engaged to prevent movement of the collector. Fully tighten the bolts, connecting the casters to the collector legs.

### ■ 4.4 SECOND STAGE HEPA FILTER

If ordered, a second stage HEPA filter will be supplied with the OptiFlo DustCatcher. The HEPA filter assembly consists of three parts:

1. The HEPA filter support frame and housing which ships pre-assembled to the outlet of the OptiFlo DustCatcher.
2. The HEPA filter cartridge which ships separate for installation at the job.
3. The 4 attachment clips for connecting the HEPA filter to the HEPA filter support frame. These clips also ship separate with the collector for installation at the job.

To avoid damage to the HEPA filter, do not insert the HEPA until the OptiFlo DustCatcher has been fully installed and is ready for startup.

The HEPA filter support housing is provided with a pressure gauge to read the pressure differential across the HEPA filter. It is recommended that the HEPA filter be replaced when the pressure differential reads 2" w.g., however, if the fan capacity is available it can be operated as high as 3" w.g. The HEPA filter support frame and housing is installed over the OptiFlo DustCatcher outlet. Remove the HEPA filter in order to adjust the outlet damper. Alternatively, the outlet damper may be left in the full open position and the airflow may be regulated by installing an adjustable damper in the inlet duct.

### ■ 4.5 EXPLOSION VENT

The optional explosion vent ships fully installed on the OptiFlo DustCatcher. The standard explosion vent measures 14" wide by 14" long and is mounted on the top of the collector. No special installation is required.

Note that the location of the air inlets on top of the collector are different from the standard collector in order to accommodate the explosion vent. Consult the product drawing for details.

### ■ 4.6 SPARK PROOF FAN AND EXPLOSION PROOF MOTOR

An optional spark proof fan and/or an explosion proof motor is available for the OptiFlo DustCatcher. These items ship fully installed and no special installation is required.

### ■ 4.7 PRESSURE DEMAND CONTROL AND ROTARY DISCONNECT SWITCH

An alternate control that includes a pressure demand control and a rotary disconnect switch is available for the OptiFlo DustCatcher. The pressure demand control will be factory pre-set to initiate pulsing at a pressure differential across the filter of 3" w.g. and to terminate pulsing at a pressure differential across the filter of 2" w.g. The rotary disconnect switch is mounted in the door of the electrical connection panel enclosure and disconnects power to the collector when the door is opened.

The pressure demand control and the rotary disconnect switch ship fully installed and no special installation is required.

#### **WARNING WARNING WARNING**

**Activation of the disconnect switch does not completely eliminate power to the electrical connection panel. Wiring connected to the supply side of the disconnect switch is still a potential shock hazard. Only qualified electrical personnel should work on this system.**

## 5.0 INITIAL STARTUP INSTRUCTIONS

### ■ 5.1 PREPARATION FOR STARTUP

1. Check the compressed air line to ensure it is properly connected to the collector. Turn on the compressed air supply and adjust the pressure to 70 psig.
2. Check the filter cartridges to ensure they are properly sealed in position in the collector. Verify doors are closed and tightly secured.

3. Ensure the dust collection pail (or the 55-gallon drum) is properly secured and sealed in place beneath the hopper discharge.
4. Ensure that the collector has been properly wired and that power is supplied to the electrical panel. Close any open disconnects.

#### **CAUTION**

**The fan rating includes an allowance for pressure drop across the filter media with a thin residual dust cake as the normal operating condition. During the initial dust caking period when the pressure differential across the new cartridge filters is low, unit airflow may have to be restricted. This may be achieved by partially blanking off the dirty air inlet, or the clean air outlet using the adjustable outlet damper provided.**

## 5.0 INITIAL STARTUP INSTRUCTIONS - CONTINUED -

### 5.2 TIMER CONTROL

*Note: The OptiFlo DustCatcher will be supplied with either a Timer Control (see this section) or the optional Pressure Demand Control (see Section 5.3). Review the section of this manual applicable to the equipment you have purchased.*

1. Turn on the collector by pushing the start button on the control panel mounted on the front of the collector. **DO NOT ALLOW ANY DUST TO BE LOADED TO THE COLLECTOR AT THIS TIME.**
2. When the start button is pushed, the fan motor will be energized and air will move through the collector. Adjust the outlet damper so that the correct volume of air is being drawn through the collector. There are a number of ways of measuring airflow volume. This can be done by performing a pitot tube traverse across the inlet or outlet duct or by measuring the pressure drop across a calibrated orifice. A rough (and normally adequate) estimate of airflow volume can be obtained by measuring airflow velocities with a hot wire anemometer at a number of points across the diameter of the incoming duct, averaging them, and multiplying the average velocity of the air (measured in feet per minute) by the area of the duct (measured in square feet). A table of duct areas is included on page 11 of this manual.
3. The solid state timer board activates a solenoid valve which releases compressed air to the diaphragm valve which then opens and releases a pulse of compressed air from the compressed air reservoir into the cartridge filters.  
  
Listen for diaphragm valve and pilot solenoid firing, to determine that they are working properly. A different filter should be pulsed at approximately 120 second intervals. If the interval between

pulses is significantly different from this, adjust the interval by rotating the adjustment screw, marked "Off Time". The "Off Time" adjustment screw is located on the solid state timer board in the electrical connection panel mounted on the rear of the collector. If any diaphragm valve fails to pulse in sequence, consult the *Troubleshooting Guide* in Section 7 of this manual.

4. If everything is operating satisfactorily, shut off the compressed air to the compressed air reservoir and allow the reservoir to pulse down until no compressed air is being pulsed into the filter cartridges.
  5. You can now begin to load dust to the collector.
  6. Observe the pressure gauge on the front mounted control panel. This indicates the pressure drop across the dust cake and filter cartridge media. Rising pressure on the gauge shows that dust is being collected on the filters.
- NOTE**

With a light dust load, the pressure drop may take days to change appreciably.
7. As the pressure drop rises, adjust the inlet or outlet damper to ensure that the collector is operating at the design airflow selected for the particular application. When the gauge shows a pressure drop of 2" w.g. across the filter, open the compressed air valve and allow the pressure to build up in the compressed air reservoir. The pulse jet cleaning system will now begin to operate with a different filter being pulsed clean every 120 seconds. When the AAF standard OptiKlean™ filter cartridge is used, the reservoir pressure should be initially set at 70 psig.

8. Observe the pressure gauge as the collector continues to operate. Under normal operation the pressure drop should read somewhere between 1" w.g. and 3" w.g. with slight fluctuations each time a pulse occurs. At startup, when pulse jet cleaning is initiated, the pressure drop across the filter may fall below 1" w.g. This is normal. Eventually, depending upon the type of dust and the rate of dust loading, the filters will build up a permanent dust cake and the pressure drop will stabilize at some level greater than 1" w.g.

If the pressure drop increases to a level greater than 3" w.g., increase the reservoir pressure in 10 psig increments until the pressure reaches 90 psig. If the pressure drop continues to increase, the interval between pulses must be decreased. As previously noted, this is done by adjusting the "Off Time" pulse interval on the solid state timer board located in the rear electrical panel with a screwdriver. It is suggested that the interval between pulses be initially adjusted downwards in increments of 30 seconds until the pressure drop across the filters stabilizes. If after all of these adjustments have been made, it is still not possible to maintain the pressure drop across the filters below 3" w.g., contact your AAF representative.

### CAUTION

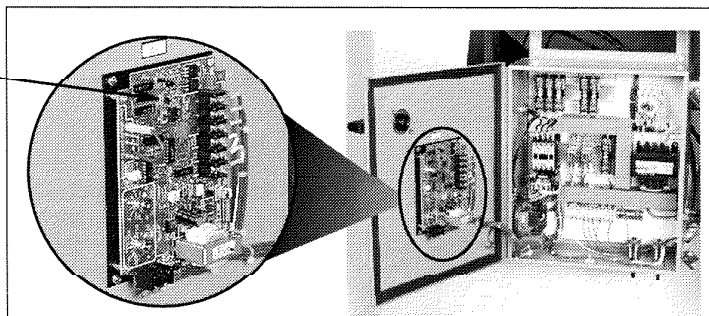
**A second adjustment provided on the solid state timer board is labeled "On Time". This is for adjusting the pulse duration, which is the length of time that the diaphragm valve is actually open during pulsing. Do not adjust the pulse duration before consulting an AAF representative.**

Repeat Section 5.1, steps 1 through 4 and Section 5.2, steps 1 through 7 after installing new filter cartridges in the unit.

### 5.3 PRESSURE DEMAND CONTROL

1. Perform steps 1 and 2 as outlined in Section 5.2 of this manual.
2. The pressure switch actuates the solid state timer board, which in turn, actuates a solenoid valve, which releases compressed air to the diaphragm valve, which then opens and releases a pulse of compressed air from the compressed air reservoir into the filters.

**Timer Board**



*Note: This illustration shows a version of the pressure switch control and the door mounted rotary disconnect. These are available as options.*



## 5.0 INITIAL STARTUP INSTRUCTIONS - CONTINUED -

The pressure switch is factory set to initiate pulsing at a pressure drop across the filters of 3" w.g. and to terminate pulsing at a pressure drop of 2" w.g. Disconnect the pressure switch from the solid state timer board by removing one of the connections to the terminal marked "PRESSURE SWITCH". The control will now operate as a timer control. Listen for diaphragm valve and pilot solenoid firing, to determine that they are working properly. A different filter should be pulsed at approximately 120 second intervals. If the interval between pulses is significantly different from this, adjust the interval by rotating the adjustment screw, marked "Off Time", on the solid state timer board located in the electrical connection panel mounted on the rear of the collector. If any diaphragm valve fails to pulse in sequence, consult the *Troubleshooting Guide* in Section 7 of this manual.

3. If everything is operating satisfactorily, reconnect the pressure switch to the solid state timer board.
4. You can now begin to load dust to the collector.
5. Observe the pressure gauge on the front mounted control panel. This indicates the pressure drop across the dust cake and filter cartridge media. Rising pressure on the gauge shows that dust is being collected on the filters.

### NOTE

With a light dust load, the pressure drop may take days to change appreciably.

6. As the pressure drop rises, adjust the inlet or outlet damper to ensure that the collector is operating at the design airflow selected for the particular application. When the gauge shows a pressure drop of approximately 3" w.g. across the filter cartridges, the pulse jet cleaning system will begin to operate with a different filter being pulsed clean every 120 seconds. The filters should continue to pulse clean until the pressure drop reads approximately 2" w.g. The pulse cycle will then stop and restart when the pressure builds up to 3" w.g. When the AAF standard OptiKlean™ filter cartridge is used, the reservoir pressure should be initially set at 70 psig.

7. Observe the pressure gauge as the collector continues to operate. Under normal operation the pressure drop should read somewhere between 1" w.g. and 3" w.g. At startup, when pulse jet cleaning is initiated, the pressure drop across the filters may fall below 1" w.g. This is normal. Eventually, depending upon the type of dust and the rate of dust loading, the filter will build up a permanent dust cake and the pressure drop will bottom out at some level greater than 1" w.g. If, after pulsing has been initiated, the pressure drop fails to decrease to a level below 2" w.g., increase the reservoir pressure in 10 psig increments until the pressure reaches 90 psig. If the pressure drop still does not decrease below 2" w.g., the interval between pulses must be decreased. As previously noted, this is done by adjusting the "Off Time" pulse interval on the solid state timer board located in the rear electrical panel with a screwdriver.

It is suggested that the interval between pulses be initially adjusted downwards in increments of 30 seconds until the pressure drop across the filters drops below 2" w.g. If after these steps have been taken, the pressure drop across the filter cartridges still does not reduce to below 2" w.g. and the pulse mechanism operates continuously, it may be necessary to adjust the upper and/or lower set points on the pressure switch. It is suggested that the lower set point be adjusted to terminate pulsing at a point 0.25" above the pressure level at which the filter cartridge pressure drop has stabilized. The upper set point should be adjusted to initiate pulsing at a pressure of 1" above this lower set point. For example: If the pressure across the filter cartridges stabilizes at 2.25" w.g., set the lower set point on the pressure switch at 2.5" w.g. and the upper set point at 3.5" w.g. If problems persist contact your AAF representative.

### CAUTION

A second adjustment provided on the solid state timer board is labeled "On Time". This is for adjusting the pulse duration, which is the length of time that the diaphragm valve is actually open during pulsing. Do not adjust the pulse duration before consulting an AAF representative.

Repeat Section 5.1, steps 1 through 4 and Section 5.3, steps 1 through 6 after installing new filter cartridges in the unit.

## 6.0 MAINTENANCE

### 6.1 AS NECESSARY

Check the 5-gallon dust collector pail. It is recommended that the pail be emptied before it is completely filled with dust. It is good practice to empty the pail prior to starting the collector at the beginning of each day's operation or at the beginning of each new shift. Before reinstalling the pail, wipe off the gasket and the gasket seating surface to remove any dust that might interfere with the seal.

### 6.2 DAILY

When a continuous pulse control has been provided, record the collector pressure drop daily for at least the first 30 days of operation. Adverse operating conditions can be detected by a significant change in pressure drop. A pressure gauge is included on the front control panel to provide the pressure drop reading across the dust cake and filter. After startup, the pressure drop will gradually rise to its normal operating level.

### 6.3 MONTHLY

A regular inspection of the collector should be made at least every 30 days. If necessary, replace the filter cartridges. The compressed air line regulator, dryer, and filters should be checked for proper operation. Grease the motor bearings.

## 6.0 MAINTENANCE - CONTINUED -

### ■ 6.4 SIX MONTHS

Ducts leading to and from the collector should be inspected for dust accumulation. In addition, the following inspections should be made:

1. Examine the filter cartridges for leaks. Leaks can be observed by examining the filters from the clean side of the collector. Remove the access panels on the rear of the collector to do this. Also, check the outlet air at the collector discharge for

signs of dust. Replace all leaking filters. It is not recommended that the filters be unsealed and removed from the collector unless they are to be replaced.

2. Inspect all joints for evidence of air or dust leakage.
3. Check for evidence of moisture or significant dust accumulation within the collector.
4. Check all electrical apparatus for proper operation.

5. Ensure the diaphragm and solenoid valves are pulsing when energized by the timer.

6. Check explosion vents (if supplied).

### ■ 6.5 FILTER CARTRIDGE REPLACEMENT

Follow the procedures in the sections for *Installing Filter Cartridges*, Section 3.7, and *Initial Startup Instructions*, Section 5.0.

## 7.0 TROUBLESHOOTING

### ■ 7.1 HIGH PRESSURE DROP READING

- **Improper Timer Operation**  
Check the wiring, fuses, and setting of pulse duration and interval.

#### CAUTION

Do not adjust the pulse duration without consulting an AAF representative.

- **Insufficient Compressed Air**  
Check the air supply to ensure the compressor is providing 80 to 100 psig. Check for a plugged filter in the compressed air line.
- **Solenoid Pilot Valve Malfunction**  
Listen to verify the solenoid valves are firing. Check for momentary air venting each time they fire. Clean or replace, if necessary.
- **Pulse Valve Malfunction**  
Pulse valves should be checked to verify operation. Pulse valves can be easily disassembled and rebuilt in place.
- **Leaking Air At The Hopper Discharge**  
An air leak into the collector at the hopper outlet can overload the collector by preventing dust discharge after pulsing. The accumulation of dust within the collector can result in a high pressure drop across the filter cartridges.
- **Condensation**  
High humidity may cause blinding of the filters, which results in excessive pressure drop. Run the cleaning mechanism with the airflow throttled back (using the discharge damper) to release the dust cake.

If condensation is a recurring problem, pre-processing warm-up and post-processing purge periods of 15 to 30 minutes each may help. Sources of moisture may come from leaking process ductwork, moisture in the process gas stream, or moisture in the compressed air system.

- **Static Electricity**  
Static electricity buildup can cause a high pressure drop by preventing particulate release from the filter cartridges. If possible, increase the humidity of the incoming air using discretion to avoid creating condensation. Grounded and metalized filters may also be required to resolve the problem, particularly in situations where a spark may result in ignition of an explosive dust.
- **Collector Overloads**  
Too much air or dust will create high pressure drops across the collector. Check the system design and the damper position. Ensure that the dust load and air volume are those the system was designed to handle.

### ■ 7.2 VISIBLE DISCHARGE

- **Improperly Installed or Damaged Filters**  
Check for inadequately compressed gaskets and holes in the filter cartridge media. Leaks can be observed by examining the filters from the clean side of the collector. Remove the access panels on the rear of the collector to do this. Reseal filter cartridges as necessary and replace damaged filters.

- **Insufficient Dust Cake**  
The collector could be pulsing too often, resulting in over-cleaning. Verify the pressure drop is between 1" and 3" w.g. If not, first increase the pulse interval and then, if necessary, decrease the pulse pressure until the collector is operating in this range.

#### CAUTION

Do not adjust the pulse duration without consulting an AAF representative.

- **Filter Replacement Required**  
Eventually the filter cartridge will wear out. Normally this results in excessive pressure drop, however, if the dust is very abrasive leaks can occur.

### ■ 7.3 INSUFFICIENT HOOD CONTROL

- **Incorrect Fan Rotation**  
Incorrect rotation of the fan will result in a failure to provide the required system static pressure or air volume.
- **Leaks**  
Leaking ductwork, access doors, explosion vents, dust discharge devices, or housing will cause insufficient suction at the pickup point. Seal any leaks.
- **Clogged Air Passages**  
Clogged ducts or closed dampers will shut off the airflow.
- **Undersized Ducts**  
Undersized ducts will create excessive pressure losses for which the fan may not have been sized. Duct size should be reviewed considering the design specifications and fan capability.

## 7.0 TROUBLESHOOTING - CONTINUED -

### 7.4 FILTER CARTRIDGE PROBLEMS

- **Over Temperatures**  
Operating temperature should not exceed 180°F.
- **Humidity**  
Humidity can blind the filters. The moisture results in a more dense dust-cake accumulation, or cements dust to the cartridge. Drawing dry air through the collector may dry the dust enough to allow the collector to pulse clean with the incoming airflow throttled back. If this method does not work, new filters must be installed.
- **Dust Characteristics**  
The filter cartridge media must be selected to perform adequately when exposed to the specific physical and chemical characteristics of the contaminated airstream. Ensure that the correct filter cartridge has been selected for the particular application. Consult your AAF representative for guidance.

### 7.5 BACK-PULSING

Under some circumstances when the filter cartridges in small collectors are pulsed clean, the power of the pulse jet cleaning may momentarily impede or reverse the direction of the airflow. This may result in a momentary loss of suction, and in the worst case, it may result in dust being emitted back through the inlet hood. This condition may be caused by the following:

- **Inadequate Airflow**  
Check to make sure that the collector is delivering the correct airflow. Airflow may be impeded if the outlet damper has been closed too far.
- **Inadequate Duct Velocity**  
It is recommended that the inlet ducts be designed to provide a minimum airflow velocity of 4000 fpm.
- **High Pulse Pressure**  
Reduce the pulse pressure gradually until the condition is eliminated, while ensuring that the filter cartridges continue to clean adequately.

## 8.0 DUCT AREAS

| Duct Diameter<br>(inches) | Duct Area<br>(sq. ft.) |
|---------------------------|------------------------|
| 3.0"                      | 0.049                  |
| 3.5"                      | 0.067                  |
| 4.0"                      | 0.087                  |
| 4.5"                      | 0.11                   |
| 5.0"                      | 0.136                  |
| 5.5"                      | 0.165                  |
| 6.0"                      | 0.196                  |
| 6.5"                      | 0.23                   |
| 7.0"                      | 0.267                  |
| 7.5"                      | 0.307                  |
| 8.0"                      | 0.349                  |
| 8.5"                      | 0.394                  |
| 9.0"                      | 0.442                  |
| 9.5"                      | 0.492                  |
| 10.0"                     | 0.545                  |



## OptiFlo DustCatcher™

### 9.0 SPARE PARTS — Call 1.800.477.1214 To Order

It is recommended that the following spare parts be stored at the installation site for routine maintenance purposes. Consult with your AAF representative to determine quantities required.

| Part No.       | Description             | Recommended Spares  |
|----------------|-------------------------|---------------------|
| 5212709-000    | Diaphragm valve         | One                 |
| 5212717-000    | Solenoid valve          | One                 |
| 2342194-1      | Solid state timer board | One                 |
| 5212725-000    | Access door latch       | Four                |
| 5212733-000    | 5-gallon pail           | One                 |
| 5212741-000    | Gasket for pail         | Two                 |
| 5212782-000    | Gasket for access door  | Two                 |
| U136-1775071-1 | Filter cartridges       | One Replacement Set |

When ordering replacement parts, the customer must identify the serial number of the collector, which can be found on the equipment nameplate.

### 10.0 GENERAL PRODUCT INFORMATION

#### Standard Filters

|               | Number of Filters | Total Filter Area (sq. ft.)<br>for Standard Filters |
|---------------|-------------------|---|
| DustCatcher 2 | 2                 | 330   |
| DustCatcher 4 | 4                 | 660   |
| DustCatcher 6 | 6                 | 990   |

#### Standard Nominal Fan Performance\*

| Size          | Nominal Airflow<br>(CFM) | External Static Pressure<br>(Inches W.G.) |
|---------------|--------------------------|---|
| DustCatcher 2 | 400-800                  | 12.5-9.4                                  |
| DustCatcher 4 | 800-1600                 | 12.3-5.6                                  |
| DustCatcher 6 | 1300-2200                | 12.0-6.9                                  |

\* Assumes an average internal pressure loss across the filter cartridges and housing of 4" w.g.  
See fan curve for full fan performance and motor horsepower required.

#### Dimensions and Operating/Shipping Weights

|   | DustCatcher 2 | DustCatcher 4 | DustCatcher 6 |
|---|---------------|---------------|---------------|
| Width   | 41"           | 41"           | 41"           |
| Depth   | 48"           | 48"           | 48"           |
| Height  | 82"           | 101"          | 120"          |
| Operating Weight<br>(less collected dust) (lb.) | 600           | 700           | 800           |
| Shipping Weight (lb.)                           | 650           | 800           | 900           |



APC-3-130 MAY 97 500 DPI

For Additional Information  
On AAF Products,  
Call The Answer Center  
**800.477.1214**



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