



## **Dryflo® Machine Mountable Mist Collectors**

MMA and MMB

### **Installation and Operation Manual**

Installation, Operation, and Service Information



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

Illustrations are for reference only as actual product may vary.



**This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.**



Process owners/operators have important responsibilities relating to combustible hazards. Process owners/operators must determine whether their process creates combustible dust, fume, or mist. If combustible dust, fume, or mist is generated, process owners/operators should at a minimum:

- Comply with all applicable codes and standards. Among other considerations, current NFPA standards require owners/operators whose processes involve potentially combustible materials to have a current Hazard Analysis, which can serve as the foundation for their process hazard mitigation strategies.
- Prevent all ignition sources from entering any dust collection equipment.
- Design, select, and implement fire and explosion mitigation, suppression, and isolation strategies that are appropriate for the risks associated with their application.
- Develop and implement maintenance work practices to maintain a safe operating environment, ensuring that combustible dust, fume, or mist does not accumulate within the plant.

Donaldson recommends process owners/operators consult with experts to insure each of these responsibilities are met.

As a manufacturer and supplier of Industrial Filtration Products, Donaldson can assist process owners/operators in the selection of filtration technologies. However, process owners/operators retain all responsibility for the suitability of fire and explosion hazard mitigation, suppression, and isolation strategies. Donaldson assumes no responsibility or liability for the suitability of any fire and/or explosion mitigation strategy, or any items incorporated into a collector as part of an owner/operators hazard mitigation strategy.

Improper operation of a dust 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.

**DO NOT** operate this equipment until you have read and understand the instruction warnings in the Installation and Operations Manual. For a replacement manual, contact Donaldson Torit.

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 Torit representative. Instruct all personnel on safe use and maintenance procedures.

**Data Sheet**

|                        |                         |
|------------------------|-------------------------|
| Model Number _____     | Serial Number _____     |
| Ship Date _____        | Installation Date _____ |
| Customer Name _____    |                         |
| Address _____<br>_____ |                         |
| Filter Type _____      |                         |
| Accessories _____      |                         |
| Other _____            |                         |

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**DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION**

**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE**

**NOTICE** is used to address practices not related to personal injury that may result in damage to equipment.

## Description

The Dryflo mist collector, Models MMA and MMB, mount directly to a machining center to collect airborne mist such as oil, water-soluble, and synthetic coolant from machining operations. Three stages of filtration, plus an optional HEPA filter, provide a cleaner, healthier work environment as well as a more cost effective means of mist collection. With airflow capacities from 390 to 800 cfm, the Dryflo is a strategic component to meeting industrial and government air-quality standards. The high efficiency filter cartridges allow air and coolants to be recycled and the cartridge efficiency actually increases as the collector operates.

Designed to increase the versatility of the collector, standard options include inlet hoppers, impact separators, drain collection methods and an adjustable stand. A variety of filter media specifically designed for mist collection, from heavy liquid-load to heavy particulate-load applications, is also available.

## Purpose and Intended Use



### WARNING

Misuse or modification may result in severe personal injury and/or property damage.

Do not misuse or modify.

Airborne mist is small droplets of liquid suspended in the air. Dryflo mist collectors are widely used in machine tool operations using metalworking fluids. Metalworking fluids include straight oil, water-soluble coolants, soluble oil, 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 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 Dryflo can collect some dust with the mist; however, it should not be operated without mist. The collector is not designed to handle water mist alone. There should be some type of material to allow coalescing, or water vapor will pass through the filters. The extremes of very heavy oil and light, thin oil should be avoided. Very heavy oil, similar to tar consistency, will not drain while very light, thin oil, similar to gasoline consistency, may evaporate.

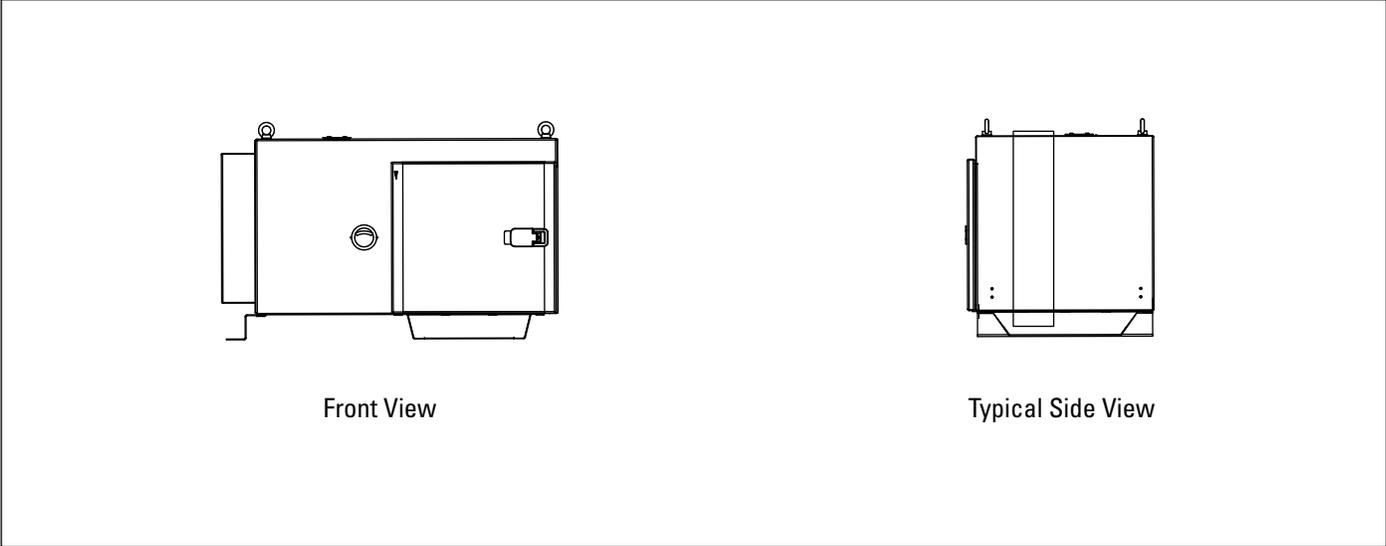


**WARNING** Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials may be present in order to protect workers and property from serious injury or damage due to a fire and/or explosion.

Consult and comply with all National and Local Codes related to fire and/or explosion properties of combustible materials when determining the location and operation of all dust, fume, or mist collection equipment.

Standard Donaldson Torit equipment is not equipped with fire extinguishing or explosion protection systems.

### Rating and Specification Information



All Collectors\*:

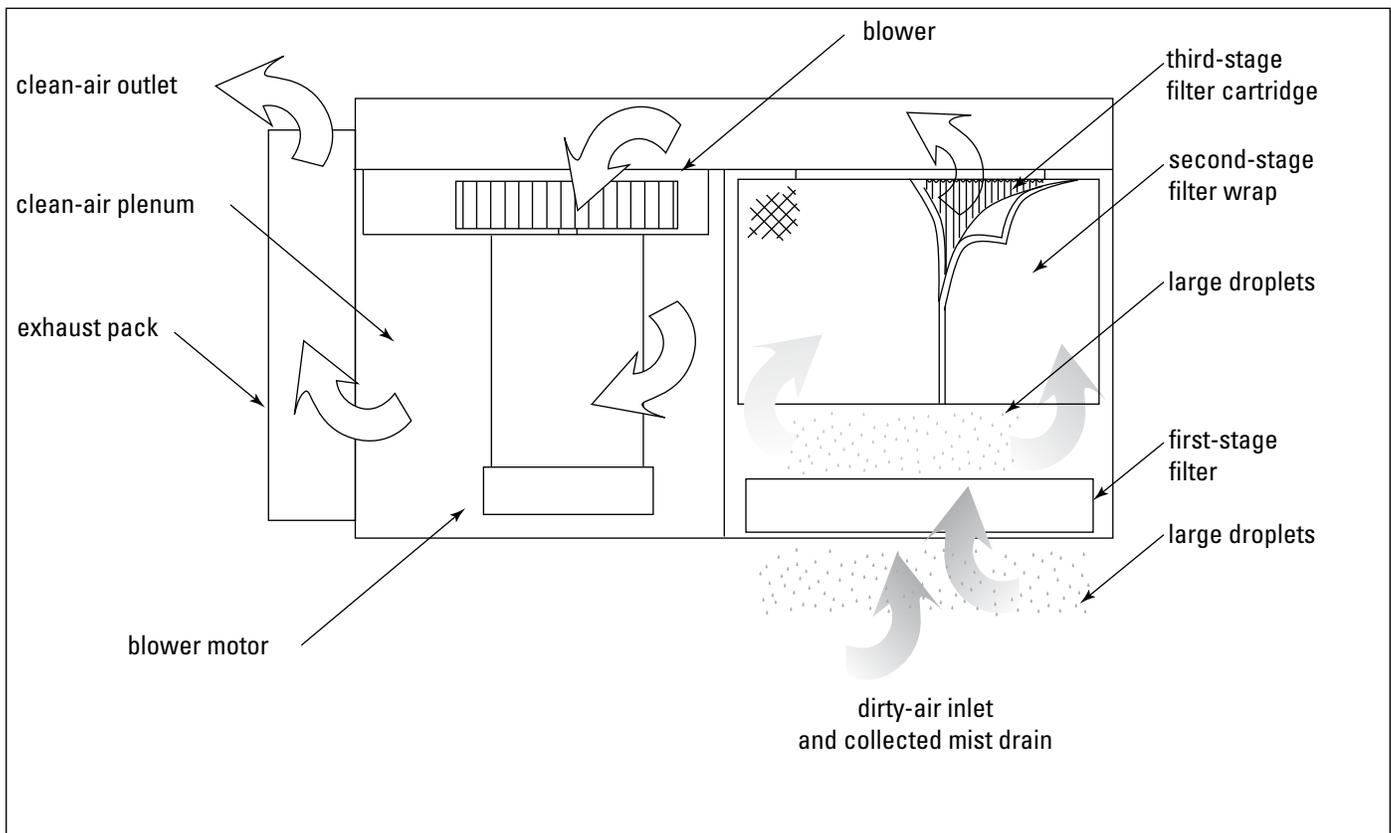
Housing rating, inches water gauge ..... +/- 20  
Control power ..... 120-Volt 50/60 Hz

\*If unit was supplied with a Record Drawing, the specifications on the drawing will supersede the standard specifications above.

## Operation

During normal operation, contaminated air enters the collector through the dirty-air inlet on the bottom of the unit. The air passes through a reusable first-stage filter designed to collect and coalesce large droplets and particles. Smaller mist droplets pass to a second-stage filter wrap where the small droplets coalesce into larger droplets.

The third and most efficient stage of filtration is the pleated filter specifically designed to collect, coalesce, and drain fine mist. As the mist coalesce, the droplets are big enough to run down the element and drain back into the collector. The droplets will drain on both the inside and outside of the filter cartridge. Liquid that collects on the inside of the cartridge drains back into the machine center. Clean, mist-free air exits the filter cartridge and discharge through the top of the collector.



Collector Operation

## Inspection on Arrival

1. Inspect collector upon delivery.
2. Report any damage to the delivery carrier.
3. Request a written inspection report from the Claims Inspector to substantiate any damage claim.
4. File claims with the delivery carrier.
5. Compare collector received with description of product ordered.
6. Report incomplete shipments to the delivery carrier and your Donaldson Torit representative.
7. Remove crates and shipping straps. Remove loose components and accessory packages before lifting collector from truck.
8. Check for hardware that may have loosened during shipping.
9. Use caution removing temporary covers.

## Installation Codes and Procedures



Codes may regulate recirculating filtered air in your facility.

Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding recirculating filtered air.

Safe and efficient operation of the collector depends on proper installation.

Authorities with jurisdiction should be consulted before installing to verify local codes and installation procedures. In the absence of such codes, install collector according to the National Electric Code, NFPA No. 70-latest edition and NFPA 91 (NFPA 654 if combustible dust is present).

A qualified installation and service agent must complete installation and service of this equipment.

All shipping materials, including shipping covers, must be removed from the collector prior to or during collector installation.

### NOTICE

Failure to remove shipping materials from the collector will compromise collector performance.

Inspect collector to ensure all hardware is properly installed and tight prior to operating collector.

## Installation



Use proper equipment and adopt all safety precautions needed for servicing equipment.

Electrical service or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and 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.



Site selection must account for wind, seismic zone, and other

load conditions when selecting the location for collectors.

Codes may regulate acceptable locations for installing dust collectors. Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding mist collector installation.

Collectors must be anchored in a manner consistent with local code requirements. Anchors must be sufficient to support dead, live, seismic, and other anticipated loads.

Consult a qualified engineer for final selection of anchorage.

The collector is suitable for indoor installations. Reference the Rating and Specification Information.

## Foundations or Support Framing

Prepare the foundation or support framing in the selected location. Foundation or support framing must comply with local code requirements and may require engineering.

Foundation and support framing must be capable of supporting dead, live, wind, seismic and other applicable loads. Consult a qualified engineer for final selection of foundation or support framing.

## Collector Location

### **WARNING**

Donaldson Torit equipment is not designed to support site installed ducts, interconnecting piping, or electrical services. All ducts, piping, or electrical services must be adequately supported to prevent severe personal injury and/or property damage.

When hazardous conditions or materials are present, consult with local authorities for the proper location of the collector.

### **CAUTION**

Mist collection equipment may reach peak sound pressure levels above 80 dB (A). Noise levels should be considered when selecting collector location.

Locate the collector to ensure easy access to electrical connections, to simplify mist collection container handling and routine maintenance, and to ensure the straightest inlet and outlet ducts.

## Site Selection

This collector can be located on a foundation or structural framing. It can also be suspended or hung from overhead supports. The supports must be adequate to carry the live load of the collector and installed to reduce sway or vibration to the collector.

Provide clearance from heat sources and avoid any interference with utilities when selecting the location.

Reference the Rating and Specification Information.

## Rigging Instructions

### Suggested Tools & Equipment

|  |                 |
|--|-----------------|
| Clevis Pins and Clamps                   | Lifting Slings  |
| Crane or Forklift                        | Pipe Sealant    |
| Drift Pins                               | Pipe Wrenches   |
| Drill and Drill Bits                     | Screwdrivers    |
| End Wrenches                             | Socket Wrenches |
| Adjustable Wrench                        | Spreader Bars   |
| Torque Wrench (inch/lbs, 9/16-in Socket) |                 |

### Hoisting Information

#### **WARNING**

Failure to lift the collector correctly can result in severe personal injury and/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.

Use all lifting points provided.

Use clevis connectors, not hooks, on lifting slings.

Use spreader bars to prevent damage to collector's casing.

Check the Specification Control drawing for weight and dimensions of the collector and components to ensure adequate crane capacity.

Allow only qualified crane or forklift operators to lift the equipment.

Refer to applicable OSHA regulations and local codes when using cranes, forklifts, and other lifting equipment.

Lift collector and accessories separately and assemble after collector is in place.

Use drift pins to align holes in section flanges during assembly.

## Electrical Wiring



### WARNING

Electrical work during installation must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and 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.

All electrical wiring and connections, including electrical grounding, should be made in accordance with the National Electric Code (NFPA No. 70-latest edition).

Check local ordinances for additional requirements that apply.

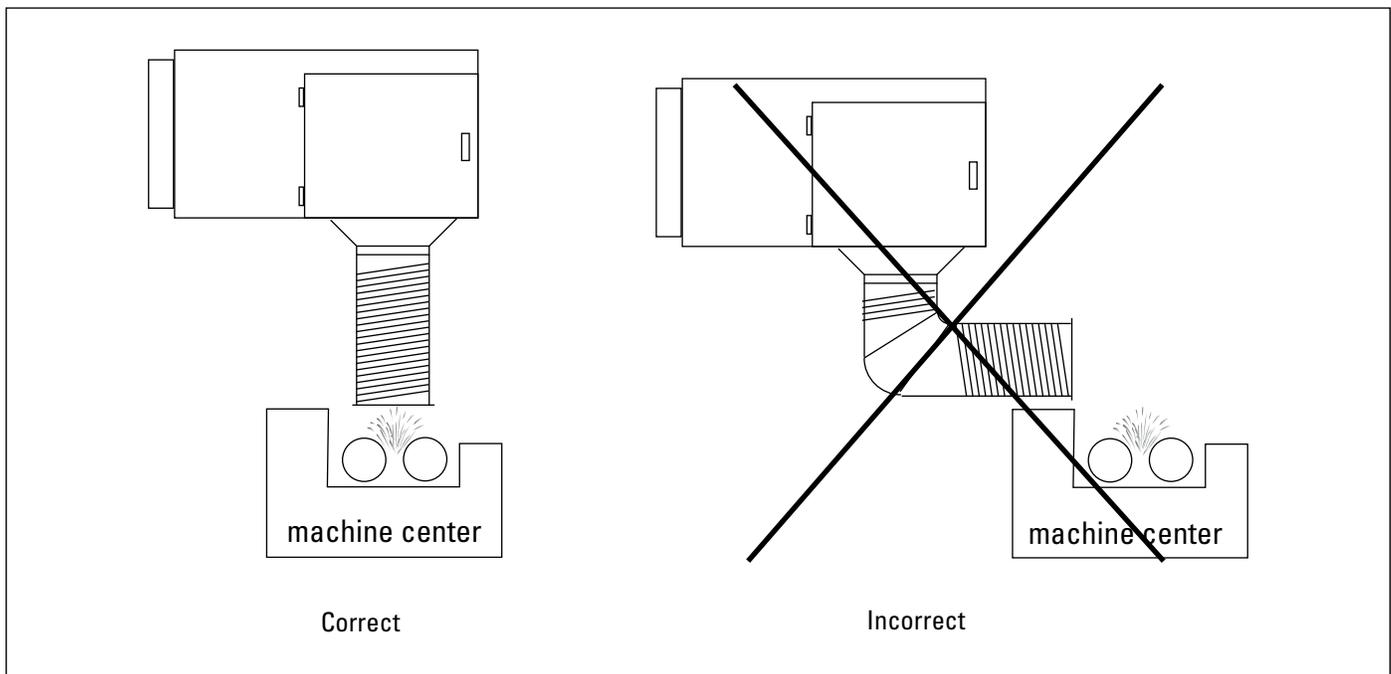
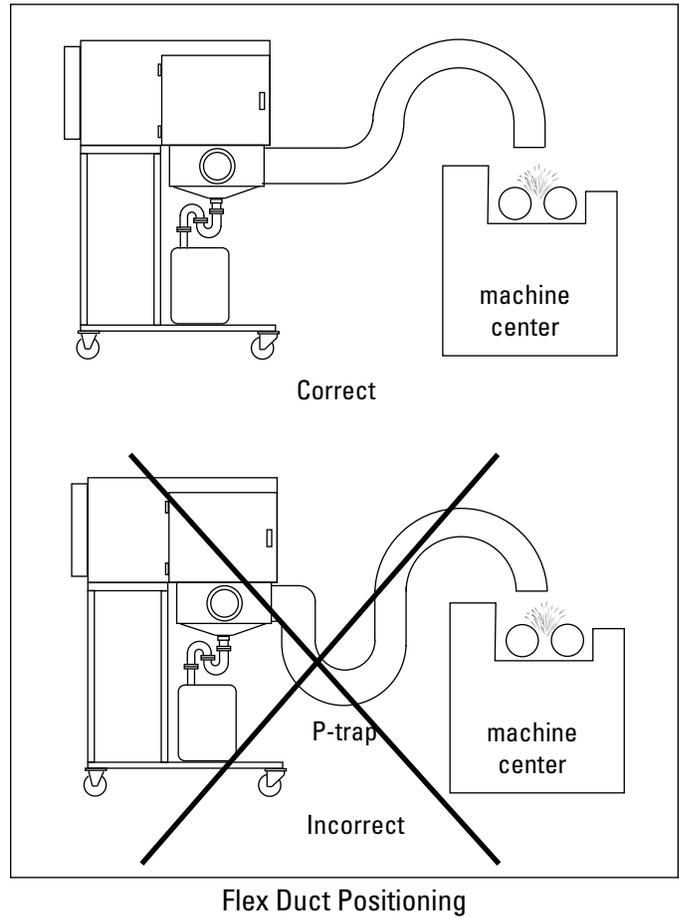
The appropriate wiring schematic and electrical rating must be used. See unit's rating plate for required voltage.

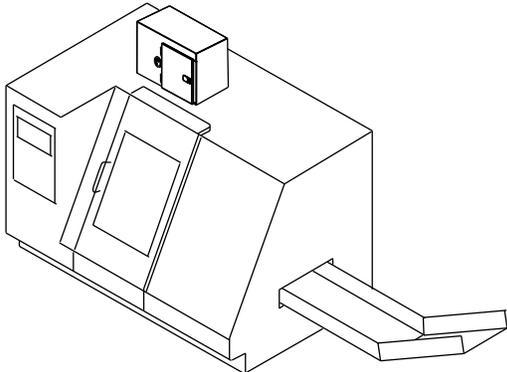
If the unit is not furnished with a factory-mounted disconnect, an electric disconnect switch having adequate amp capacity shall be installed in accordance with Part IX, Article 430 of the National Electrical Code (NFPA No. 70-latest edition). Check unit's rating plate for voltage and amperage ratings.

Refer to the wiring diagram for the number of wires required for main power wiring and remote wiring.

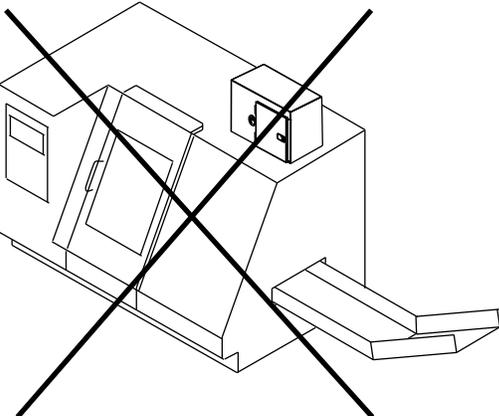
## General Installation

1. Apply a generous amount of sealant when installing attachments.
2. Position the collector above the mist-capture zone. See Collector Positioning.
3. Do not allow a P-Trap to form when using flexible duct. See Flex-Duct Positioning.
4. On enclosed-machine installations, mount the unit as far from the chip conveyor opening as possible. Installing too close allows the negative pressure created by the unit to draw clean shop air, not mist, into the collector. See Enclosed-Machine Installation.
5. On open-machine installations, position the unit's pick-up hood a minimum of 12-inches from the mist source. Avoid mounting the pick-up hood too close to the mist source of an open machine such as a wet surface grinder. Installing too close can shorten filter life as the unit will collect large droplets and particulate instead of mist. See Open Machine Installation.



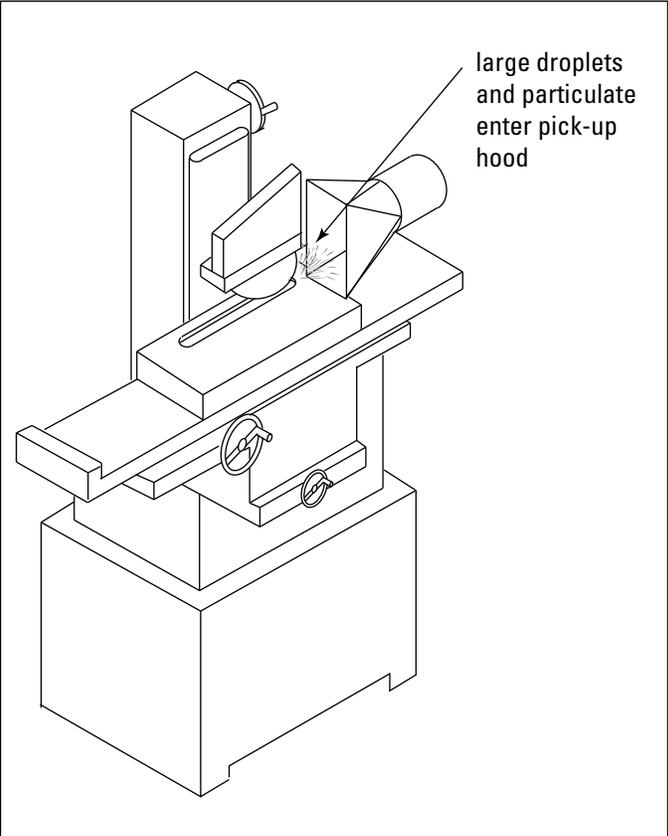


Correct Location



Incorrect Location

Enclosed Machine Installation



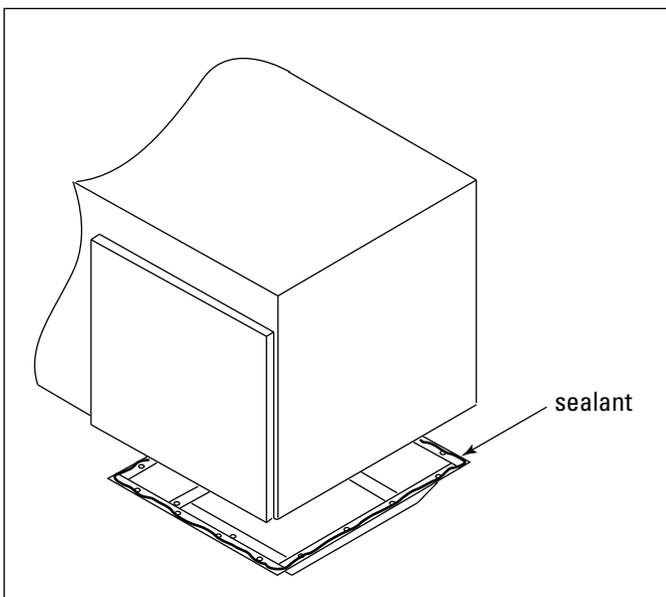
Open Machine Installation

## Standard Equipment

### Machine Mount

Because the air inlet also serves the unit as a drain, the collected mist droplets drain back into the machine center. Machine mounting, or collection at the source is the most efficient means of mist collection.

1. Position the mist collector's inlet so the air flows through the machine center, across the chuck, and then into the collector.
2. Apply a generous amount of sealant to the mounting flange.
3. Lift unit over machine center and lower slowly. Secure using hardware supplied.



Sealant

### Inlet Gasket

An inlet gasket is used on machine centers that have a large, flat unobstructed top surface.

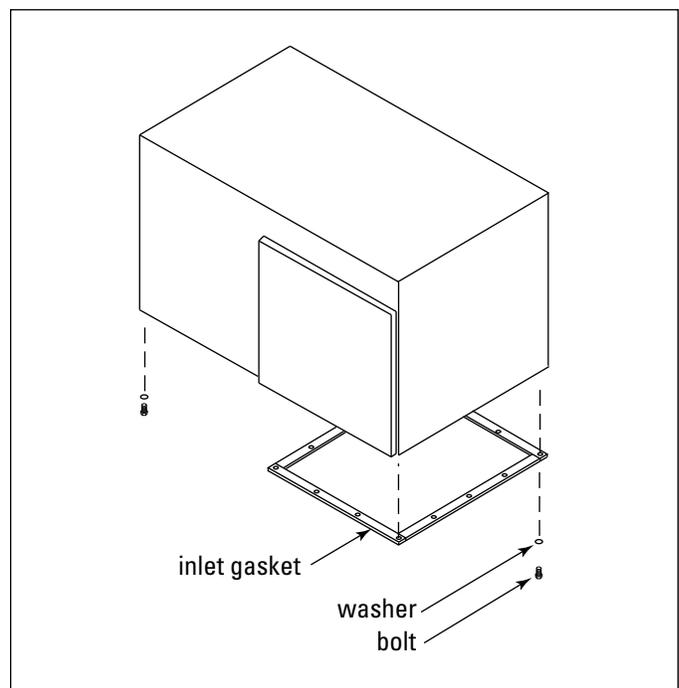
1. Lift the unit into position over the machine center and lower slowly.
2. Open the unit's access door and remove the filter cartridge, filter retention mechanism, and the first-stage filter.
3. Trace the lower hopper opening onto the machine center, cut hole, and remove unit.
4. Align the bolt template with the cut out and match-drill the bolt holes using a 5/16-in diameter drill bit. Remove and discard template.
5. Remove the protective backing from the gasket and apply to the machine center adhesive side down.
6. Lift unit into position and lower slowly. Fasten using 6mm bolts, washers, and hex nuts supplied.



#### WARNING

Start bolts from the inside of the machine center. Do not overtighten. Compress gasket 3/16-in maximum.

7. Install a bolt into every rivnut hole.



Inlet Gasket

### Inlet Hopper with Legs

This option is for machine centers that do not allow the collector to mount flush to the top. A leg mounted to the left side of the unit and a hopper mounted to the right side provide a raised, level surface on the machine center.

1. Lift the unit approximately 5-ft.
2. MMA: remove plugs or existing bolts from the five holes on the bottom left side of the unit. Apply sealant to the leg flange.

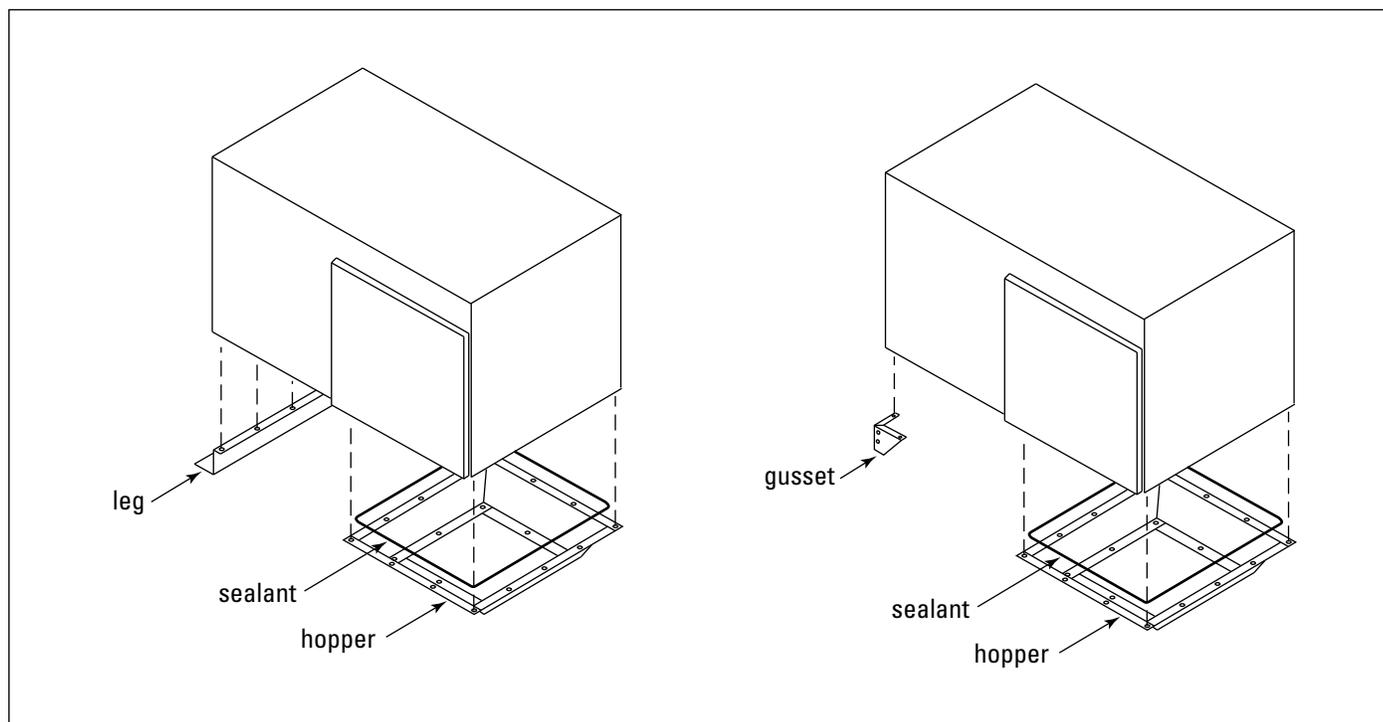
Align the holes in the leg with the five holes on the unit and secure using bolts removed in Step 2.

MMB: remove plugs or existing bolts from the four corner holes on the bottom left side.

Apply sealant to the gussets and fasten each gusset to the collector using the bolts and washers supplied.

3. Apply sealant to the hopper's top flange toward the outside edge of the bolt pattern.

4. Align the holes in the hopper flange with the holes in the collector and fasten using the bolts and washers supplied.
5. Lift the assembled unit into position over the machine center and lower slowly. Do not remove crane.
6. Open the unit's access door and remove the filter cartridge, filter retention mechanism, and the first-stage filter.
7. Trace the lower hopper opening and flange bolt pattern onto the machine center; remove unit, cut the inlet hole, and drill bolt holes using a 5/16-in diameter drill bit.
8. Apply a 1/4-in diameter bead of sealant to the machine center, toward the outside edge of the bolt pattern.
9. Lift unit into position and lower slowly aligning bolt patterns. Fasten unit to machine center using 1/4-in customer-supplied bolts, washers, and hex nuts.

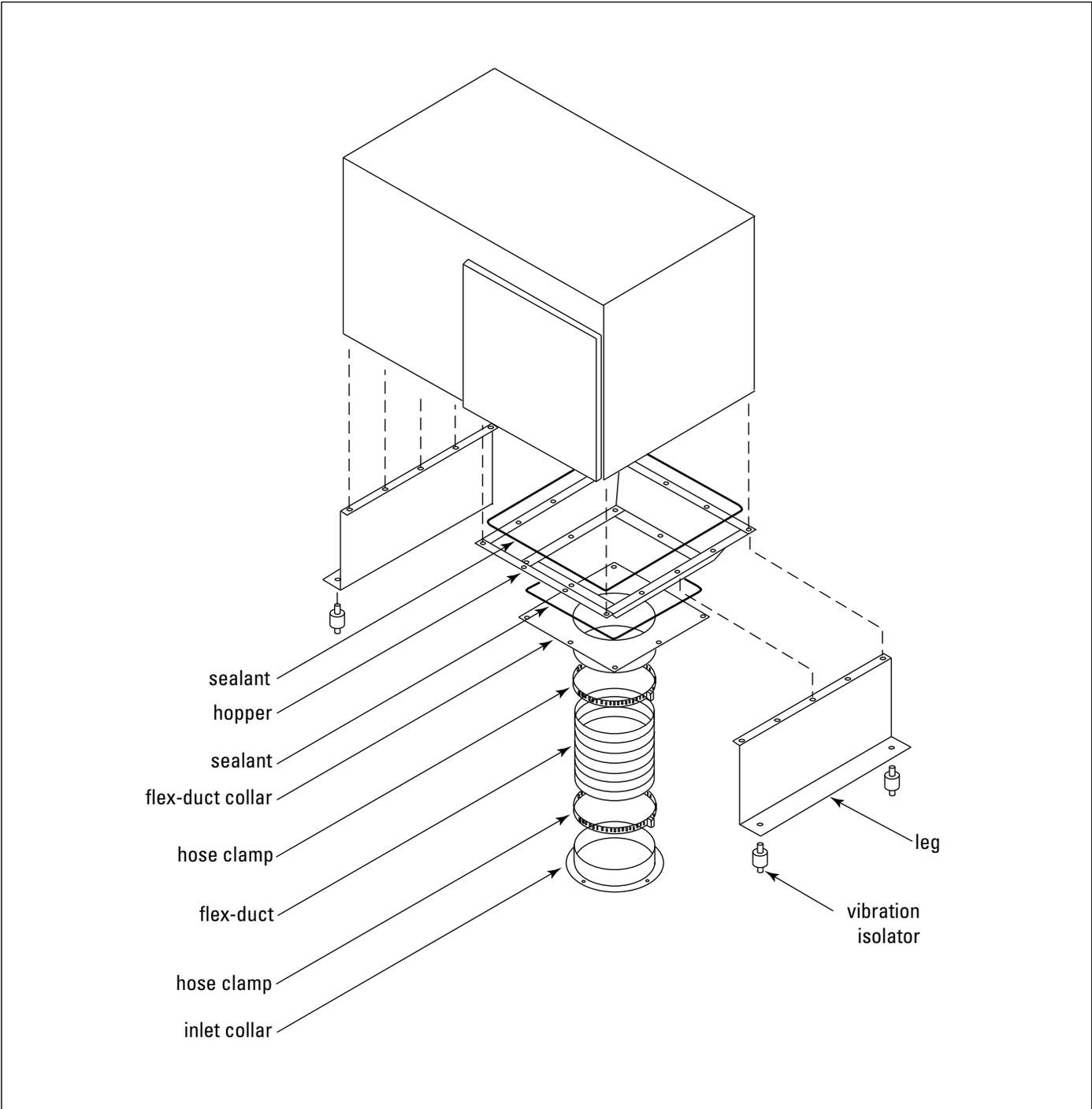


Inlet Hopper with Legs or Gussets

### Inlet Hopper with Vibration Isolators

A vibration isolation kit is for top-mounted units installed on machine centers sensitive to vibration. The kit includes four isolators, a support frame, hopper, 6-in diameter flexible duct and a duct collar with mounting flange and two hose clamps.

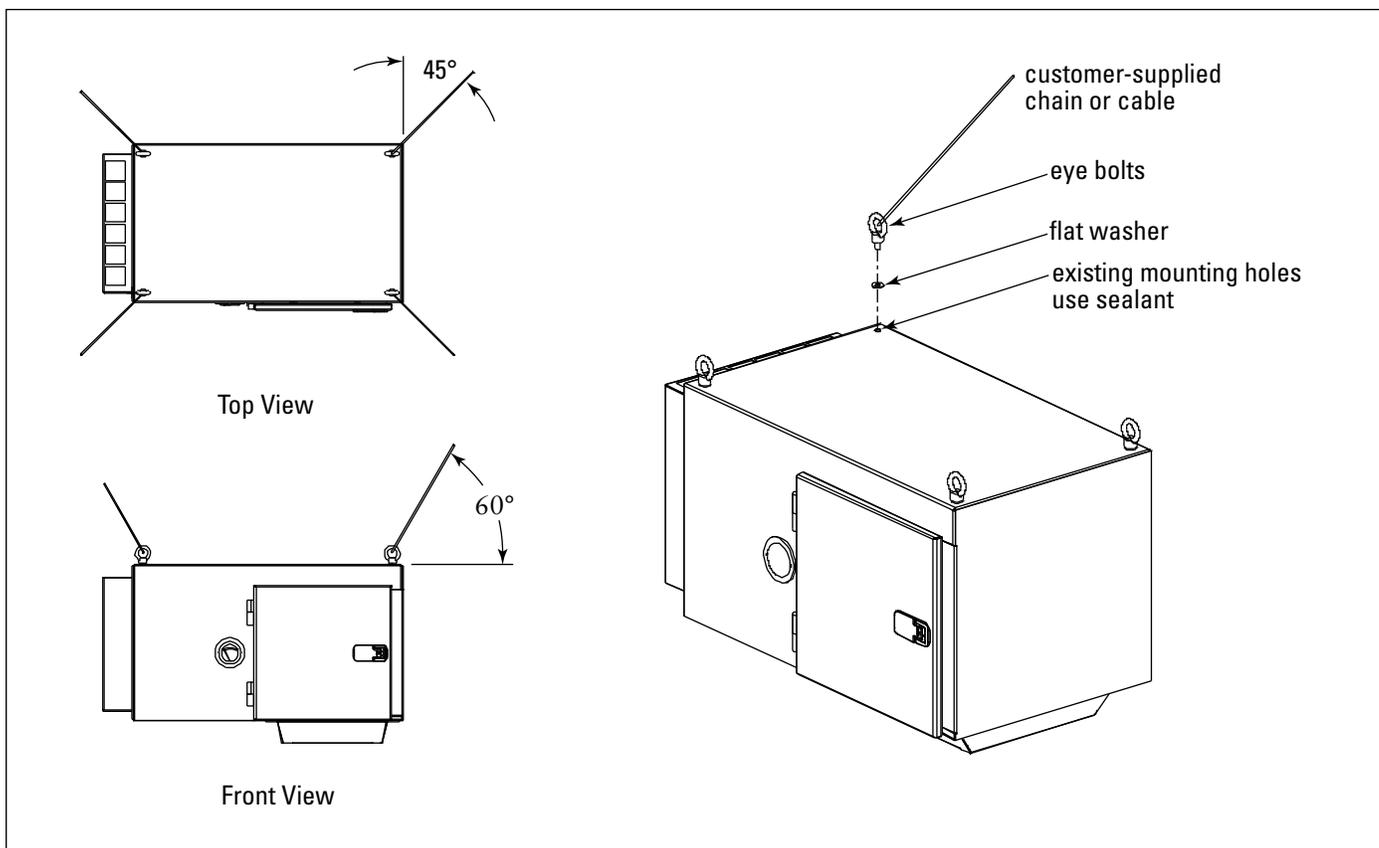
1. Carefully lift unit and turn over so the bottom inlet is facing up.
2. Remove plugs or existing hardware from the five holes on the unit's left side.
3. Apply sealant to the leg's top flange and secure to unit using the hardware removed in Step 2.
4. Apply sealant to the inlet collar toward the outside edge of the bolt pattern. Fasten inlet collar to the hopper's bottom flange using the bolts, washers, and hex nuts supplied.
5. Apply sealant around the hopper's top flange toward the outside of the bolt pattern.
6. Align the top flange of the hopper with the bolt pattern on the bottom of the unit and secure using 6mm bolts and washers supplied.
7. Attach remaining leg to the right side of the unit following the same procedure.
8. Turn unit upright, lift into position over the machine center and lower slowly. Do not remove crane.
9. Match-drill four holes in the machine center for securing the legs.
10. Open the unit's access door and remove the filter cartridge, filter retention mechanism, and the first-stage filter.
11. Position the inlet collar on the machine center and trace the inlet opening and bolt pattern. Remove inlet collar, cut inlet hole, and drill bolt holes using a 3/16-in diameter drill bit.
12. Apply a 1/4-in diameter bead of sealant to the machine center, toward the outside edge of the bolt pattern.
13. Align collar and fasten to machine center using 1/8-in customer-supplied bolts, washers, and hex nuts.
14. Fasten the isolators to the machine center.
15. Lift unit into position over the vibration isolators and lower slowly. Fasten using the supplied hardware.
16. Connect the flexible duct using the supplied hose clamps.



Inlet Hopper with Vibration Isolators

## Ceiling Mount

1. Use cable or chain attached to each eyebolt to suspend the unit from the ceiling.
2. Position the chain to form a  $60^\circ$  angle to the top of the unit and a  $45^\circ$  angle with the sides.
3. Level unit in all directions.

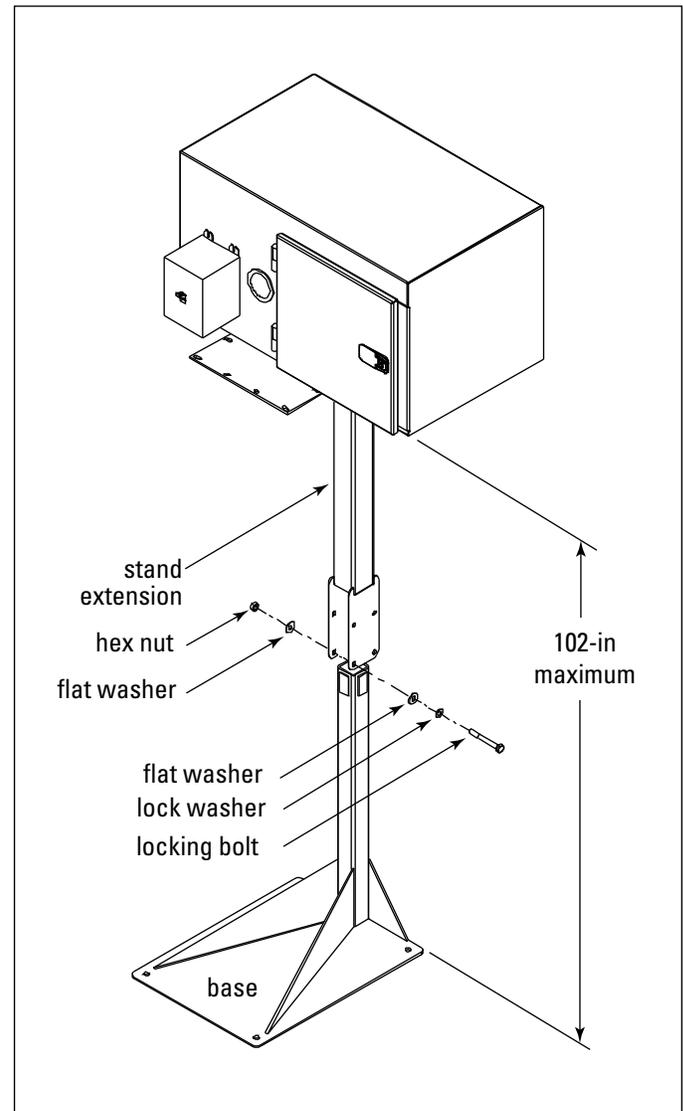


Ceiling Mount

## Collector Stand

For applications with limited mounting surfaces, an adjustable stand is available. Bolt the stand's base securely to the floor, attach the collector, and adjust height from 84 to 102-in.

1. Install customer-supplied 3/8-16 anchor bolts in the floor extending 1 1/2-in above surface.
2. Level the collector stand and tighten anchor bolts securely.
3. Lift the unit and remove the bolts from the access panel located on the bottom of the unit. Remove bolts only. Do not remove access panel.
4. Adjust the stand height by loosening the four locking bolts on the upper portion of the stand. Slide this section up to obtain the required height. Tighten bolts securely. Do not adjust the stand over 102-inches.
5. Using a crane or forklift, lift the unit into position over the stand and lower slowly.
6. Fasten the top plate of the stand to the unit using the bolts removed in Step 3.
7. Tighten all hardware and remove crane.

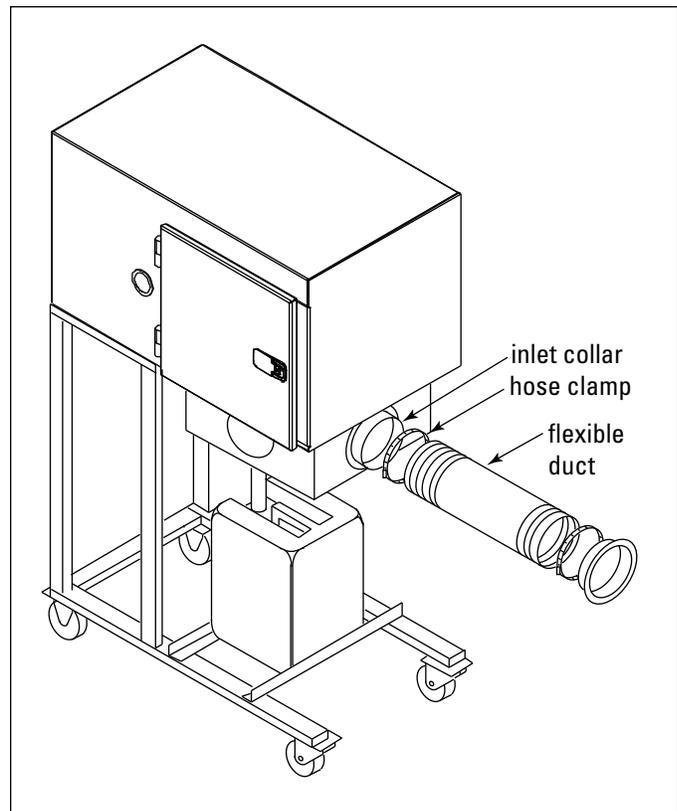


Collector Stand

## Cart Installation

For applications requiring a mobile mist collector.

1. Turn the unit on its back with the door facing up.
2. Select a front, side, or back location on the hopper for the flex-duct. Choose the location that provides the shortest duct length.
3. Apply sealant to the hopper top flange. Position the hopper so that the inlet hole is directed toward the machine center. See Cart Installation.
4. Align the hopper flange bolt pattern with the bolt pattern on the inlet and fasten using the hardware supplied.
5. Remove and discard the eight bolts from the motor access panel. Do not remove the panel; it is sealed to the collector.
6. Lay the cart frame assembly on the ground. Align the cart to the collector at the motor access panel location. Bolt the unit to the cart using eight M6 x 38mm bolts and washers supplied.
7. Turn cart and collector assembly upright.
8. Thread the P-Trap assembly to the hopper drain. Stop when the P-Trap tailpiece is toward the back of the collector. See Flex-Duct Positioning on Page 8.
9. Remove cover from collection container and place container under the unit's hopper. Insert the P-Trap outlet into the collection container.
10. Apply sealant to one of the 6-in inlet collar flanges. Fasten to hopper at the flex-duct location using the hardware supplied.
11. Connect flex-duct to the collar and fasten with a hose clamp.
12. Trim the flex-duct to length. Do not allow the flex-duct to sag. Coolant can collect in sagging areas and re-entrain into the system resulting in shortened filter life.
13. Prime the P-Trap by pouring a full cup coolant into the hopper and allow it to settle in the P-Trap.
14. To change from a front to a back flex-duct location, remove the front access cover and reposition the collar and flex-duct assembly. Apply sealant and attach the access cover to the open hopper hole.



Cart Installation

## Inlet Hopper with Flex-Duct

This option is available for ceiling mounted units or units on customer-supplied stands. Included components are a 6-in diameter collar, 10-ft flexible duct, two six inch hose clamps, and a six inch mounting collar.

1. Lift the unit approximately 5-ft.
2. Apply sealant around the flex-duct collar toward the outside of the bolt pattern.
3. Align the adapter with the bottom flange of the hopper. Fasten using bolts, washers, and hex nuts supplied.
4. Apply sealant around the hopper's top flange toward the outside of the bolt pattern.
5. Align the top flange of the hopper with the bolt pattern on the bottom of the unit and secure using 6mm bolts and washers supplied.

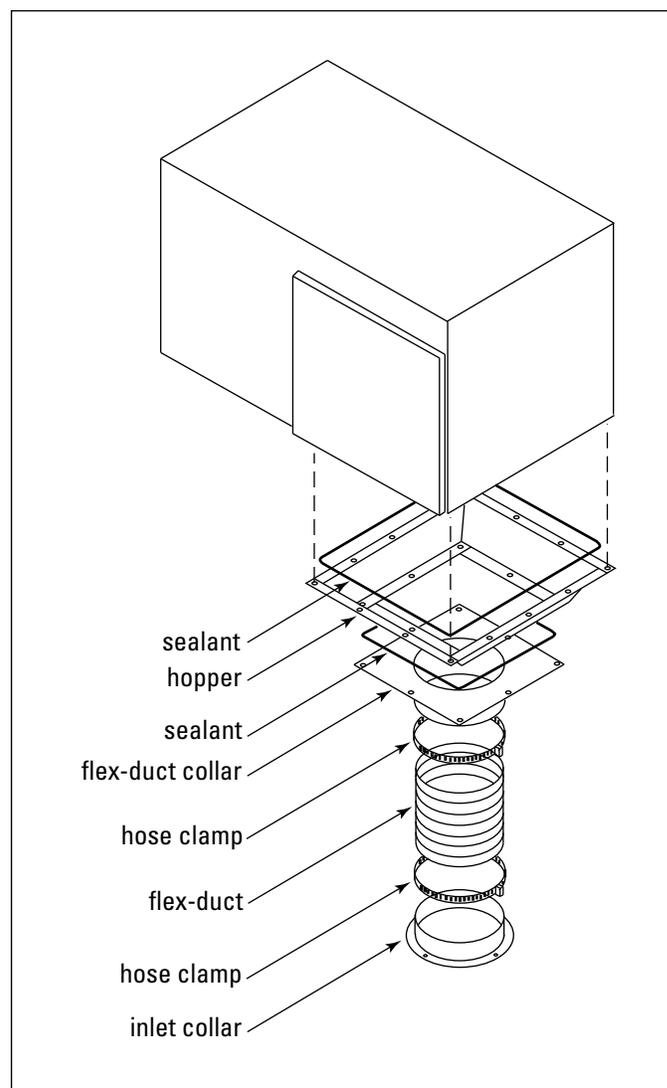
Note: Install a 6mm bolt into every rivnut.

6. Fasten one end of the flexible duct to the collar using a six inch hose clamp.
7. Position the inlet collar on the machine center and trace the inlet opening and bolt pattern. Remove inlet collar, cut inlet hole, and drill bolt holes using a 3/16-in diameter drill bit.
8. Apply a 1/4-in bead of sealant to the machine center, toward the outside edge of the bolt pattern.
9. Align collar and fasten to machine center using 1/8-in customer-supplied bolts, washers, and hex nuts.
10. Trim the flexible duct to the required length and secure with remaining hose clamp.

### **NOTICE**

Positioning.

Do not allow flexible duct to create a P-Trap. See Flex-Duct



Inlet Hopper with Flex-Duct

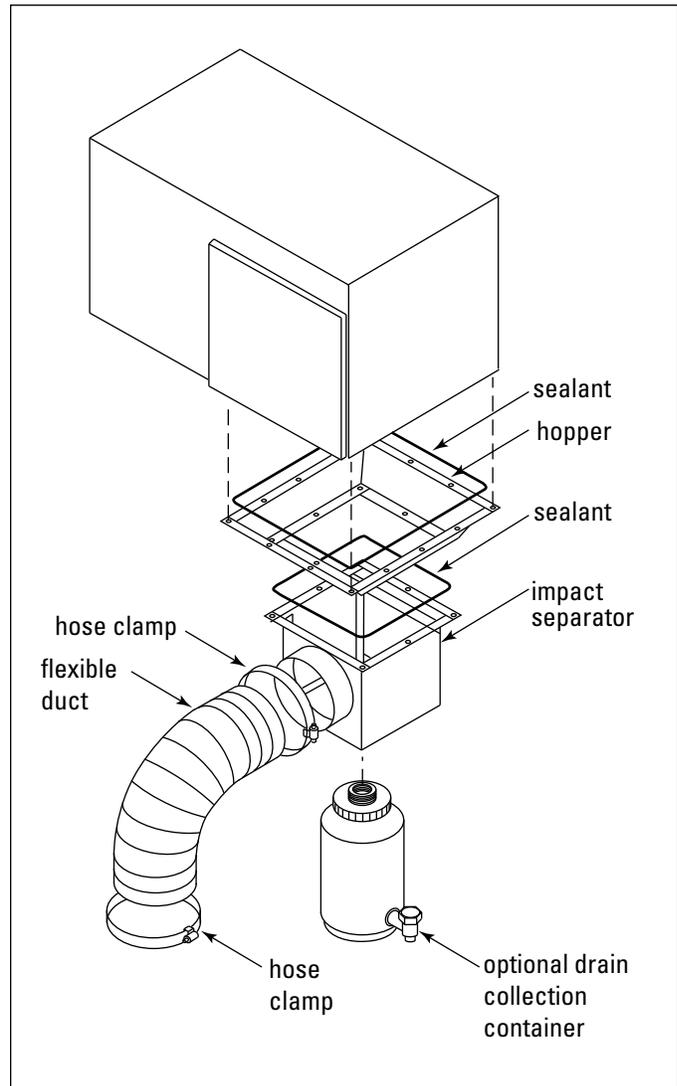
## Inlet Hopper and Impact Separator

Impact separators are available for remote-mounted units in operations generating large amounts of small particulate such as surface grinding, polishing, and high-speed cutting.

1. Lift the unit approximately 5-ft.
2. Apply sealant around the impact separator toward the outside of the bolt pattern.
3. Align the impact separator with the bottom flange of the hopper. Fasten using bolts, washers, and hex nuts supplied.
4. Apply sealant around the hopper's top flange toward the outside of the bolt pattern.
5. Align the top flange of the hopper with the bolt pattern on the bottom of the unit and secure using 6mm bolts and washers supplied.

Note: Install a 6mm bolt into every rivnut.

6. Fasten the flexible duct to the 6-in side inlet on the impact separator using a hose clamp.
7. Connect opposite end of flexible duct to a customer-supplied angular nozzle, inlet collar, or other fitting.
8. Install drain collection container as described in Drain Collection Container.



Inlet Hopper with Impact Separator

## Electrical Connection

### **⚠ WARNING**

Electrical work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and 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.

Dryflo mist 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.

### Pre-Wired Units

Pre-wired units include contactors and overload protection that must be installed in a customer-supplied safety disconnect switch. Complete the wiring as shown in Motor Starter Wiring.

### Unwired Units

1. Remove the exhaust pack. Remove all bolts and lift starting at one corner.

### **NOTICE**

The gasket material is fragile and must be handled with care. If the gasket is disrupted, reposition evenly around the inner and outer flanges when replacing the exhaust panel.

2. Make the wiring connections to the fan motor according to the wiring diagram located inside the control box and the instructions on the motor decal.

### **NOTICE**

All electrical components must be sized for the supply voltage and motor horsepower. See Motor Starter Wiring.

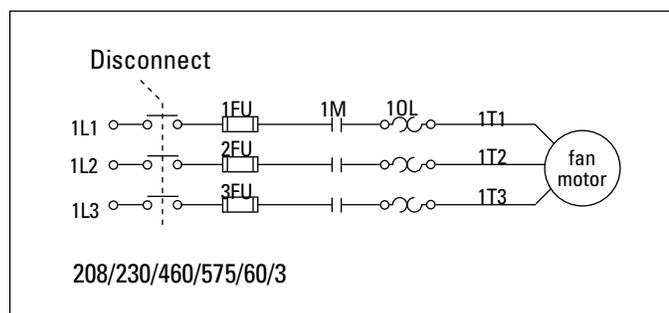
3. Turn the fan-motor ON then OFF and check for proper rotation found on the fan label when viewed from the back of the motor.

To reverse rotation, single-phase power supply: Follow manufacturer's instructions on the motor's nameplate.

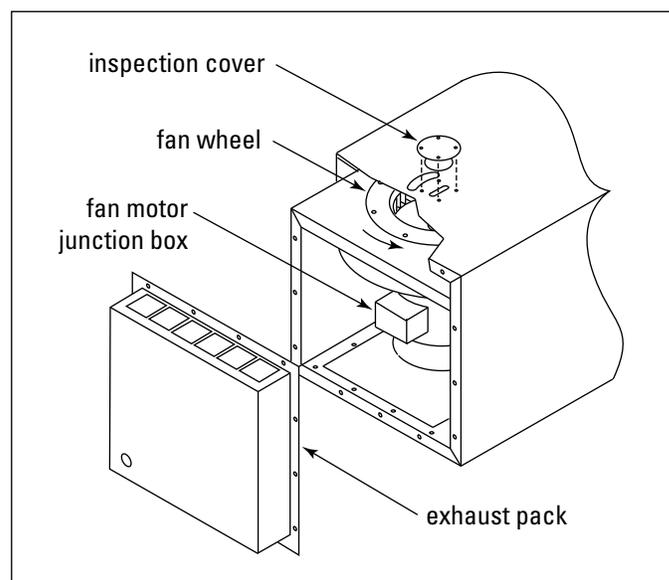
To reverse rotation, three-phase power supply: Turn electrical power OFF at source and switch any two leads on the motor junction box.

### **⚠ WARNING**

Do not interchange a power lead with the ground wire. Severe damage or personal injury may result.



Motor Starter Wiring



Power Pack

## Preliminary Start-Up Check

Instruct all personnel on safe use and maintenance procedures.

### **WARNING**

Electrical work during installation, service or maintenance must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Check that the collector is clear and free of all debris before starting.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Optional fans over 600 lbs must be independently supported.

1. Check all electrical connections for tightness and contact.
2. Check for proper rotation as noted on the fan and/or hopper discharge device housing.

To reverse rotation, single-phase power supply:  
Follow manufacturer's instructions on the motor's nameplate.

To reverse rotation, three-phase power supply:

Switch any two leads on the motor junction box.

### **WARNING**

Do not look into fan outlet to determine rotation. View the fan rotation through the back of the motor.

Check that the exhaust plenum is free of tools or debris before checking blower/fan rotation.

Stand clear of exhaust to avoid personal injury.

Do not interchange a power lead with the ground wire. Severe personal injury and/or property damage may result.

3. All access panels should be sealed and secure.
4. Check that the dust container is properly sealed and clamped.

5. Check that fan exhaust damper is set to the fully-closed position.
6. Check and remove all loose items in or near the inlet and outlet of the collector.
7. Check that all remote controls and solenoid enclosures (if applicable) are properly wired and all service switches are in the OFF position.
8. Check that all optional accessories are installed properly and secured.
9. Turn power ON at source.
10. Turn fan motor ON.
12. Adjust airflow with the exhaust damper.

### **NOTICE**

Excess airflow can shorten filter life, cause electrical system failure and fan motor failure.

## Maintenance Information

Instruct all personnel on safe use and maintenance procedures.



### WARNING

Use proper equipment and adopt all safety precautions needed for servicing equipment.

Use appropriate access equipment and procedures. Note the standard collector is not equipped with access platforms unless noted on the specification drawings.

Electrical service or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and 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.

3. Monitor exhaust. Exhaust should remain visually clean throughout filter life. If leaks are visible, check the filter cartridge and optional HEPA filter for positive gasket seals.
4. Monitor hopper drainage. If slow or stopped, check hopper for obstructions and clean as necessary. Check first-stage filter and clean as required.
5. Monitor second-stage filter wrap.

## Operational Checklist

1. Monitor the physical condition of the collector and repair or replace any damaged components.

Routine inspections will minimize downtime and maintain optimum system performance. This is particularly important on continuous-duty applications.

2. Monitor pressure drop across filters.

Abnormal changes in pressure drop indicate a change in operating conditions and possibly a fault to be corrected. If the pressure gauge is in the red zone, the second-stage filter wrap or third-stage filter cartridge may need replacement. In some applications, it may be necessary to replace the second-stage filter wrap two to three times during the life of a single, third-stage filter cartridge. To determine if the second-stage filter wrap needs replacing, install a clean wrap, restart the unit, and check the pressure gauge reading. If the gauge is now in the green zone, continue to operate the unit with the new wrap. If the gauge still reads in the red zone, the filter cartridge needs replacement.

## Second-Stage Filter Wrap Replacement



### WARNING

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.

Note: Replace the second-stage filter wrap and third-stage filter cartridge at the same time for easy maintenance.

1. Remove the filter cartridge by pulling the filter retention lever out and down to a horizontal position. Remove cartridge from unit.
2. Pull wrap from filter cartridge and dispose of properly.
3. Install new wrap, aligning the top of the wrap to the top of the cartridge and fasten securely with hook and loop fastener.
4. Replace filter cartridge and secure with filter retention mechanism.

### NOTICE

Do not operate the collector without the second-stage filter wrap installed. Significant reduction in filter cartridge life may result.

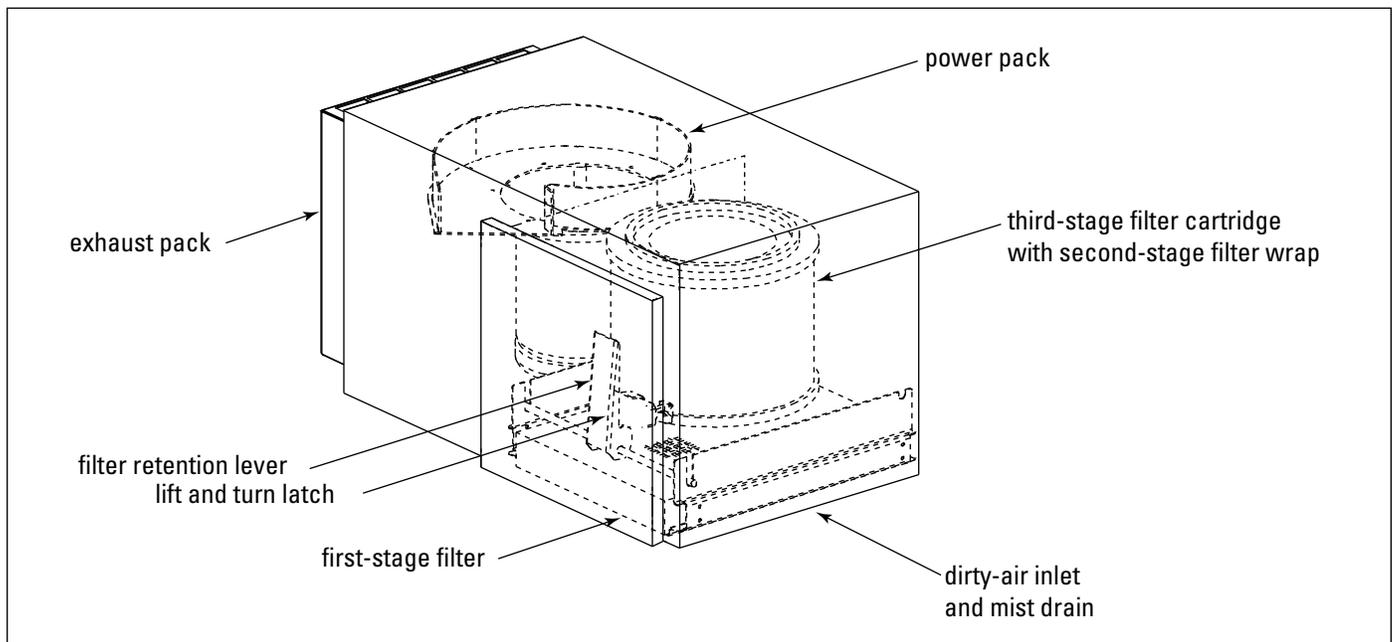
## Third-Stage Filter Cartridge Replacement

Note: Replace the second-stage filter wrap and third-stage filter cartridge at the same time for easy maintenance.

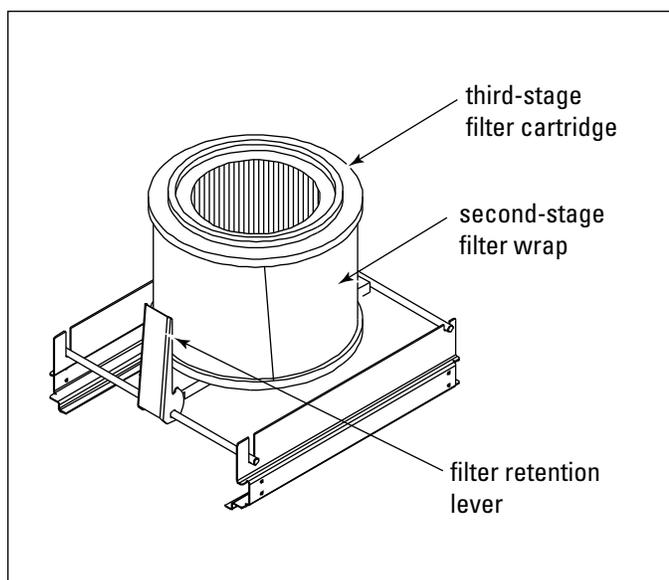
1. Remove the filter cartridge by pulling the filter retention lever out and down to a horizontal position. Remove cartridge from unit.

Note: A large plastic garbage bag placed over the top of the used filter allows cleaner filter change out. The filter can be tipped forward and out of the unit while the bag is pulled up over the bottom of the cartridge.

2. Place new filter and wrap on the filter retention platform, gasket side up. Slide filter back as far as it will go and center side-to-side.
3. Lift the filter retention lever up and close access door.



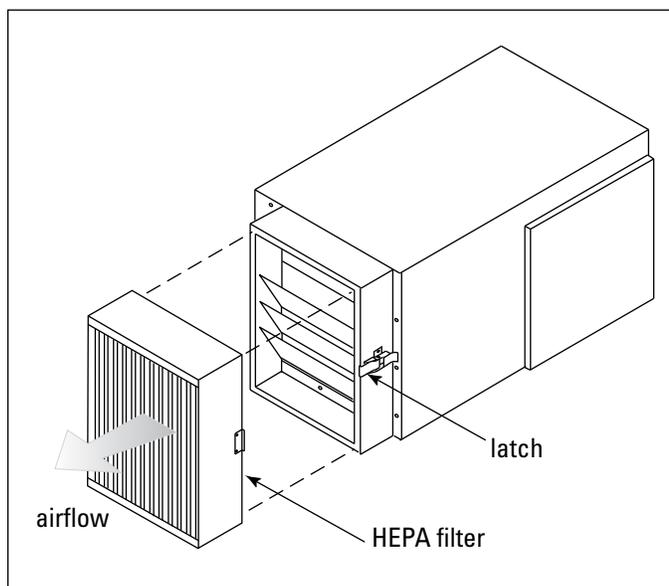
Dryflo Mist Collector



Second- and Third-Stage Filter Replacement

### Optional Fourth-Stage HEPA Filter

1. Release the latches on both sides of the HEPA filter frame. Dispose of used filter properly.
2. Install new HEPA filter with the gasket facing the frame and the airflow arrow pointing away from the unit.

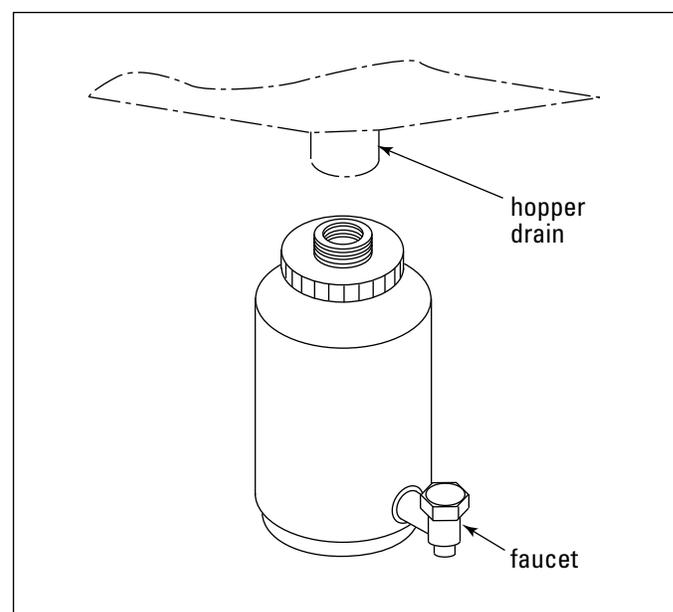


HEPA Filter Replacement

### Drain Collection Container

1. Turn unit OFF.
2. Remove the container by unscrewing the container from the cap. Clean the container, faucet, and reinstall.

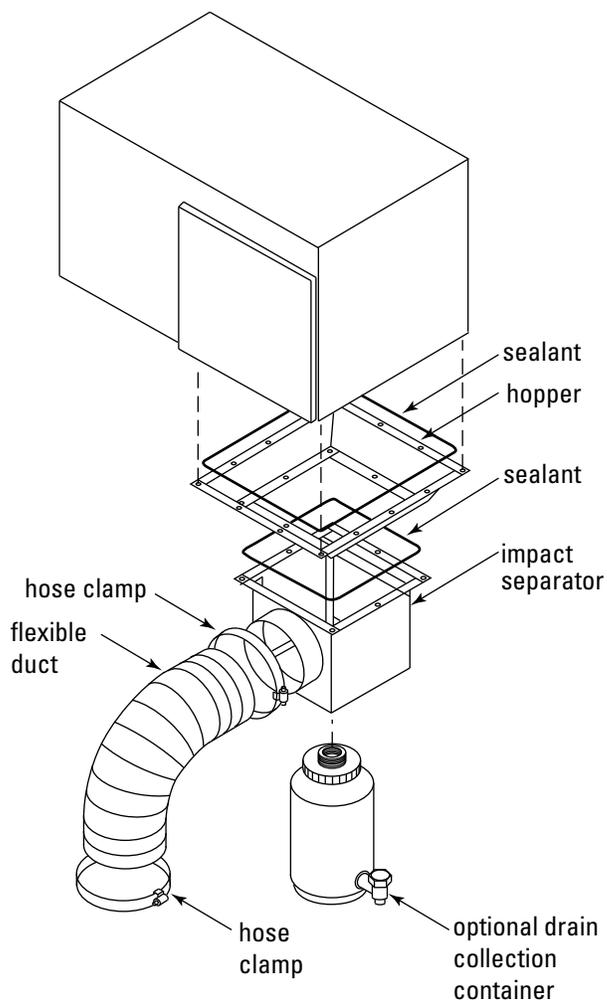
Note: Close the faucet before turning the collector back ON.



Drain Collection Container

## Impact Separator

1. Remove the first, second, and third-stage filters and the filter retention mechanism. Clean the hopper and impact separator by scraping the particulate out, being careful to keep particulate out of the drain.
2. Replace the filter retention mechanism and filters.



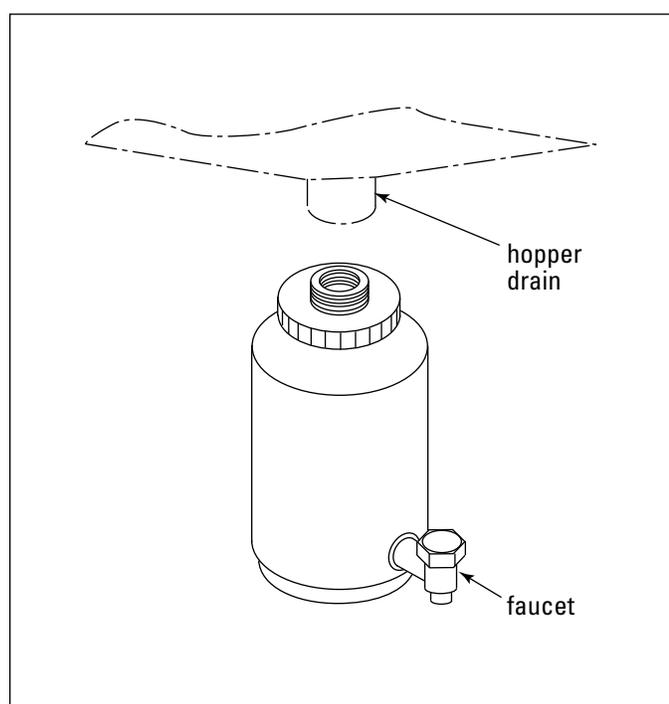
Impact Separator and Inlet Hopper

## Optional Equipment

### Drain Collection Container

The optional drain collection container is available for use with an impact separator only. A semi-clear one-gallon plastic container attached to the bottom of the impact separator collects small particles and coolant.

To install, simply thread the container onto the bottom of the impact separator. The container's faucet must be closed when the unit is in operation.



Drain Collection Container

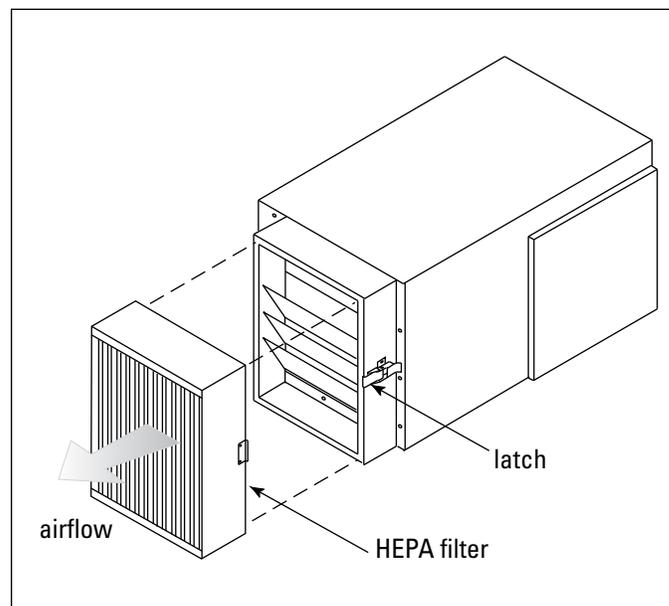
### Junction Box

The junction box option offers quick and easy wiring to the unit. The three-phase motor is pre-wired to the customer's supply voltage. The motor wires terminate inside a junction box located on the outside of the collector.

1. Remove the junction box cover plate.
2. Attach the ground wire to the ground terminal and the three hot wires to the remaining terminals.
3. Replace junction box cover plate.

### HEPA Filter

Used in place of the standard exhaust pack, the optional HEPA filter is recommended for applications using straight- or mineral-oil machining fluids that generate smoke or other extremely small particulate.



Optional HEPA Filter

## Troubleshooting

| Problem  | Probable Cause   | Remedy  |
|--|--|---|
| <b>Fan blower 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. |
|  | Collector 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>Fan blower 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 Maintenance Information.  |
|  | Filter damage, dents in the end caps, gasket damage, or holes in media | Replace filter as necessary. Use only genuine Donaldson replacement parts. See Maintenance Information.   |
|  | Access cover(s) loose  | Tighten access doors securely.  |

| Problem                                  | Probable Cause                        | Remedy   |
|--|---------------------------------------|--|
| <b>Insufficient airflow</b>              | Fan rotation backwards                | Proper fan rotation is clockwise from the top of the unit. The fan can be viewed through the back of the motor. See Preliminary Start-Up Check.  |
|  | Access doors open or not closed tight | Check that all access doors are in place and secured.  |
|  | Fan exhaust area restricted           | Check fan exhaust area for obstructions. Remove material or debris.  |
|  | First-stage filter plugged            | Remove and clean or replace.   |
|  | Second-stage filter wrap plugged      | Remove and replace. Use only genuine Donaldson replacement parts. See Second-Stage Filter Wrap Replacement.  |
|  | Filters need replacement              | Remove and replace. Use only genuine Donaldson replacement parts. See Third-Stage Filter Cartridge Replacement.  |
| <b>Liquid leaking out bottom of door</b> | Plugged HEPA filter                   | Remove and replace. See Optional Fourth-Stage HEPA Filter.   |
|  | Door does not fit tight               | Increase door gasket compression by removing door and lifting off the hinges. Loosen the top door latch nut. Turn lower latch nut, located under the latch arm approximately three rotations clockwise. Tighten top door latch nut and replace door. Check seal and repeat if necessary. |





## The Donaldson Torit 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 Afterfilters 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. To ensure proper operational performance of the equipment, use only genuine Donaldson replacement parts. 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.



**Donaldson**  
FILTRATION SOLUTIONS

### Parts and Service

For genuine Donaldson replacement filters and parts, call the Parts Express Line. For faster service, have unit's model and serial number, quantity, part number, and description available.

**Donaldson Company, Inc.**  
**Torit**  
**PO Box 1299**  
**Minneapolis, MN 55440-1299**  
**U.S.A.**

**800-365-1331 USA**  
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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.

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