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To protect your warranty use only genuine AAF OEM parts
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INTRODUCTION

This document contains the information necessary to properly receive, assemble, install, operate, and maintain the AAF FabriPulse® Fusion industrial air cleaning system. The purchaser, installer, and operator of the filter system **MUST** read and comply with this document in its entirety prior to installation of the equipment and its operation. Failure to comply with the requirements of this manual may void the product warranty.

**CAUTION**

These instructions are specific to the AAF FabriPulse® Fusion. 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 government codes, laws, and policies.
1 NOMENCLATURE AND TERMINOLOGY

![Diagram of FabriPulse Fusion]

- Safety railing
- Safety gate
- Pressure manifold with pulse valves and solenoids
- Clean air top section
- Contaminated air plenum (contains bags and cages)/dirty air plenum
- Contaminated air inlets
- Hopper
- Hopper access panel
- Support structure (including legs and bracing)
- Hopper outlet
- Support base plate (with anchor bolt holes)
- Ladder with safety cage

Figure 1. FabriPulse Fusion
2 SAFETY

2.1 Safety statement

The air cleaning equipment supplied by AAF International ranges from very large multiple-component assemblies which require significant and complex, rigging, handling and assembly on-site, to small compact assemblies that are easily handled and maneuvered. In addition to size, many of the dust collectors will require electrical connections, compressed air connections, and will feature high speed rotating equipment.

At all times, when dealing with industrial equipment such as dust collection equipment personnel safety must be the highest priority of all involved, from riggers, installers, operators, users, and maintenance personnel. Those responsible on-site shall review the details of the equipment beforehand and develop a plan for dealing with all stages of the installation from receipt of the equipment on-site to start-up, commissioning, and hand-over. All applicable health, safety, and environmental (“HSE”) rules, regulations and legislation shall be fully complied with at all times.

2.2 Safe working practices and staff training

AAF International is fully committed to the safety of its employees and those of its customers. In this spirit the following guidelines are offered for the consideration of those responsible:

AAF strongly urges the owner to develop written safety policies, procedures, and training manuals and that all personnel be made familiar with these documents and receive safety training specific to the site, the task, and the conditions under which the work will be conducted. This shall include instruction on the hazards associated with working with potentially explosive dusts. See paragraph 2.3 for further guidance.

All personnel shall be equipped with appropriate personal protective equipment (PPE) such as clothing, footwear, hard-hats, gloves, ear protection, eye protection, and safety harness.

All personnel involved in any stage of the process shall have been trained for the tasks in which they will be involved and at all times shall be under the direct supervision of experienced supervisors and managers.
All personnel shall be equipped with appropriate tools and equipment to safely and efficiently complete their task.

Adequate lighting shall be supplied at all times while work is being conducted.

During installation, start-up and maintenance a work perimeter shall be set up to define the limits of the area within which the work will be conducted and outside which there will be no threat to the safety of personnel or plant. The perimeter shall be taped-off and marked appropriately to prevent accidental ingress of uninvolved personnel or equipment. When the work area impedes into existing access ways or traffic routes for which no practical alternative is available, barriers, wardens and flaggers shall be employed to safely control crossing traffic and personnel.

At any time only those personnel directly involved in completing the task at hand shall be allowed within the work perimeter.

2.3 Dust explosion hazard

Dust explosions constitute a serious industrial hazard and may result in death, serious injury, and/or devastating property damage. It is the responsibility of the user to identify the nature of the dust and whether or not it poses an explosive hazard and to properly mitigate this hazard. Except as otherwise expressly provided in writing, AAF makes no representation or warranty in connection with explosion hazard equipment, including, but not limited to, the necessity or effectiveness of explosion hazard equipment or to the design, installation, operation, and performance of such equipment. The basic standard for dealing with explosive dust applications is from the National Fire Protection Agency (“NFPA”), NFPA 69: Standard on Explosion Prevention Systems. This standard applies to the design, installation, operation, maintenance, and testing of systems for the prevention of explosions by means of various methods. The user shall be fully conversant with the provisions of NFPA 69 and shall comply in full with all of its requirements.

By its very nature, AAF equipment is intended to be used to capture airborne particulate matter, otherwise known as dust. There are various methods for dealing with a dust explosion in a dust collector. These can include, but are not limited to, the use of properly designed explosion vents, explosion suppression systems, or flameless vents. The user shall understand which method is being used and who is responsible for the design and supply of the equipment required.
When an explosive dust has been properly identified to AAF, the dust collector may be structurally designed to withstand the internal pressure generated during the explosive event and fitted with an explosion vent, or with multiple vents, designed to safely discharge the pressure and the resulting fireball. The user shall review the purchase order and the documents referenced within it to determine if explosion protection equipment has been supplied by AAF International. Where this is the case, review the appropriate sections of this manual that deal with the installation, operation and maintenance of the equipment ordered.

When explosion protection systems are supplied by multiple vendors, it is the responsibility of the user to coordinate between suppliers to ensure that the equipment supplied by each vendor will work together to achieve the required protection. For instance, if an explosion suppression system is being supplied by parties other than AAF, it is incumbent on the user to ensure that the dust collection equipment has been ordered to resist the internal pressure defined by the suppression equipment supplier.

Dust collectors fitted with explosion vents must not be located indoors, unless properly designed in accordance to NFPA regulations. The equipment shall be oriented so that the vent will discharge to an unoccupied zone. Such a zone will be prohibited to personnel and shall not include critical equipment or services such as fuel storage tanks, flammable materials, fire hydrants, power distribution or electrical control equipment, or similar. If the vent (or vents) are located on the side(s) of the equipment the vent discharge area shall be isolated with barriers erected to prevent the parking of vehicles, pedestrian use, or use of the area for temporary storage. Warning signs shall be posted. Include diagrams showing the distribution of a typical dust explosion discharge.
2.4 Electrical hazard

Before doing any work on the equipment, make sure that all potential electrical hazards have been identified and that all electric current connected to the equipment, and to any connected or associated equipment, has been properly disconnected and securely locked-out to prevent accidental reconnection prior to completion of the work.

The basic FabriPulse Fusion is supplied with a control panel to regulate the pulse-cleaning of the filter bags. This control ships loose for installation at the jobsite. A 120 Volt electrical power supply is connected to the control panel, and from there to the solenoid valves located on the dust collector. All power to the solenoid valves **MUST** be connected through the control panel. Under no circumstances shall the control panel ever be by-passed. The control panel door shall not be opened until all electrical power has been disconnected from the dust collector and locked out. The only exception to this is when diagnostics are being performed by a licensed electrician.

Before performing any electrical work the wiring diagram shall be reviewed.

All electrical work shall be done in full accordance with the current edition of **NFPA 70, the National Electrical Code**, and all appropriate governing local codes. All electrical work shall be performed by a licensed/qualified electrician. Only original AAF parts shall be used as replacements for ongoing maintenance and repair.
Be aware that the FabriPulse Fusion may be connected to other ancillary equipment, supplied by AAF International or by others, which may have single phase or 3-phase power, or control wiring connected. Examples are:

- Rotary airlock drives
- Screw conveyor drive motor
- Fan motor
- Damper actuators
- Hopper level indicators
- Hopper heaters
- Airflow measurement instrumentation
- Various sensors and transmitters

Note that this list is provided for guidance and is not intended to be all-inclusive. It is the responsibility of the user to identify all such equipment. Review the electrical drawings provided with the system before proceeding, along with the installation, operation and maintenance manuals for each of the specific items identified. Power to all such items must be disconnected and locked out before performing any electrical work.

2.5 Rotating equipment

The air cleaning and ventilation system, of which the FabriPulse Fusion is a part, will include a fan for moving the air through the system. The fan wheel rotates at high speed and has the potential to cause severe injury or even death. The fan wheel may be directly coupled to the drive motor or may be driven indirectly by a belt drive. Such drives must be isolated by safety guards to prevent contact with the moving components of the drive. All due care should be exercised to avoid any contact with the operating fan and drive components. The fan must be disconnected and locked out prior to the performance of any maintenance work, see paragraph 2.4.

2.6 Access panels

All access panels shall remain closed and latched or bolted in place while the fan is operating. Prior to the removal of any access panel, the electrical power to the collector shall be disconnected and locked out, see paragraphs 2.4 and 2.5. After electrical power is disconnected, the fan wheel will continue to rotate for a period of time before coasting to a stop. Do not access the fan until the fan wheel has come to a complete stop.
3 GENERAL PRODUCT INFORMATION

3.1 Description
The FabriPulse Fusion is a complete pulse-jet bag collector system capable of providing continuous on-line cleaning. This bag collector utilizes high efficiency bag filter elements arranged for optimized pulse cleaning. Dust laden air enters through a high, front inlet(s) and moves in a “cross-flow” direction between the bag filters. The dirty airstream turns at a ninety degree angle after it hits the inlet baffle plate and enters into the dirty air plenum, allowing heavier particles to drop out of the airstream and into the hopper. The clean air passes through the bag media as the dust is collected on the outside of the bag. The collected dust forms a dust cake, which increases efficiency and dust removal. The clean air then moves through the tube sheet section and into a clean air plenum at the top of the module. The bags are periodically cleaned by bursts (pulses) of compressed air and the agglomerated dust falls as a sheet off the bags and into the hopper. This cleaning can occur while the dust collector is running, or while the unit is shut down.

3.2 Purpose and intended use
The FabriPulse Fusion is intended to be used for relatively dry nuisance dusts. Typical applications a FabriPulse Fusion is used for include mining, furnaces, cement, boilers, woodworking and chemical industries. The standard bag media that is used in the FabriPulse Fusion should be suitable for the intended application.

The standard REDClean bag media is suitable for most applications where the FabriPulse Fusion is used. Contact AAF International for assistance on a bag design for your application. It is recommended that you use only AAF International bags on AAF International equipment.

3.2.1 Collection of explosive dusts
The FabriPulse™ Fusion is primarily intended for the collection of dust generated by industrial applications. Such dusts have the potential to be highly explosive if not dealt with correctly. See paragraph 2.3 for further details.

3.3 Normal Operation
The FabriPulse Fusion is a complete pulse-jet bag collector system capable of providing continuous on-line cleaning. This bag collector utilizes high efficiency bag filter elements arranged for optimized pulse cleaning. Dust laden air enters through a high, front inlet(s) and moves in a “cross-flow” direction between the
bag filters. The dirty airstream turns at a ninety degree angle after it hits the inlet baffle plate and enters into the dirty air plenum, allowing heavier particles to drop out of the airstream and into the hopper. The clean air passes through the bag media as the dust is collected on the outside of the bag. The collected dust forms a dust cake, which increases efficiency and dust removal. The clean air then moves through the tube sheet section and into a clean air plenum at the top of the module. The bags are periodically cleaned by bursts (pulses) of compressed air and the agglomerated dust falls as a sheet off the bags and into the hopper. This cleaning can occur while the dust collector is running, or while the unit is shut down.

During filter element cleaning, a pulse controller automatically selects the element or elements to be cleaned, activating solenoid valves which open air diaphragm valves. High pressure air pulses directly into the center of the selected element or of elements, for 100 milliseconds, blowing collected dust off the filter element(s). The dust is swept downward into the hopper by the prevailing airflow and gravity. See Figure 2 for further information.
Figure 2. FabriPulse Fusion Operation Schematic

3.4 Sizes and Physical Characteristics

The FabriPulse Fusion pulse-jet bag collector is available in two heights: 12 foot and 14 foot bag series. There are three main modules: 96, 144, and 192. Each size larger is assembled from these three basic modules. The size is based on the number of bags in that module. For example, the 144 module has 144 bags in the module, and a 576 unit has 576 total bags, made from 3 modules.

The following page details all the available sizes of the FabriPulse Fusion.

3.5 Filter elements

The basic filter element used in the FabriPulse Fusion dust collector is the polyester bag filter which contains at least 16 square feet of media per 12 foot bag, and at least 18 square feet of media per 14 foot bag. The FabriPulse Fusion can also be equipped with pleated bags. Contact AAF International for assistance on a bag design for your application.

The FabriPulse Fusion bag is a top loading bag, which means that the bags are loaded into the collector from the top of the unit. The cage is placed on top of the installed bag to seal it against the tubesheet and to keep the bags from collapsing during operation.

Figure 3. Typical bag installation.
# 3.6 Weights

Bag Length: 12 foot

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**Notes:**
- Net Weight: weight without bags, cages or dust.
- Total Weight: weight with bags and cages, but no dust.
Bag Length: 14 foot

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Notes:
Net Weight: weight without bags, cages or dust.
Total Weight: weight with bags and cages, but no dust
## Explosion Protection Design

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### Notes:

Net Weight: weight without bags, cages or dust.
Total Weight: weight with bags and cages, but no dust
4 PRODUCT SHIPMENT

Unless otherwise agreed in writing, all products will be delivered EXW (Ex Works) Company’s designated delivery point, in accordance with Incoterms 2000. The responsibility of the Company for all shipments ceases upon delivery of Products in good order to designated delivery point. The method of shipment will be as specified in the customer’s purchase order to AAF.

4.1 How the product ships

For ease of shipping and handling, the FabriPulse Fusion ships as a knocked down assembly. The unit will be shipped as follows:

- Fully assembled clean air plenum
- Fully assembled hopper
- Each side panel fully assembled
- Legs and bracing
- Legs and platform

Once assembled on site, the collector will require the connection of:

- Installation of the filter elements
- Mounting and wiring of the control box
- Connection of hopper discharge devices(s)
- Connection of ductwork and/or the fan
- Connection of compressed air supply

4.2 Items that ship separately

To save the customer money, AAF International may ship items separately. The customer will be notified which equipment ships separately when the order is placed. Items that ship separately should be set aside in an area that is clean, dry, and in a place where damage to the equipment will not occur.

5 PRODUCT RECEIPT AT THE DESIGNATED DELIVERY POINT

The people of AAF International take pride in the quality of the products that we supply and it is our intention that our customer’s experience with our products and services be positive and satisfying. This process begins at delivery. It is important to ensure that the product delivered is what was ordered and that it arrives at its destination in perfect condition. Adequate preparation on the part of the buyer together with a structured approach to receipt and inspection will ensure...
that if problems exist they are communicated swiftly and efficiently through the proper channels allowing them to be resolved in the shortest possible time.

5.1 **Responsibilities of the customer or customer’s agent**

Ensure all loading/unloading equipment and safety equipment is on site at the time of delivery. Safe and efficient operation of the collector depends on proper installation. Know proper laws, codes and regulations before installation starts.

5.2 **Receiving**

Remove crates, tarps, shipping straps, etc. along with any loose items or equipment before unloading the FabriPulse fusion.

5.3 **Inspection on arrival**

The FabriPulse Fusion is normally shipped by truck and should be checked for damage that may have occurred in route. Compare the collector(s) received to the description and/or drawing of the collector(s) ordered. Immediately report any differences or missing items from the order to AAF International. Remove loose items or components before lifting the collector from the truck.

A qualified installation and service company should complete installation of the collector and accessories.

5.4 **Damaged goods**

If there is any visible damage to the packaging or the equipment notify the carrier and AAF before proceeding further and, if appropriate, file an immediate claim with the carrier against such damage. Be aware that damage to packaging may indicate hidden damage to the product that is not immediately discernable.

Digital color photographs must be taken of any damage to the packaging and the equipment immediately on discovery. The nature of any damage must also be documented in writing. Adequate documentation will be critical to support any claims.

Contact AAF International for claim filing procedure.

5.5 **Missing goods**

Any missing goods should be noted on the delivery receipt, and the carrier and AAF notified immediately. Contact AAF International for claim filing procedure.
6 UNLOADING AND HANDLING

6.1 Unloading

Failure to lift the collector correctly can result in severe personal injury, property damage, or even death.

Never stand or work beneath a suspended load.

Connect lifting sling to at least four cabinet lifting lugs, distributing the load evenly. Connect lifting sling to double-thickness cabinet lifting lugs provided on collectors 3 modules wide. Always use spreader bars on collectors field assembled wider than 4 modules.

Use clevises, not hooks, on lifting sling with a load capacity of at least 30% above the weight that is going to be handled.

Use of spreader bars is recommended on all lifting slings.

Check the drawings of the specific FabriPulse Fusion ordered for dimensions and weights to ensure proper lifting and installation equipment.

All lifting operations must be made in compliance with the relevant HSE legislation.

CAUTION: All handling operations must comply with all relevant local, state, and federal government standards, codes, laws, and policies.

6.2 Handling

Only personnel experienced in handling equipment shall be employed for this task.

Be aware of the size, weight, and center of gravity of the shipped components, see section 3.6 for weights.

Some of the lifting elements provided with the equipment must be removed to perform the correct assembly of the filter.
6.3 Rigging and hoisting instructions

Only personnel experienced in rigging and hoisting equipment shall be employed for this task.

The FabriPulse Fusion has been designed to reduce the use of lifting equipment and lifting platforms, although their use is necessary at certain points during assembly.

7 STORAGE AND PROTECTION

If not installed immediately the equipment shall be retained and stored in a protective environment until immediately prior to installation. This environment shall be clean, dry, and temperature and humidity-controlled as much as possible.

At all times the equipment shall be protected from exposure to weather and from standing water.

All equipment shall be stored elevated above grade.

The equipment shall be clearly labelled and be stored in a location that is easily and readily accessible.

If prolonged storage is anticipated the equipment shall be covered with plastic to prevent the accumulation of surface dust. In the case of prolonged storage, a maintenance schedule shall be set up to periodically inspect the system.

8 SITE PREPARATION

8.1 Locating equipment

The equipment shall be located in an area with sufficient space to allow ready access. It is recommended that at least 4 feet of clear space be available at each side of the equipment and 3 feet to the rear for access and maintenance. The customer shall determine if it is necessary to erect permanent guards or railings for the protection of the worker.

Ensure that the installation location of the FabriPulse Fusion is suitable for the noise levels generated during operation and use, with special attention to the noise generated by the air mover and the noise generated by the pulsing of the collector.
8.2 Foundations
The support foundation must be designed to be adequate to support the FabriPulse Fusion operating weight, and any seismic, live or other loads (if any), with a sufficient factor of safety as determined to comply with the requirements of all applicable governing codes, standards, and laws.

Ensure that the foundation or support surface is flat, level, and smooth before proceeding.

The FabriPulse Fusion is designed for indoor and outdoor operation.

The reinforced concrete base pad, by others, shall provide adequate embedment for the anchor bolts.

8.3 Anchoring
Each FabriPulse Fusion includes a base flange on each leg support, See Figure 4.

Anchoring bolts fitted with leveling plates are required to assemble the structure. See Figure 5.
Figure 4. Base Mounting Detail

Figure 5. Anchoring bolt and leveling plate detail.
9 ASSEMBLY AND INSTALLATION

9.1 Introduction
Safe and efficient operation of the FabriPulse Fusion depends on proper installation.

AAF recommends that the ductwork going into the collector be as straight as possible, with at least 5 diameters of straight run recommended.

Authorities with jurisdiction should be consulted before installing the FabriPulse Fusion to insure local installation laws, codes, regulations and procedures are followed.

A qualified installation and service agent must complete installation and service of the dust collector and equipment.

Ensure all covers from shipping and loose materials are removed from the collector before installation. Failure to do so can result in failure of the dust collector.

Ensure the hardware on the dust collector assemblies are properly installed and tight before installation.

9.2 Tools
No special tools are required to install the product. However, due to the number of flanged joints, the use of a hydraulic or pneumatic screwdriver is recommended.

9.3 Assembling and installing the structure

9.3.1 Flanged joints
Flanged joints exist where housing modules must be bolted together and where accessories are bolted to the outer faces of the housing. In all cases, AAF will provide sufficient tubes of sealant which must be applied to one of the opposing faces just prior to the faces being brought together. When applying sealant be careful to circle each bolt hole with the sealant.

When assembly is required between these joints, follow this procedure:

1. Check that neither of the two flanges to join has ceramic cord placed around the perimeter.
2. Using a small brush, apply a thin layer of contact adhesive on one of the two surfaces to be flanged.

3. Fit two lines of ceramic cord, one inside and one outside with respect to the holes around the perimeter of the flange and wait until the ceramic cord is well bonded.

4. Just prior to making the joint, apply two lines of acrylic sealant parallel to the ceramic seals and on the outside of these. In the photograph, the white lines represent the two ceramic cord perimeter seals and the red lines the two acrylic sealer seals.

5. Fit all of the bolts, nuts and washers that form the flanged joint.

   **NOTE:** Remember that the joints on the outside of the filter are fitted with a nylon washer both on the bolt head as well as the nut.
6. Once all of the nuts and bolts are fitted, proceed to tighten them.
7. Fill the outer area of the joint with acrylic sealer.
9.3.2 Products shipped as a single assembly

When the dust collector arrives at the plant as a single piece, i.e. structure, hopper and body fully assembled, use the lifting points to unload the equipment onto the ground.

Once on the ground, lift one side of the collector as shown.

When the filter arrives at the plant with the legs and bracing disassembled, erect the structure over the supports (installing them per section 9.3.4.1), use the lifting points to unload the equipment and mount it on the structure.
9.3.3 Products shipped in multiple modular assemblies

Where product is shipped with the main housings in multiple modular assemblies, with the legs separate, proceed as follows:

Pre-apply the sealant to the flanges as 9.3.1 and then bolt the housings together.

Remove the crane and proceed to raise and install the next module on the structure, lining up the holes of the flanges with the ones of the previously installed.

Begin to insert the bolts into the matching holes in both flanges with the help of a conical drill bit.

Fit the washers and hand tighten the nuts. Do not attempt to tighten the bolts until all the modules are in position. Do not forget to fit the bolts of the tube sheet.

Make sure that the modules sit correctly and that the junction of the module on the structure provides stability prior to removing the crane connections.
9.3.4 Products shipped in multiple disassembled modular assemblies

9.3.4.1 Leg structure

Assemble the leg structure onto the prepared foundations or steelwork using the supplied GA drawing which shows the position of all the legs and cross braces. Ensure all the nuts and bolts are tightened and the structure is mechanically sound and secure, and level before proceeding to the next stage.

Anchors must comply with local code requirements and must be capable of supporting dead, live, wind, seismic, and other applicable loads for the area the dust collector is going to be installed.

Consult with a qualified engineer for foundation and anchoring design.

9.3.4.2 Hoppers

In most cases, the hopper will be shipped vertically “upside down”.

Use a crane to unload the hopper, attaching to the lifting lugs on the hoppers.

The collector hopper can be placed on the ground, if rests are included on the hopper outlet.

Placed on the ground and in the mounting position, the hoppers must be bolted in pairs to be placed on the structure. Follow the instructions for flanged
joints in section 9.3.1. Notice the hoppers re installed in the longitudinal and transverse direction to give stability to the assembly.

Note that the hoppers located at the ends of the structure have a “U” profile on the side.
Once the hopper are joined together, they can then be mounted on the legs and bracing.

**NOTE:** If there is a single hopper, it can be installed on the legs and bracing before assembling to multiple modules. For example, if there are three hoppers, two can be joined together and then third hopper can be added once these are installed on the legs and bracing.

9.3.4.3 Assembling the Collector Housing

To lift the collector, use accessories such as hooks, cables, slings, etc. with a load capacity of at least 30% above the weight that is going to be handled. See section 3.6 for weights.

**CAUTION:** Never stand or work beneath a suspended load.

Assemble the unit in the horizontal position at ground level. Assemble the unit following section 9.3.1, 9.3.4.1, and 9.3.4.2. Temporary bracing (by others) between the units made be necessary during installation.
When installing the modules and hopers, position the modules on top of the hopper frame, lining up the holes on both sections. Begin to insert the bolts into the matching holes in both flanges with the help of a drill bill.

Fit the washers and hand tighten the nuts. Do not attempt to tighten the bolts until all the sets are in position.

**NOTE:** Do not forget to fit the bolts of the tube sheet.

9.3.5 Installing the access components
The perimeter railing and access ladder are elements that are bolted onto their respective brackets.

All installation operations must be made in compliance with the relevant HSE legislation.

9.3.6 Installation of control panel
Refer to the electrical drawings issued with the general arrangement drawing.

When the AAF Control Center or Pressure Demand controller is to be used, select a location for fixing the enclosure within 15ft of the static taps located on the FabriPulse fusion side panels. Usually the Pressure Demand controller is fixed to the leg structure but it can be remotely located if desired.
AAF provides plastic tubing for the pulse controller to be located 15ft from the static taps. A more remote position is acceptable if additional tubing is obtained. A practical limit of 30ft applies.

Once the pulse controller is fixed in position, connect two parallel lines of plastic tubing to the 2 connection taps on the pulse controller and the other ends to the static taps located on the side wall of the FabriPulse Fusion. These plastic pipes allow the pulse controller to measure and display the differential pressure that exists between the clean air plenum and dirty side plenum. In some modes of operation, this differential pressure is used to control the pulsing.

Connect the high pressure port to the dirty side of the collector and connect the low pressure port to the clean air side (top of the unit). Both ports are located on the side of the collector.

See the separate pulse controller manual for a full explanation of its features and modes of operation.

9.3.7 Installation of the filter elements
The FabriPulse Fusion bag filter elements are shipped separately in cartons for field installation AFTER all ductwork connections are made.

Access the inside of the filter head by removing the covers on the top of the collector.

Remove the blown-down pipes which have been fitted in their final working position. To do this, remove the split pin located at the end of the pipe.
Begin installing the bags to the support plate in the sequence shown below, concluding with the cage assembly inside of it:
Once all of the filtering elements and their support cages have been installed, proceed to install the blow-down pipes in the same way as they were shipped. Pay attention to the position of the holes that are in blow-down pipes which must be facing down towards the inside of the bags.

Replace the covers, lock washers and tighten the screws until they make contact with washers.
9.3.8 Installation of accessories
When accessories, such as sprinklers, hopper discharge device(s), and airlocks, are ordered with the FabriPulse Fusion, separate installation instructions will be provided with the collector. For complete information, see the most current installation drawing or separate IOM.

9.3.9 Electrical connections
**WARNING**: Potential shock hazard. Disconnect power before servicing. Only qualified electrical personnel should work on this system.

The FabriPulse Fusion pulse-jet bag collector is supplied with electrical solenoids in a NEMA 4 enclosure and the standard pulse controller in a NEMA4X enclosure. Higher NEMA ratings are available as an option. Do not install in classified hazardous locations without an enclosure suitably rated for the application and location.

The standard pulse control supplied with the FabriPulse Fusion is the DCT-1010 Dust Collector Timer Controller. This pulse controller is used for on-demand or continuous cleaning applications.
To power up the DCT controller, connect power line to L1 and L2. Control Wiring must be field installed between the solenoid valves and the pulse output terminals as shown on the electrical connection diagram that is supplied with the specific FabriPulse Fusion collector ordered.

![Diagram of wiring connections]

The power requirements are 85-270V/50-60Hz/1Ph. The operating temperature range is -40°F to 140°F.

Continuous cleaning operations do not require external inputs and can be used for time based cleaning by placing a jumper wire across the manual override and common, or across the high limit input and common.
For on-demand applications, program the DCT controller by going through each selection available, setting up each step. For further information, see the IOM of the DCT controller.

When setting up the DCT, the “high limit” is normally set at 5” w.g. and the “low limit” is normally set up at 2” w.g. Different applications require different settings. Please contact AAF International for assistance.

For troubleshooting and for further information, see the Dwyer DCT controller IOM.

9.3.10 Compressed air connections

The FabriPulse Fusion dust collector requires dry compressed air (-40°F dew point, 80-100 psig) for cleaning. See product literature for the compressed air requirement for the nominal compressed air requirements. When the dust collector is set on a timer, the timer is factory set at a 30 second pulse interval.

For equipment with multiple modules, the supply can be attached by:

- In series: Via a receiver located at the end of the filter and joining the rest of the receivers by means of a flexible line,

- In parallel: Attaching individual supplies with shut-off valves for each one of the receivers.

Parallel connection allows a leaking receiver to be isolated, while the rest of the system works normally.
The FabriPulse Fusion will require the compressed air as shown below:

<table>
<thead>
<tr>
<th>Size</th>
<th>Compressed Air Usage @ 100 psig</th>
<th>Size</th>
<th>Compressed Air Usage @ 100 psig</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>8</td>
<td>432</td>
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<td>144</td>
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</tr>
<tr>
<td>384</td>
<td>12</td>
<td>720</td>
<td>22</td>
</tr>
</tbody>
</table>

Compressed Air Usage is with continuous pulsing every 60 seconds

When sizing a compressor, add a minimum of 20% capacity for duty cycle plus any bleed air required by a regenerative air dryer.

Do not use over 120 psig of compressed air. Solenoid valves will not operate and can cause damage to collector components.

9.3.11 Ductwork Installation

Install the inlet ductwork to the front inlet above the access doors. Connect the clean air duct (or manifold) to outlet(s) located on the bottom and rear side of the clean air plenum.

Ductwork should be of sufficient gauge to withstand the system design pressure and should be independently supported.

The FabriPulse Fusion is not designed to support ductwork.

10 EXPLOSION VENTS

The following only applies to AAF-supplied explosion vents. Additional and/or different steps, equipment, etc. may be needed for vents and other equipment not supplied by AAF. Further, the following is a non-exhaustive list of recommendations, and users must carefully read, among other things, the manufacturer’s explosion vent guide for further instructions.
10.1 Installation of the explosion vent
If an explosion vent is ordered with the FabriPulse Fusion, the explosion vent is shipped separately from the collector. Ensure no damage has been done to the explosion vent during shipping or handling.

The FabriPulse Fusion will have a frame constructed as part of the unit where the explosion vent is mounted. The number of explosion vents and location of the explosion vent will be detailed on the collector drawing.

10.2 Assembly
Ensure no damage has been done to the explosion vent during shipping or handling. The FabriPulse Fusion will have a frame constructed as part of the unit where the explosion vent is mounted. The number of explosion vents and location of the explosion vent will be detailed on the collector drawing.

Gripping the opposite sides, carefully remove the explosion vent from the crate that it was shipped. Avoid excessive flexure of the explosion vent while handling.

**CAUTION:** The edges of the explosion vent can be sharp.

**CAUTION:** Incorrect installation of the explosion vent can cause the panel to not open at the rated burst pressure.

Place the explosion vent over the protruding bolt holes of the frame. Make certain the dome is protruding outwards. Install the outlet frame.

Install bolts and nuts and tighten hand tight. Tighten nuts to 27–34 Newton meters torque.
To ensure proper installation of your explosion vent, carefully read the separate manufacturer’s explosion vent installation guide.

**WARNING:** personal injury, death, and/or property damage can result from material discharge during venting.

**10.3 Explosion Vent Burst Sensor**

All standard explosion vents come with a burst sensor. This can be connected to an AAF Control Center or to the customer’s controls to shut down the unit when an event occurs.

The magnetic sensor is suitable for use in Class I and II, Division I, Groups A to G.

Under normal operation, when the disk is closed, the switch is closed. When the disk opens, the switch opens (no electrical flow).
The connection cable is two wire, 3 feet long and has a voltage of 30VDC and current of 10 mA. This cable will be wired on site.

To ensure proper installation of your explosion vent, carefully read the separate manufacturer’s explosion vent installation guide.

**WARNING:** personal injury, death, and/or property damage can result from material discharge during venting.

### 10.4 Servicing
Explosion vents should be inspected regularly to confirm physical and operational condition. Replace any damaged or worn parts immediately.

### 10.5 Safety distance
The material discharged during a vented explosion must be directed outdoors.

Locating equipment with explosion vents outdoors is always recommended.

Measures should be taken to reduce the risk to personnel and equipment from the effects of fireball temperature and pressure. In the event of a vented explosion, use the guidance detailed in NFPA 68 to determine the maximum width and height of the flame.

### 11 START-UP & OPERATION

#### 11.1 Start-up checklist
Check the compressed air lines to be sure they are connected to the 1” NPT connection on the top of the compressed air manifold(s). Pressure available should be 80-100 psig.

Check that the bags are properly installed and sealed.

Check the fan to ensure it is rotating in the proper direction. Check the fan for any foreign objects.

Ensure the hopper discharge device(s) (if any) is operating properly. Follow the manufacturer’s instructions as needed.
Energize the pulse controller and ensure the correct mode and parameters are set (reference to the controller manual or section 9.3.9).

Listen for firing of the pilot solenoids and diaphragm valves to determine that they are all operational. Note that as each solenoid is activated, a “click” can be heard and a small vibration can be felt on the cover of the solenoid valve enclosure. When the diaphragm valve is activated, a small jet of air vents from the hole at the solenoid valve base and there will be a sharp noise as the compressed air is allowed to escape from the compressed air manifold.

Before introducing any dust to the collector, turn the power off to the controller and reset the high and low set points to 5” w.g. and 2” w.g., respectively.

Start the fan with the fan damper or duct blast gates partially open. At the same time, observe the controller’s differential pressure gauge. This gauge indicates the differential pressure across the filter elements and dust cake. Rising pressure on the gauge shows that dust is being collected. When the gauge shows 2-5 inches w.g., the fan damper or blast gates may be adjusted to their normal position. At this time the power to the timer/controller should be turned on.

Check the controller again. It should read between 2 and 5” w.g. with slight fluctuations each time a pulse occurs. This indicates that the factory setting of the differential pressure, or timer, is correct. Excessive pulsing can cause premature bag wear. On demand pulse units do not change on time pulsing interval, but instead change the pressure settings.

Due to the design of the FabriPulse Fusion, changes in differential pressure may take days rather than hours to change appreciably.

11.2 Normal operation
An understanding of the design and operating principle of the FabriPulse Fusion is essential for effective operation and maintenance. Knowledge of the collector nomenclature is necessary so that parts may be easily identified and located.

The FabriPulse Fusion is a modular, continuous, automatic, self-cleaning, pulse-jet dust collector. The dirty air enters the collector through one or more rectangular inlets. A baffle is located at the inlet to deflect the dust into the hopper, providing uniform air stream distribution, and to protect the bags from...
direct impingement. After the dust laden air leaves the baffle area, it passes through the filter media, depositing the dust on the outside surface of the individual filter bags. The cleaned air leaves the filter bags and discharges into the plenum at the top of the collector, where it is then exhausted through the outlet.

The filter bags are periodically cleaned by bursts of compressed air that are directed down the inside of the bags. A venturi located in the top of the bag cage induces additional air to the inside of the bags being cleaned. This reverses the flow of air through the bags and dislodges the dust cake from the surface of the bag, allowing it to settle into the hopper. Since only a small percentage of the bags are cleaned at one time, the unit remains in continuous operation.

**NOTE:** Hoppers are designed to receive the dust and are not for storage. The recommended practice is to continuously empty the hopper by means of a rotary lock and/or screw conveyor, or by some other discharge device.

**12 MAINTENANCE**

It is suggested that a record is kept of operational data and that all servicing maintenance is recorded. A maintenance log is included in this IOM.

Operational data to be recorded could include measurements taken of the air flow rate and the pressure differential across the FabriPulse Fusion bags. This should be recorded weekly or monthly. This record can assist with maintenance schedules and show collector variances due to operations.

Maintenance data to be recorded should include details of inspections and any parts replaced.

See final page of IOM for Maintenance Interval Checklist.

**12.1 Initial Weekly Maintenance**

This should be done during the first month of initial collector operation:

Record the differential pressure across the FabriPulse Fusion at start-up. Record the collector differential pressure regularly for at least the first 30 days of operation.

Adverse operating conditions can be detected by a change in differential pressure. The differential pressure can be read on the display of the pulse
controller. After start-up, the dust collector’s differential pressure should settle to approximately 2-5 inches w.g.

The filter cleaning cycle is automatically controlled from the pulse controller with either the differential pressure set points or the timed interval used to maintain a steady pressure differential across the filter.

Do not be alarmed if cleaning pulses cause momentary spikes in the differential pressure readings.

**NOTE:** The time interval between pulses is factory pre-set at 30 seconds. It may be changed and is dependent on the application. Effective cleaning is reliant upon pulse frequency, duration and pulse compressed air pressure. The pulse duration is pre-set at 100 milliseconds. DO NOT change the factory setting without contacting an AAF International representative.

Inspect the dust disposal equipment on a regular basis during the first month of operation to determine that the collected dust is being disposed at a rate consistent with the operation. Failure to ensure that the collected dust is taken away at the appropriate rate will result in material building up into the hopper and could cause malfunction. This is especially important if the dust is being collected into drums or other such container. Once the dust collection rate is understood, a maintenance schedule for emptying the containers should be set.

### 12.2 Six months

Examine the FabriPulse Fusion bags for any wear, damage, or excessive deposition of dust. Consult the records for differential pressure and flow to identify signs of rising differential pressure across the bags. If the bags can no longer maintain a consistent differential pressure, the FabriPulse Fusion bags need to be replaced. Replacement of the bags should occur as soon as possible.

Examine the inlet ducting for material drop-out. If there is significant drop out, airflow may need to be increased.

Inspect all joints for evidence of air or dust leakage.

Check for evidence of moisture or dust build up within the collector. Moisture in the collector can cause plugging and premature bag failure.

Check all electrical apparatus for proper operation.
Check for correct operation of the solenoid valves and the diaphragm valves.

Check discharge air condition for signs of dust. See Troubleshooting if bypass occurs.

Check the dust disposal equipment for correct operation and comply with any lubrication or maintenance instructions in the relevant manufactures’ instructions. If an AAF barrel top adapter mechanism is installed, check the condition of the flexible, or hard pipe, sleeve and replace if showing signs of wear or if torn.

Check all safety & warning labels are intact and legible and secure.

### 12.3 Annual Maintenance

Remove the diaphragms and the valves for wear. Replace them with new items if required.

**NOTE:** a replacement diaphragm and its return valve are supplied in the diaphragm replacement kit.

Remove the used solenoids from within the solenoid box enclosure and replace them with new items if required.

**NOTE:** AAF recommends having a spare set of diaphragm and solenoid kits available at all times.

Inspect all gaskets and panels for possible leak points. Replace gaskets and re-caulk panels as necessary.

### 12.4 Filter removal and installation

Disconnect power and lock out any electrical power sources before servicing.

**CAUTION:** Dirty bags may be heavy, use caution when removing the bags from the dust collector.

Do not operate the dust collector with missing or damaged bags.

The working area requires good ventilation. Some applications involve hazardous gasses and dusts. Check with an authorized person before work
commences to avoid exposure to hazardous substances. Appropriate PPE should be considered and worn.

In order to minimize escape of dust particles which have been deposited in the FabriPulse Fusion bags, it is recommended the used bags are placed into polythene sacks as they are withdrawn from the unit for ultimate safe disposal.

**NOTE:** When replacing the FabriPulse Fusion bags, drop the used bags into the hopper of the collector. This ensures the clean air plenum is not contaminated with the dirty bags. All FabriPulse Fusion collectors come with hopper access doors to access the used bags after filter change out.

Follow section 9.3.7 for full bag installation instructions.

### 12.5 Accessories

AAF accessories should be inspected for wear or damage on the same interval as the bags.

Any accessory equipment should follow the maintenance schedule that is included in the manufacturer’s IOM.

See final page of IOM for Maintenance Interval Checklist.
13 TROUBLESHOOTING

13.1 High Differential Pressure 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 pipe jets should be checked to verify operation of the pulse valves. Pulse valves can be easily disassembled and rebuilt in place.

**Leaking Dust Discharge Device**
A leaking rotary lock, screw conveyor, slide gate, etc. can overload the Fusion by preventing dust discharge after pulsing. This can cause high differential pressure, excessive bag wear, and reduced air volume. Seal any such leaks or replace.

**Condensation**
High humidity may cause blinding of bags, which results in excessive differential pressure. Run the cleaning mechanism with the fan off and the program timer on, or with the pressure switch set to zero, 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. Exterior insulation may also be necessary. 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 buildup can cause a high differential pressure. If possible, increase the humidity using discretion to avoid creating condensation. Grounded bags may also be required in situations where a spark may result in ignition of an explosive dust.

Collector Overloads
Too much air or dust will create high differential pressure across the collector. Check the fan speed, system design, pre-cleaners, and the damper position. Also ensure the dust load and air volume is within the system design parameters.

13.2 Visible Discharge

Improperly Installed or Damaged Bags
Check for holes or tears in bags. Replace damaged bags. Reseal bags as necessary.

Insufficient Dust Cake
The unit could be pulsing too often, resulting in over cleaning. Verify the differential pressure is at least 2" w.g. Increase the pulse interval until the unit is operating stably at 2" differential pressure minimum.

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

13.3 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.

Fan V-Belt Slippage
Tighten the V-belts if necessary. Replace broken or stretched belts.

Leaks
Leaking ductwork, access doors, explosion vents, dust discharge devices, or housing will cause insufficient suction at the pickup point. Seal any leaks.

Closed Air Passages
Clogged ducts, closed dampers, or closed gates 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 selection.

**13.4 Fabric Bag Problems**

**Excessive Temperatures**
Operating temperature should not exceed the specified maximum.

**Humidity**
Humidity can blind bags. The moisture results in a denser dust cake accumulation, or cements dust to the bag. Drawing dry air through the collector may dry the dust enough to allow the collector to clean with the fan off. If this method does not work, the bags must be dry cleaned or new bags installed.

**Dust Characteristics**
Each bag material is selected for specific physical and chemical characteristics which are compatible with the gas stream composition and temperature.

**Dust Buildup In Hoppers**
Dust buildup in the hopper may generate a problem in the bag area and cause excessive abrasion of the bags. The buildup may be caused by a malfunctioning discharge device, or by condensation in the hopper. It may be necessary to add a vibrator to the hopper, or add hopper heaters and insulation.

**Bag Wear On The Inside**
Dirt on the clean side of the bags will cause the bags to wear from the inside. This could be the result of a broken bag, incorrect bag installation, or an improper tube sheet seal. Vacuum the clean air side of the plenum, replace the bag, correct and reseal the bag in the tube sheet. Do not blow dirt inside the bags. Any dirt contained in the bags should be vacuumed out.
14 REPLACEMENT PARTS LIST

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 actual quantities required.

<table>
<thead>
<tr>
<th>Spare Parts</th>
<th>Description</th>
<th>Recommended Spares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diaphragm Valve Repair Kit, Low Temperature (180°F)</td>
<td></td>
<td>10% Number Required</td>
</tr>
<tr>
<td>Or</td>
<td>Diaphragm Valve Repair Kit, High Temperature (400°F)</td>
<td>10% Number Required</td>
</tr>
<tr>
<td>Solenoid Valve Repair Kit (NEMA 4)</td>
<td></td>
<td>10% Number Required</td>
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<tr>
<td>10 Point Printed Circuit Board</td>
<td>1 Timer</td>
<td></td>
</tr>
<tr>
<td>22 Point Printed Circuit Board</td>
<td></td>
<td></td>
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<tr>
<td>DCP 100 Pressure Module</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse Pipe Connector Seal, Low Temperature (to 180°F)</td>
<td>Set (one for each pulse valve)</td>
<td></td>
</tr>
<tr>
<td>Or</td>
<td>Pulse Pipe Connector Seal, High Temperature (to 400°F)</td>
<td>(one for each pulse valve)</td>
</tr>
<tr>
<td>Pulse Pipe Hairpin (SST)</td>
<td></td>
<td>10% Number Required</td>
</tr>
</tbody>
</table>

To obtain replacement parts:
Call: 1-800-477-1214
Or email: APCSales@AAFINTL.com.

When ordering parts provide the FabriPulse Fusion, the size, control number and serial number (see the product nameplate) should be on hand.
## Maintenance Log - FabriPulse Fusion

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Model Number</th>
</tr>
</thead>
</table>

### Daily (first week)

<table>
<thead>
<tr>
<th>Date</th>
<th>Differential Pressure</th>
<th>Record compressed air pressure</th>
<th>Are solenoids operating?</th>
<th>Are diaphragm valves operating?</th>
<th>Dust disposal level recorded?</th>
</tr>
</thead>
</table>

### Weekly

<table>
<thead>
<tr>
<th>Date</th>
<th>Differential Pressure</th>
<th>Record compressed air pressure</th>
<th>Check hopper is empty</th>
<th>Dust disposal level maintained?</th>
</tr>
</thead>
</table>

### Monthly

<table>
<thead>
<tr>
<th>Date</th>
<th>Examine bags for damage or holes</th>
<th>Examine inlet and outlet duct for dropout or bypass</th>
<th>Is moisture present in collector?</th>
</tr>
</thead>
</table>

### Six Month Check

<table>
<thead>
<tr>
<th>Date</th>
<th>Examine bags</th>
<th>Examine collector joints for leakage</th>
<th>Check correct electrical operation</th>
<th>Examine dust disposal equipment</th>
<th>Examine auxiliary equipment maintenance</th>
</tr>
</thead>
</table>

### Annually

<table>
<thead>
<tr>
<th>Date</th>
<th>Replace diaphragm valves as needed</th>
<th>Replace solenoid valves as needed</th>
<th>Examine inlet ductwork for dust accumulation</th>
<th>Examine outlet ductwork for dust accumulation</th>
<th>Examine and replace all air lines and DP tubing for cracks or clogging</th>
</tr>
</thead>
</table>
Sales Offices:

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