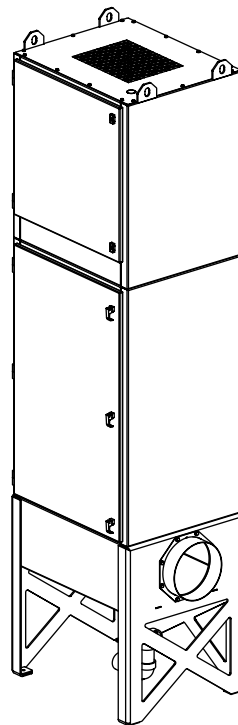




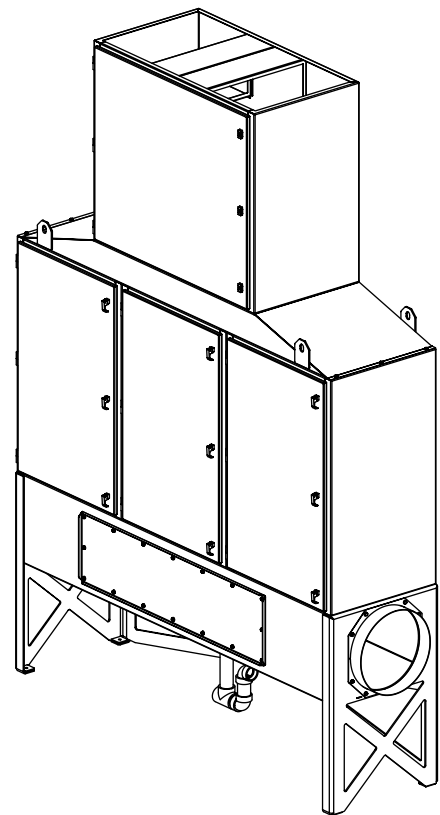
# Installation and Operation Manual

## Modular MediaFilter™ - Vertical Series Collector

Models MDV-1, MDV-2, and MDV-3



MDV-1



MDV-3



Throughout this manual statements indicating precautions necessary to avoid equipment failure are referenced in a **Note**. Statements indicating potential hazards that could result in *personal injury* or *property damage* are referenced in a **Caution!** box.

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



## Caution!

### Application of Mist Control Equipment

- Combustible materials such as buffing lint, paper, wood, aluminum or magnesium dust, weld fume, or flammable solvents represent a fire or explosion hazard. Use special care in the selection and operation of all mist collection equipment when combustible materials are present to protect workers and property from damage due to fire and/or explosion. Consult and comply with National and Local Codes relating to fire or explosion, and all other appropriate codes when determining the location and operation of mist collection equipment.
- When combustible materials are present, consult with an installer of fire extinguishing systems familiar with these types of fire hazards and local fire codes for recommendations and installation of fire extinguishing and explosion protection systems. Donaldson Dust/Mist Collection equipment is not equipped with fire extinguishing or explosion protection systems.
- **DO NOT** allow sparks, cigarettes, or other burning objects to enter the hood or duct of any mist control equipment as these may initiate a fire or explosion.
- For optimum collector performance, use only Donaldson replacement parts.

**Warning** – Improper operation of a mist control system may contribute to conditions in the work area or facility that could result in severe personal injury and product or property damage. Check that all collection equipment is properly selected and sized for the intended use.

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This manual contains specific precautionary statements relative to worker safety. Read thoroughly and comply as directed. Discuss the use and application of this equipment with a Donaldson representative. Instruct all personnel on safe use and maintenance procedures.

## Data Sheet

Model Number _____	Serial Number _____
Ship Date _____	Installation Date _____
Customer Name _____	
Address _____	
_____	
Filter Type _____	
Accessories _____	
Other _____	

## Description

The Modular MediaFilter - Vertical Series Collector collects airborne mist such as oil, water-soluble, and synthetic coolant from machining operations. Three stages of filtration, plus an additional prefilter and HEPA or 95% DOP filter, provides a cleaner work environment as well as a more cost-effective means of mist collection. With a nominal airflow capacity of 1,000/2,000 cfm for Model MDV-1; 2,000/4,000 cfm for Model MDV-2; and 3,000/6,000 cfm for Model MDV-3, the Modular MediaFilter collector is a strategic component to meeting industrial and government air-quality standards. The high efficiency filters allow air and coolants to be recycled, and the filter efficiency remains constant as the unit operates.

A variety of prefilter options specifically designed for mist collection, from heavy liquid-load to heavy particulate-load applications, are available to increase the versatility of the unit.

## Purpose and Intended Use

Airborne mists are small droplets of liquid suspended in the air. Modular MediaFilter - Vertical Series Collectors are used in machine tool operations using metalworking fluids. Metalworking fluids include straight oil, water-soluble coolants, synthetic coolants, and semi-synthetic coolants. These fluids perform a variety of functions such as lubricating or cooling the part or the tool, flushing chips away from the part, and suppressing dust and smoke. Oils and coolants allow machines to operate faster and tools to last longer resulting in high quality parts.

Mist is created in two ways: mechanical action or thermal effects. Mechanical action refers to aerosol used for light lubrication and generally creates mist greater than one micron in size. Thermal effects occur when heat vaporizes the coolant, the vapor cools and recondenses into a mist. Thermal effects create mist from 0.01 to 1 micron in size. Other contaminants, such as dust from the part or the tool, or smoke from the combustion of the oil or coolant are also generated when using metalworking fluids.

The Modular MediaFilter - Vertical Series Collector is specifically designed to collect and filter mist from the air. With a properly selected prefilter and the high-loft vee-bag (primary filter), the Modular MediaFilter can also be used on applications ranging from mist with high volumes of dust to wet and sticky contaminants.

## Operation

**Caution!**

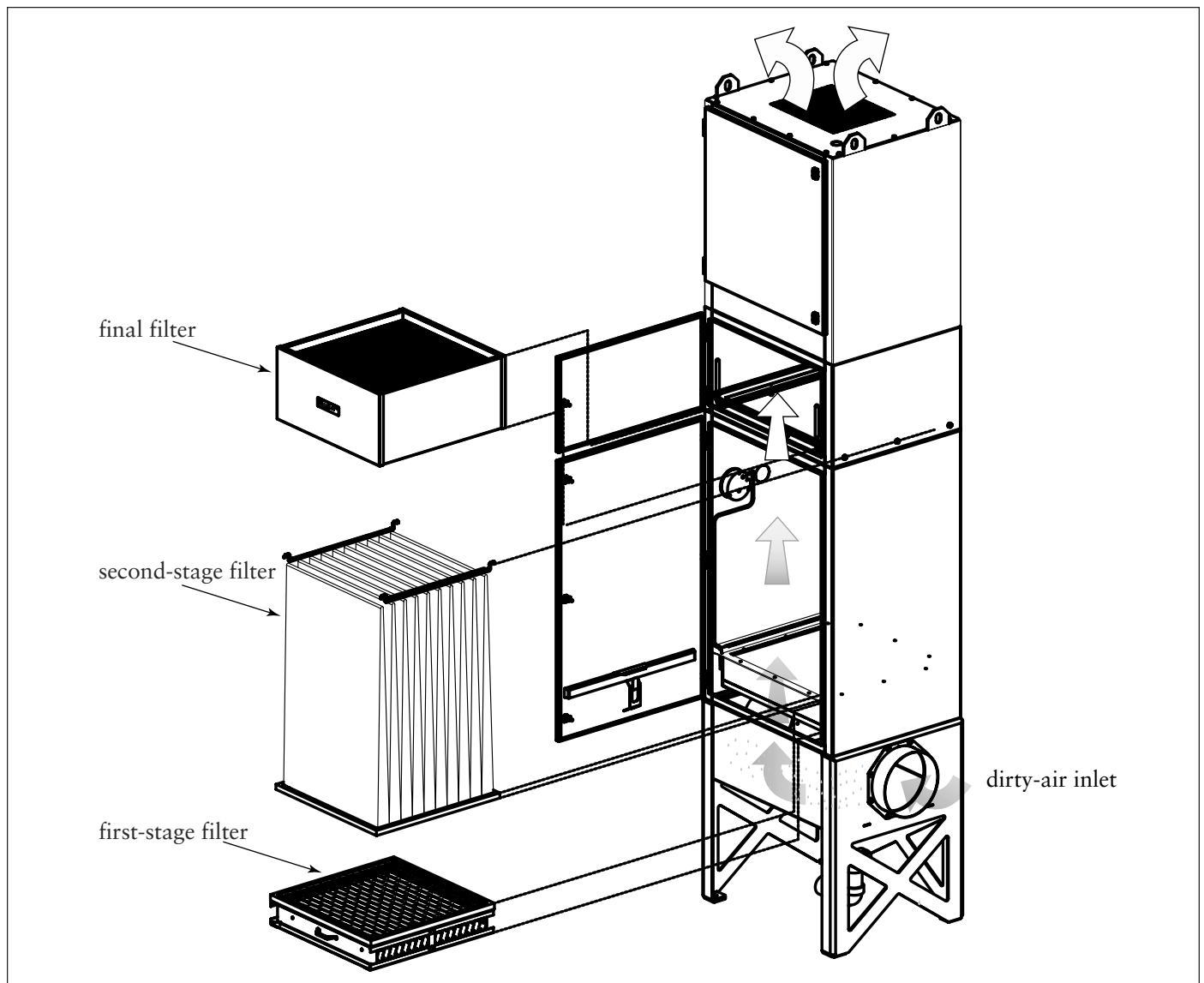
- Misuse or modification of this equipment may result in personal injury.
- Do not misuse or modify.

During normal operation, contaminated air enters the unit through one of the dirty-air inlets located on each side, toward the bottom of the unit. The incoming air slows and turns upward, causing large mist droplets and particles to fall out of the

airstream and into the hopper. The incoming air passes through the prefilters first. The prefilters are designed to reduce the liquid- and particulate-load to the primary filter. Smaller mist droplets pass to the primary filter where the small droplets collect and drain.

Clean, mist-free air is discharged through the top of the unit. A Magnehelic® gauge, mounted on the side of the unit, monitors the pressure drop across the prefilters and primary filter.

Magnehelic® is a registered trademark of Dwyer Instruments, Inc.



*Unit Operation, Model MDV-1 Shown*

## Inspection on Arrival

1. Inspect unit on delivery.
2. Report any damage to the delivery carrier.
3. Request a written inspection report from the Claims Inspector to substantiate claim.
4. File claims with the delivery carrier.
5. Compare unit received with description of product ordered.
6. Report incomplete shipments to the delivery carrier and your Donaldson representative.
7. Remove crates and shipping straps. Remove loose components and accessory packages before lifting unit from truck.

## Installation Codes and Procedures

1. Safe and efficient operation of the unit depends on proper installation.
2. Authorities with jurisdiction should be consulted before installing to verify local codes and installation procedures. In the absence of such codes, install unit according to the National Electric Code, NFPA No. 70-latest edition.
3. A qualified installation and service agent must complete installation and service of this equipment.

## Installation

### Site Selection, Grade-Mounted Units

1. The unit can be located on a reinforced concrete foundation.
2. Provide clearance from heat sources and interference with utilities when selecting the location.



#### Caution!

OSHA may have requirements regarding recirculating filtered air in your facility. Consult with the appropriate local authorities to ensure compliance with all codes regarding recirculating filtered air.

## Unit Location

1. When hazardous conditions or materials are present, consult with local authorities for the proper location of the collector.
2. Foundation must be sized to accommodate the entire weight of the unit, plus the weight of the collected material, piping, and ductwork.
3. Prepare the foundation in the selected location. Install anchor bolts to extend a minimum of 1-1/2-inches above foundation unless otherwise indicated on the Specification Control drawing.
4. Locate the collector to ensure the shortest and straightest inlet duct length, easy access to electrical connections and routine maintenance.



#### Caution!

- Combustible materials such as buffing lint, paper, wood, aluminum or steel dust, weld fume, and flammable solvents represent fire or explosion hazards.
- Use special care when selecting and operating all collection equipment when combustible materials are present to protect workers and property from damage due to fire and/or explosion.
- Consult and comply with National and Local Codes relating to fire or explosion, and all other appropriate codes when determining the location and operation of mist collection equipment.
- Donaldson equipment is not equipped with fire extinguishing or explosion protection systems.

## Electrical Wiring



### Caution!

- Electrical installation must be performed by a qualified electrician and comply with all applicable national and local codes.
- Lock out electrical power sources before performing service or maintenance work.
- Do not install in classified hazardous atmospheres without an enclosure rated for the application.

1. All electrical wiring and connections, including electrical grounding, should be made in accordance with the National Electric Code, NFPA No. 70-latest edition.
2. Check local ordinances for additional requirements that apply.
3. The appropriate wiring schematic and electrical rating must be used. See unit's rating plate for required voltage.
4. If the unit is not furnished with a factory-mounted or shipped loose disconnect switch, an electric disconnect switch having adequate amp capacity shall be installed in accordance with Part IX, Article 430 of the National Electrical Code, NFPA No. 70-latest edition. Check unit's rating plate for voltage and amperage ratings.
5. Refer to the wiring diagram for the number of wires required for main power wiring and remote wiring.

## Rigging Instructions

### *Suggested Tools & Equipment*

Crane or Forklift	Pipe Wrenches
Slings, Spreader Bars, and Clevis Pins	Socket Wrenches
Clamps	End Wrenches
Screwdrivers	Large Crescent Wrench
Pipe Sealant	Drill and Drill Bits

### Hoisting Information

1. Use all lifting points provided.
2. Use clevis connectors, *not hooks*, on lifting slings.
3. Use spreader bars to prevent damage to the unit's casing.
4. Check the Specification Control drawing for weight and dimensions of the unit, subassemblies, and components to ensure adequate crane capacity.
5. Allow only qualified crane operators to lift the equipment.
6. Refer to applicable OSHA regulations and local codes when using cranes, forklifts, and other lifting equipment.
7. Lift unit and accessories separately, and assemble after unit is in place.



### Caution!

- Failure to lift the collector correctly can result in severe personal injury or property damage.
- Use appropriate lifting equipment and adopt all safety precautions needed for moving and handling the equipment.
- A crane or forklift is recommended for unloading, assembly, and installation of the collector.
- Location must be clear of all obstructions, such as utility lines or roof overhang.

## Standard Equipment



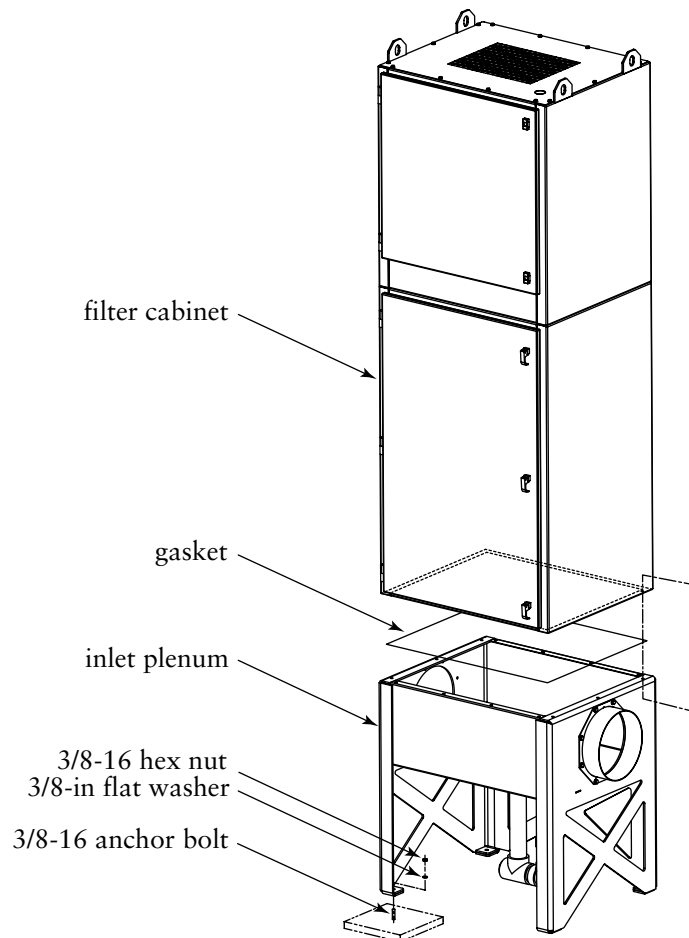
### Caution!

The collector has a high center-of-gravity and may overturn if not secured properly.

- Secure the collector to the lifting device.
- Use care when moving the unit.

The Modular MediaFilter collector is shipped in two sections; an inlet plenum and a filter cabinet section with power pack.

1. Prepare the foundation in the selected location. Install customer-supplied 3/8-16 anchor bolts to extend a minimum of 1 1/2-inches above foundation.
2. Using a crane or forklift, lift the inlet plenum into position over the anchor bolts and lower slowly.
3. Level inlet plenum and secure to anchor bolts.
4. Apply the gasket shipped with the unit to the inlet plenum's top flange.
5. Using a crane or forklift, lift the filter cabinet with power pack into position over the inlet section, lower slowly, and align bolt holes.
6. Secure the filter cabinet to the inlet section with the hardware supplied.
7. Remove crane.

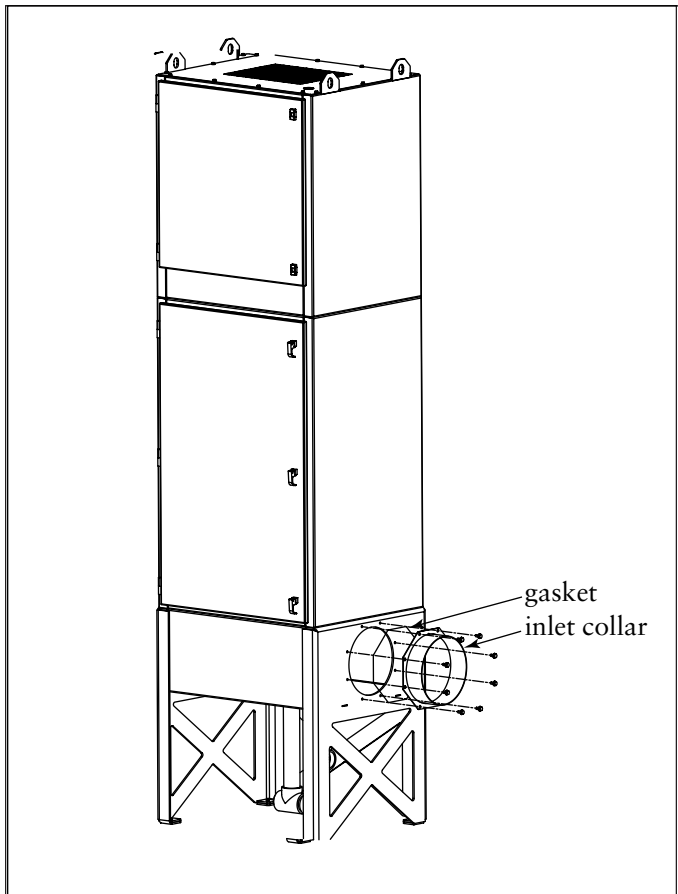


*Typical Installation, Model MDV-1 Shown*



## Inlet Collar Installation

1. Install the inlet collar to the desired inlet location using the gasket and hardware supplied.
2. Install the inlet blank to the inlet opposite the inlet collar using the gasket and hardware supplied.



*Inlet Collar Installation, Model MDV-1 Shown*

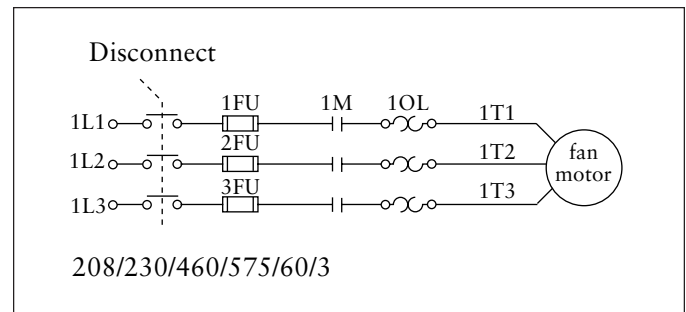
## Electrical Connection



### Caution!

- Electrical installation must be performed by a qualified electrician and comply with all applicable national and local codes.
- Lock out electrical power sources before performing service or maintenance work.
- Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Modular MediaFilter collectors must be equipped with a customer-supplied safety disconnect with short circuit protection, contactors, and overload protection. Complete the wiring as shown in Motor Starter Wiring.



*Motor Starter Wiring*

## Optional Equipment

### Motor Starter Control Box

Mount the motor starter control box in a convenient location. An electrical knockout, sized for 1/2-in fittings, is provided on the left-hand side of the blower cabinet. Increase knockout size using a drill as required.

1. Using the wiring diagram supplied inside the control box and the instructions on the motor decal, make the connections to the blower motor.

**Note:** If the unit is supplied with an optional junction box, wire the motor starter to the terminal strip located inside the junction box according to the wiring diagram supplied with the junction box.

2. Turn the fan-motor ON then OFF and check for proper rotation. Proper rotation is clockwise.

**To reverse rotation, three-phase power supply:**

Turn electrical power OFF at source and switch any two leads on the output-side of the fan-motor starter.

3. Ground cabinet according to local electric codes.



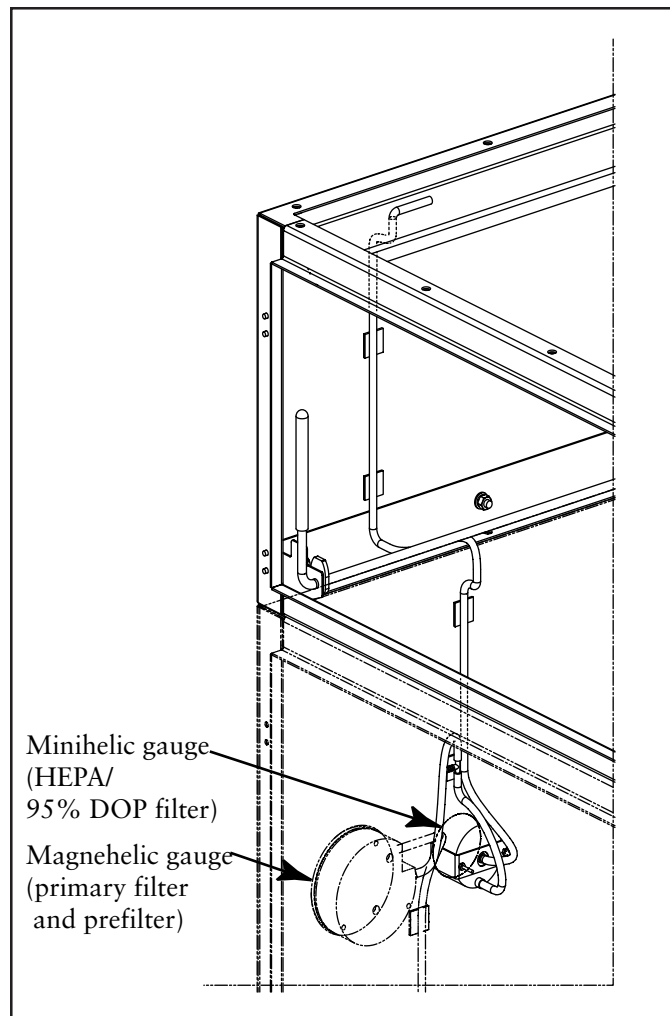
#### Caution!

- **Do not** look into fan outlet to determine rotation.
- Check that the exhaust plenum is free of tools or debris before checking blower/fan rotation.
- Stand clear of exhaust to avoid personal injury.

### HEPA/95% DOP Filter

If a HEPA or 95% DOP Filter module was ordered with this collector, a Minihelic gauge comes factory installed for measuring the pressure drop across this filter.

Minihelic® is a registered trademark of Dwyer Instruments, Inc.



*Magnehelic and Minihelic Gauge Configurations  
with HEPA/95% DOP Module*

## Sprinkler Installation



### Caution!

Sprinkler systems place a large quantity of water in the mist collector when activated. Provide adequate drainage to remove water. Excess water weight can cause the leg structure to collapse.

Optional fire control sprinklers are available for the Modular MediaFilter collector. Model MDV-1 uses one sprinkler and Models MDV-2 and MDV-3 use two sprinklers. Each Donaldson Torit-supplied sprinkler requires 20 to 60 psig water pressure with a 1-in supply line. The volume of water discharged per sprinkler head at 20-psig is 6.3 gallons per minute.

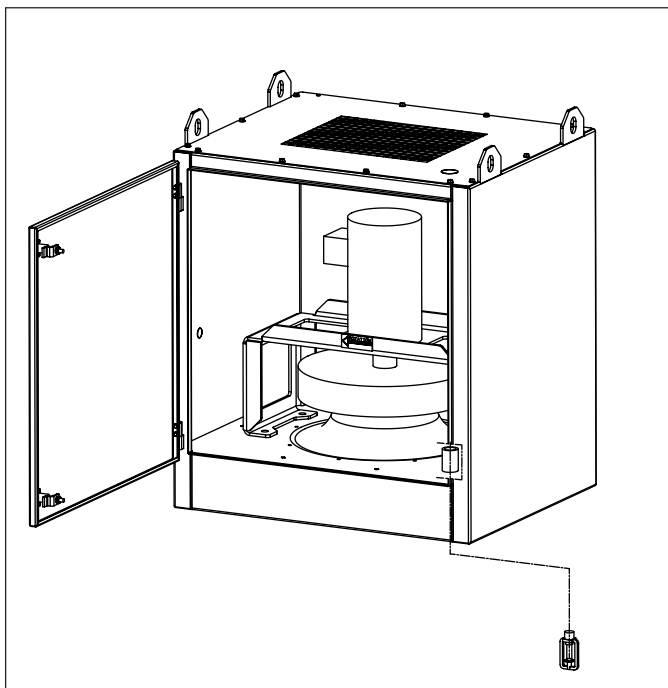
**Note:** Consult with local authorities when installing fire control systems on collection equipment.

1. Remove or open the final filter access door (primary filter or HEPA/95% DOP access door) and remove the final filter to access the sprinkler tap located in the blower chamber.
2. Remove the 1/2-in pipe plug from the sprinkler tap.
3. Apply pipe sealant to the sprinkler threads.
4. Thread the sprinkler into the 1/2-in sprinkler tap so the sprinkler is located above the final filter as shown and tighten securely.

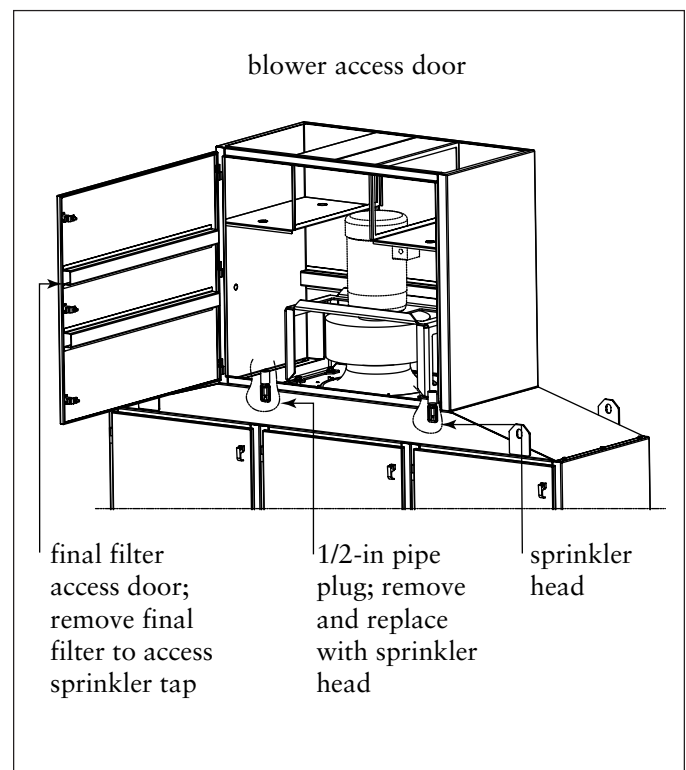


### Caution!

Each sprinkler requires a 1-in supply line at 20 to 60 psi water pressure.



*Sprinkler Installation, (Blower Cabinet)  
Model MDV-1 Shown*



*Sprinkler Installation, Model MDV-3 Shown*

## Preliminary Start-Up Check

1. Check all electrical connections for tightness and contact.
2. Check for and remove all loose items in or near the inlet and outlet of the unit.
3. Check that all service switches are in the OFF position.
4. Check that all optional accessories are installed properly and secured.
5. Check that all filters are properly installed and filter access doors are closed and latched.
6. Fill P-Trap or ensure other type of drain is properly installed.
7. Turn power ON at source.
8. Turn the fan motor ON then OFF to check for proper rotation by referencing the rotation arrow.

### To reverse rotation, three-phase power supply:

Turn electrical power OFF at source and switch any two leads on the output-side of the fan-motor starter.



### Caution!

- **Do not** look into fan outlet to determine rotation.
- Check that the exhaust plenum is free of tools or debris before checking blower/fan rotation.
- Stand clear of exhaust to avoid personal injury.

## Service Information



### Caution!

Lock out electrical power sources before performing service or maintenance work.

## Operational Checklist

1. Monitor overall performance of the collector.
2. Monitor exhaust. Exhaust should remain visually clean throughout filter life. If leaks are visible, check the filters for positive gasket seals.
3. Monitor hopper drainage. If slow or stopped, check hopper for obstructions and clean as necessary.
4. Check that the P-trap is full. Refill if low or dry.
5. Check the prefilter and clean or replace as required.
6. Monitor pressure drop on the Magnehelic gauge and Minihelic gauge (if unit is supplied with 95% DOP or HEPA). If the reading is significantly higher than initial clean filter reading, filter replacement or prefilter cleaning may be required.

**Note:** **Do not** operate the unit without the prefilters in place. Significant reduction in primary filter life can result.

## Prefilter Cleaning and Replacement

All prefilters except the multi-vee can be cleaned and reused. Remove the prefilter through the lower access door. Wash prefilter in an appropriate wash tank, rinse, dry, and re-install. Replace the multi-vee prefilter as necessary.

The high efficiency and multi-vee prefilters have a 1-in mesh screen on the inlet side. This screen is designed to reduce the particulate load to the high efficiency and multi-vee prefilters extending their life.

The impinger has a 1-in mesh screen on the outlet side to reduce particulate load and evenly distribute the airflow to the primary filter.

When servicing prefilters, always clean the 1-in mesh screen. Check that all particulate is removed. Replace the screen if particulate cannot be removed by cleaning.



### Caution!

- Use proper safety and protective equipment when removing contaminants and filters.
- Dirty filters may be heavier than they appear.
- Use care when removing filters to avoid personal injury.
- Do not drop filters.

## Primary Filter (Vee-Bag) Replacement

**Note:** The vee-bag filter must be replaced. *Do not wash.*

1. Open the filter access door.
2. Remove the filter support rods by lifting the rods from the retaining brackets.
3. Pull rods from the bag hoops.
4. Slide the vee-bag out through the door opening to remove it from the filter cabinet. Dispose of the filter.
5. Install a new vee-bag in the cabinet by sliding the filter into the filter retention slot. Ensure that the pile gasket on the bottom of the filter retention slot is secure. Replace if necessary.
6. Place a support rod through the 10 filter loops on the right and left sides of the filter.
7. Place the support rods in the retention bracket at the top of the filter module.
8. Inspect the door gaskets and replace as necessary.
9. Close and secure the filter access door.

## Optional HEPA/95% DOP Filter Replacement

**Note:** The final filter must be replaced.  
*Do not wash.*

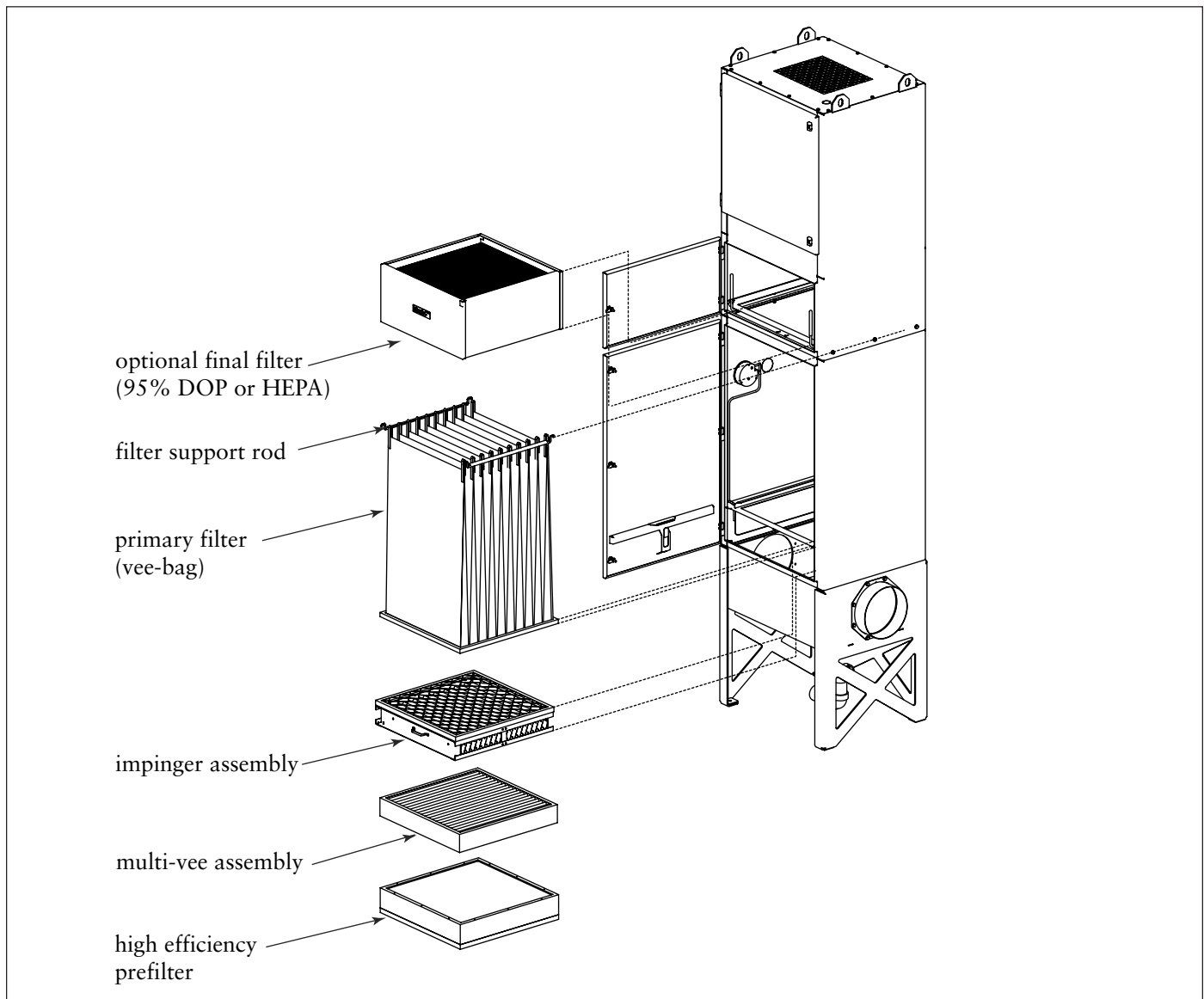
1. Open the final filter access door and lower the retention handles to release the filter.
2. Remove the filter.

**Note:** Dirty filters may be heavier than they appear. Provide a support platform or have two people, one on each side of the filter, and pull the filter out.



### Caution!

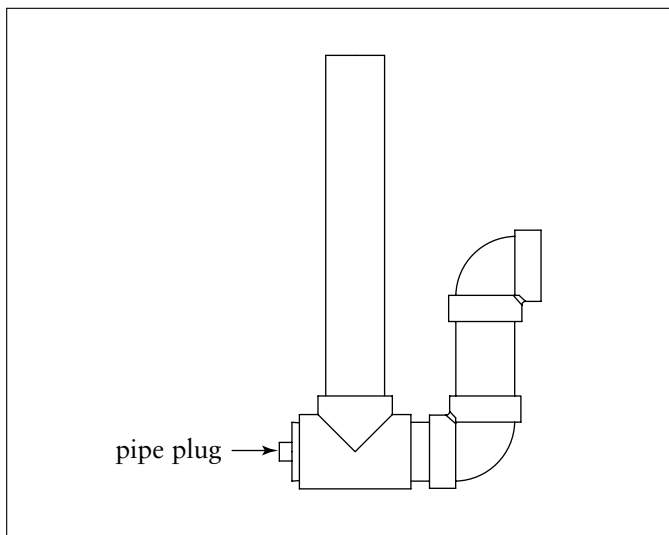
Install filters gasket side up.



*Filter Removal and Replacement, Model MDV-1 Shown*

### P-Trap Service

1. Place a suitable container under the P-trap, turn the collector OFF, and remove the pipe plug.
2. Allow fluid and particulate to drain.
3. Use thread sealant and replace pipe plug.
4. Refill the P-trap with suitable fluid before restarting the collector.



*P-Trap*

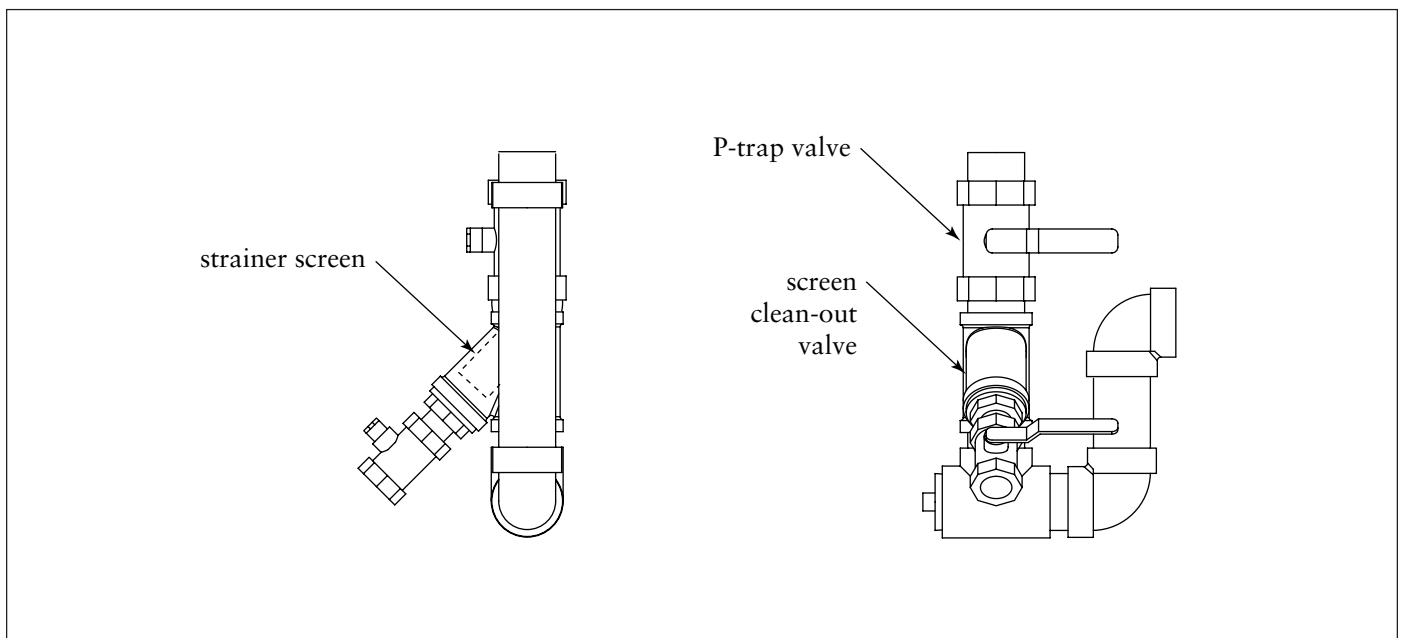
### P-Trap with Y-Strainer, Screen Cleaning

1. Place a suitable container under the screen clean-out valve, turn the collector OFF, close the P-trap valve, then open the screen clean-out valve.
2. Allow fluid and particulate to drain.
3. With the clean-out valve open, *slowly* open the P-trap valve. This allows fluid still trapped in the hopper to drain.

**Note:** A substantial amount of fluid may be trapped in the hopper and could exceed the container capacity. Open the P-trap valve *slowly*.

### P-Trap with Y-Strainer, Screen Removal

1. Close the P-trap valve.
2. Unscrew the screen cap and pull the screen out.
3. Clean the screen and the inside of the Y-strainer body and re-assemble taking care to seat the screen in the body and cap.
4. Close the clean-out valve.
5. Refill the P-trap with suitable fluid before restarting the collector.



*P-Trap with Y-Strainer*

## Troubleshooting

Problem	Probable Cause	Remedy
<b>Blower fan and motor do not start</b>	Improper motor wire size	Rewire using the correct wire gauge as specified by national and local codes.
	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	Unit not wired for available voltage	Correct wiring for proper supply voltage.
	Input circuit down	Check power supply to motor circuit on all leads.
	Electrical supply circuit down	Check power supply circuit for proper voltage. Check for fuse or circuit breaker fault. Replace as necessary.
	Overload relay tripped	Reset. Check amp draw on motor leads.
	Defective overload heater or overload assembly	Replace as necessary.
<b>Blower fan and motor start, but do not stay running</b>	Incorrect motor starter heater elements installed	Check for proper heater elements and replace if necessary.
	Access doors are open or not closed tight	Close and tighten access doors.
	Electrical circuit overload	Check that the power supply circuit has sufficient power to run all equipment.
<b>Clean-air outlet discharging oil mist</b>	Filters not installed correctly	See Service Information on Page 12.
	Filter or filter gasket damage	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Service Information on Page 12.
<b>Insufficient airflow</b>	Fan rotation backwards	Proper fan rotation is clockwise when looking down at the blower motor. See Preliminary Start-Up Check on Page 12.
	Access doors open or not closed tight	Check that all access doors are in place and secure.
	Fan exhaust area restricted	Check fan exhaust area for obstructions. Remove material or debris.
	Prefilter plugged	Remove and clean or replace.
	Filters need replacement	Remove and replace using genuine Donaldson replacement filters.
	Plugged ducting	Check ducting for obstructions and check that dampers in ducting are not closed.
<b>Insufficient hopper discharge</b>	Plugged P-trap	Clean P-Trap. See P-Trap Service on Page 15.
<b>Liquid leaking from collector door</b>	Plugged P-trap	Clean P-Trap. See P-Trap Service on Page 15.









## Limited Warranty

Donaldson® warrants to the original purchaser that the major structural components of the goods will be free from defects in materials and workmanship for ten (10) years from the date of shipment, if properly installed, maintained and operated under normal conditions. Donaldson warrants all other Donaldson built components and accessories including Donaldson Airlocks, TBI Fans, TRB Fans, Fume Collector products and Donaldson built Afterfilter housings for twelve (12) months from date of shipment. Donaldson warrants Donaldson built filter elements to be free from defects in materials and workmanship for eighteen (18) months from date of shipment. Donaldson does not warrant against damages due to corrosion, abrasion, normal wear and tear, product modification, or product misapplication. Donaldson also makes no warranty whatsoever as to any goods manufactured or supplied by others including electric motors, fans and control components. After Donaldson has been given adequate opportunity to remedy any defects in material or workmanship, Donaldson retains the sole option to accept return of the goods, with freight paid by the purchaser, and to refund the purchase price for the goods after confirming the goods are returned undamaged and in usable condition. Such a refund will be in the full extent of Donaldson's liability. Donaldson shall not be liable for any other costs, expenses or damages whether direct, indirect, special, incidental, consequential or otherwise. The terms of this warranty may be modified only by a special warranty document signed by a Director, General Manager or Vice President of Donaldson. Failure to use genuine Donaldson replacement parts may void this warranty. **THERE EXIST NO OTHER REPRESENTATIONS, WARRANTIES OR GUARANTEES EXCEPT AS STATED IN THIS PARAGRAPH AND ALL OTHER WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER EXPRESS OR IMPLIED ARE HEREBY EXPRESSLY EXCLUDED AND DISCLAIMED.**

## Parts and Service

For genuine Donaldson Torit replacement filters  
and parts, call the Parts Express Line



**Donaldson**  
*Filtration Solutions*

Donaldson Company, Inc.  
Industrial Air Filtration  
P.O. Box 1299  
Minneapolis, MN 55440-1299  
dustmktg@mail.donaldson.com

Donaldson Company, Inc. is the leading designer and manufacturer of dust, mist, and fume collection equipment used to control industrial-air pollutants. Our equipment is designed to help reduce occupational hazards, lengthen machine life, reduce in-plant maintenance requirements, and improve product quality.