

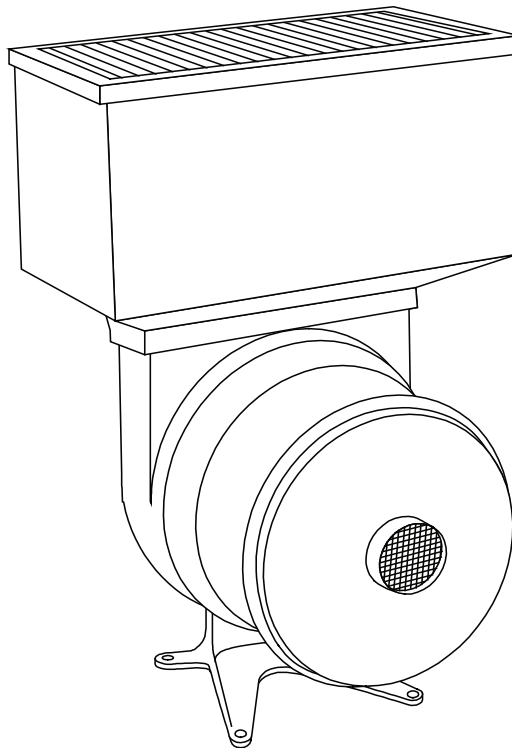
Donaldson
Torit

Centrifugal Mist Collector

E-100, E-200, E-300, E-500
EA-700, EA-900, and EA-905

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.

English
Master Language

IOM 1B0510107 (ENG)
Revision 3

 **WARNING**

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.

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



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



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



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

Data Sheet

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

Description

Centrifugal Mist Collectors are compact, high efficiency, centrifugal mist collection systems designed to collect, filter, and reclaim liquid mist generated in machine tool or process operations. The compact size allows direct machine mounting which integrates the collection system directly to the mist-generating machine or process. Four stages of filtration provide effective indoor air pollution control.

Optional prefilters, impingers, and afterfilters provide additional filtration. Prefilters are used to remove chips or solid particles before they enter the rotating drum and impingers remove heavy sprays of raw fluids. Optional HEPA afterfilters, available in standard and high-capacity sizes, remove smoke generated in a machine process while carbon afterfilters remove gas vapor and odors.

Purpose and Intended Use



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

Do not misuse or modify.

Centrifugal Mist Collectors are intended for separation of various liquid droplets and particulates. It is not a dust collector and should not be used to filter solid particulate. The mist collector is designed to filter mild amounts of smoke of an oily nature or smoke mixed with oil mist. Typical applications include chip-generating operations such as screw and bar machines, CNC turning and milling machines, and applications using straight oil coolants. Some applications such as grinding, especially those with heavy metal-removal rates, can cause a buildup of grinding swarf or other solid particulate. Using a prefilter trap is strongly recommended to extend the maintenance cycle of the mist collector in these operations.

The collector must be sized to the application or filtration will not be effective. Too little airflow will not draw the contaminant into the filter and too much airflow may result in the unit picking up large or heavy solid particles increasing the frequency of maintenance or filter replacement.



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.

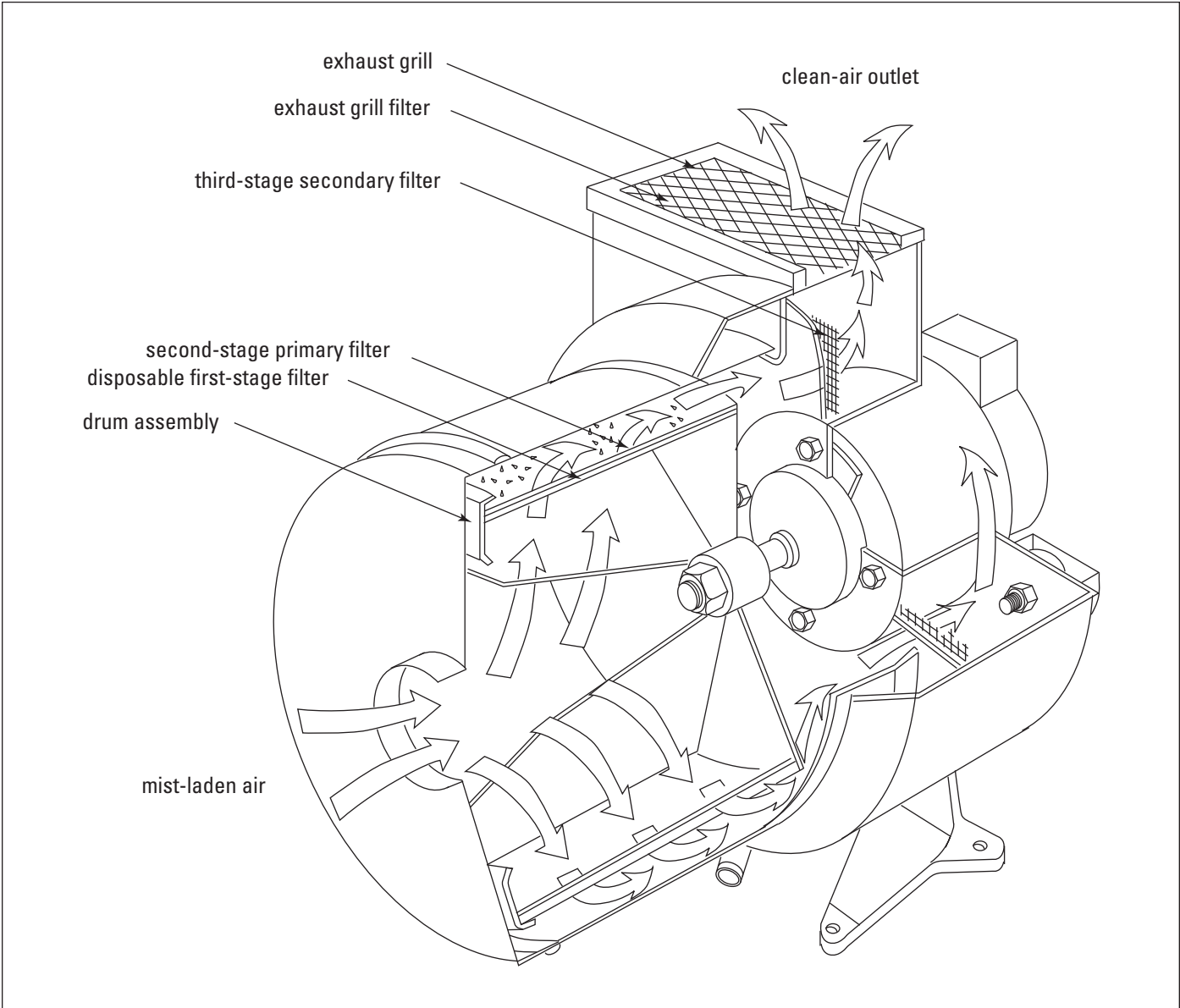
Standard Donaldson Torit equipment is not equipped with fire extinguishing or explosion protection systems.

Operation

During normal operation, mist-laden air enters the collector through a flexible hose. The air passes through a disposable first-stage filter and into a second-stage primary filter. Sub-micron mist particles are trapped and retained as they coalesce and grow to large droplet size. These filters are housed in a spinning, perforated drum with internal radial fan blades to promote air movement.

The droplets are spun and thrown from the perforated drum to the inner wall of the collector housing by centrifugal force. High velocity air drives the liquid or

oil along the housing walls, through a circumferential slot, and into a collection chamber where the liquid is drained. A third-stage, secondary filter catches liquid that bypasses the slot and drains through the secondary drain. Clean air is exhausted through the fourth-stage, exhaust grill filter and returned to the plant environment while the recycled oil drains from the unit for reuse or disposal.



Unit 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 installation. Reference the Rating and Specification Information.

Foundations or Support Framing

Prepare the ceiling or machine mounting structure in the selected location. Mounting structure 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.

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

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.

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 installation, 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.

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 collector's rating plate for required voltage.

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 collector'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.

Standard Equipment

The Centrifugal Mist Collector is normally installed horizontally; however, it can be installed vertically with the inlet end down.

1. Remove the inlet cover's retaining ring and remove the cover. Discard the cardboard spacers between the casing and the rotating drum, if installed. The drum should now rotate freely. Replace the inlet cover and secure with retaining ring.
2. Remove the carriage bolts or lag screws securing the collector base to the pallet. Retain the four washers tied to the pedestal.
3. Secure the base to the mounting surface with four 1/2-in machine screws. Use the four washers retained in Step 1 as shims under the mounting bolts if necessary.

Ducts

1. Attach one end of the flexible hose to the inlet cover and secure with a hose clamp.
2. Connect the opposite end to the machine hood or enclosure with a hose clamp. Flange connectors are available to connect the hose to most hoods or enclosures.

NOTICE

Keep flexible hose length and number of bends to a minimum.

Maintain a slope to prevent deposits of oil from settling at low points and blocking the air passage.

3. If rigid duct is used, connect an 18-in length of flexible hose to the unit's inlet cover for easy cover removal.

Drain Connection

Primary Drain

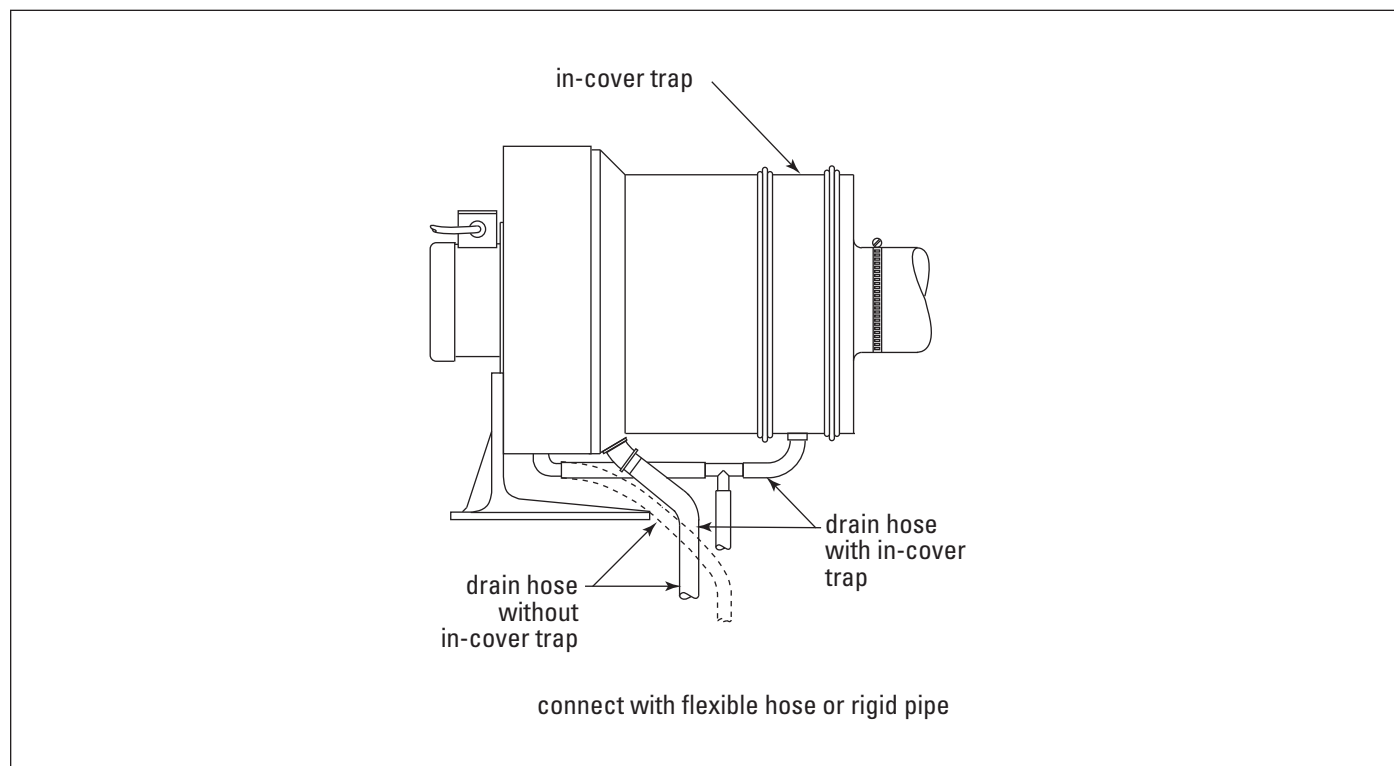
1. Use 1-in diameter pipe or flexible hose for the drain connection.
2. Models E-100 and E-200 are equipped with a 1-in NPT male drain fitting and Models E-300 through EA-900 are equipped with a 1 1/4-in NPT fitting that connects to the reservoir eliminating the need to empty containers. A separate container can be attached to the drain if desired.

Secondary Drain

The secondary drain fitting is a 1/4-in NPT 900 EL fitting and connects the same way the primary drain connects.

NOTICE

Do not submerge ends of hose. Do not connect the secondary drain hose to the primary drain hose.



Drain Connection

Electrical Connection

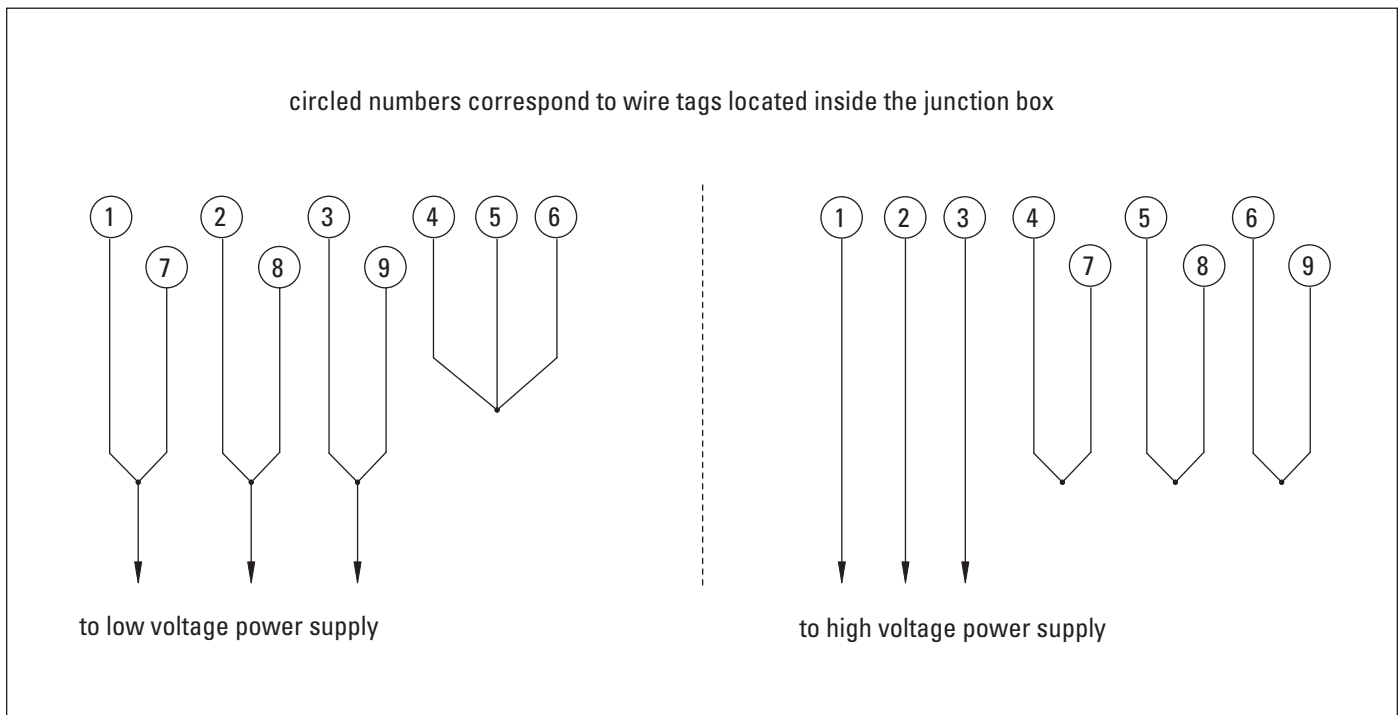
WARNING

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.

Wire unit according to the wiring diagram located on the motor conduit box cover.



Typical Wiring Diagram

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.

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. Check and remove all loose items in or near the inlet and outlet of the collector.
4. Check that all remote controls are properly wired and all service switches are in the OFF position.

5. Check that all optional accessories are installed properly and secured.
6. Turn power ON at source.
7. Turn fan motor ON.
8. If Centrifugal collector has been sitting stationary more than one hour, douse drum with original liquid during startup to prevent vibration from an out of balance system. If the system has been turned off long enough for the liquid to congeal, replace the filter.

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.

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 exhaust.

Disposable Filter Liner Replacement

WARNING Turn unit OFF and check that drum has stopped before removing the cover.

1. Using a felt tip marker or scribe, mark the location of the liner ends on the face of the drum.
2. Remove and discard disposable liner.
3. Starting at the mark made in Step 1, slide the replacement liner under each blade until the ends come together.

NOTICE Do not trim the filter if it seems too long. Work the excess filter liner around the drum evenly.

4. Replace the cover and clamping ring, turn power ON and allow unit to reach full speed.
5. Turn unit OFF and allow drum to stop. Remove the inlet cover and inspect liner. It should be smoothly seated and the butt joint flat. If liner overlaps at the seam or wrinkles are present, smooth troublesome areas by hand and repeat Steps 4 and 5.

NOTICE If unit runs rough after filter liner replacement, shift the liner seam a few inches to the right or left of the reference mark.

Primary Filter Replacement

Under normal operating conditions and scheduled filter liner replacement, the primary filter will not require replacement. It is strongly recommended that this filter is not removed. The dynamic balance of the drum assembly will be affected.

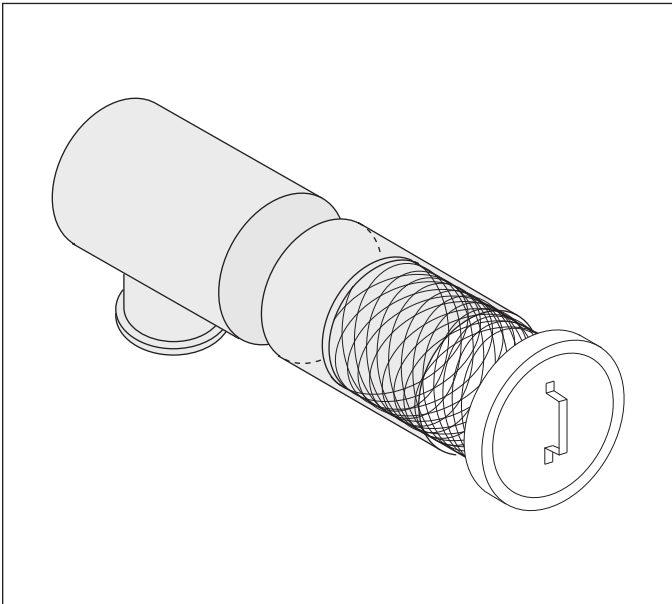
Delayed maintenance or accidental damage can make replacement necessary. Follow the same procedure used for replacing the disposable filter. Trial and error shifting of the seam will be necessary to minimize vibration. If the drum is distorted, it may be necessary to re-balance the unit.

Secondary Filter Replacement

The third stage secondary-filter replacement requires the removal of the rotating drum.

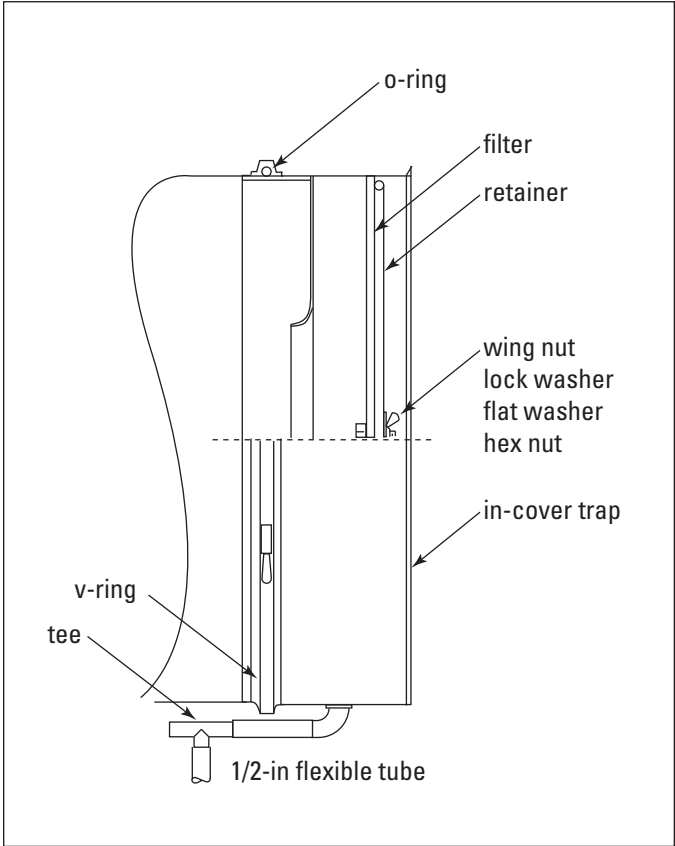
Optional Equipment

Prefilter Trap



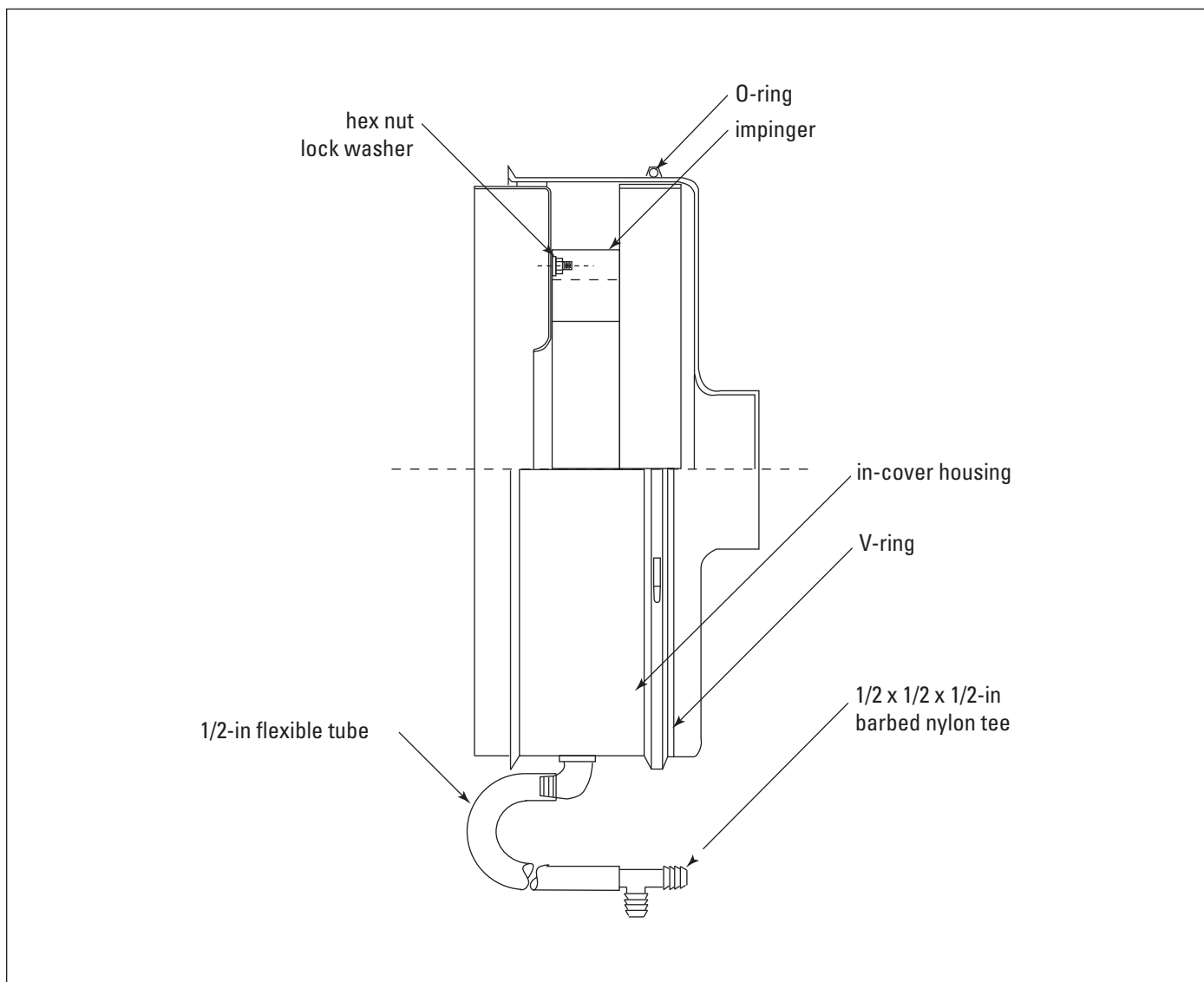
Prefilter Trap

In-Cover Trap



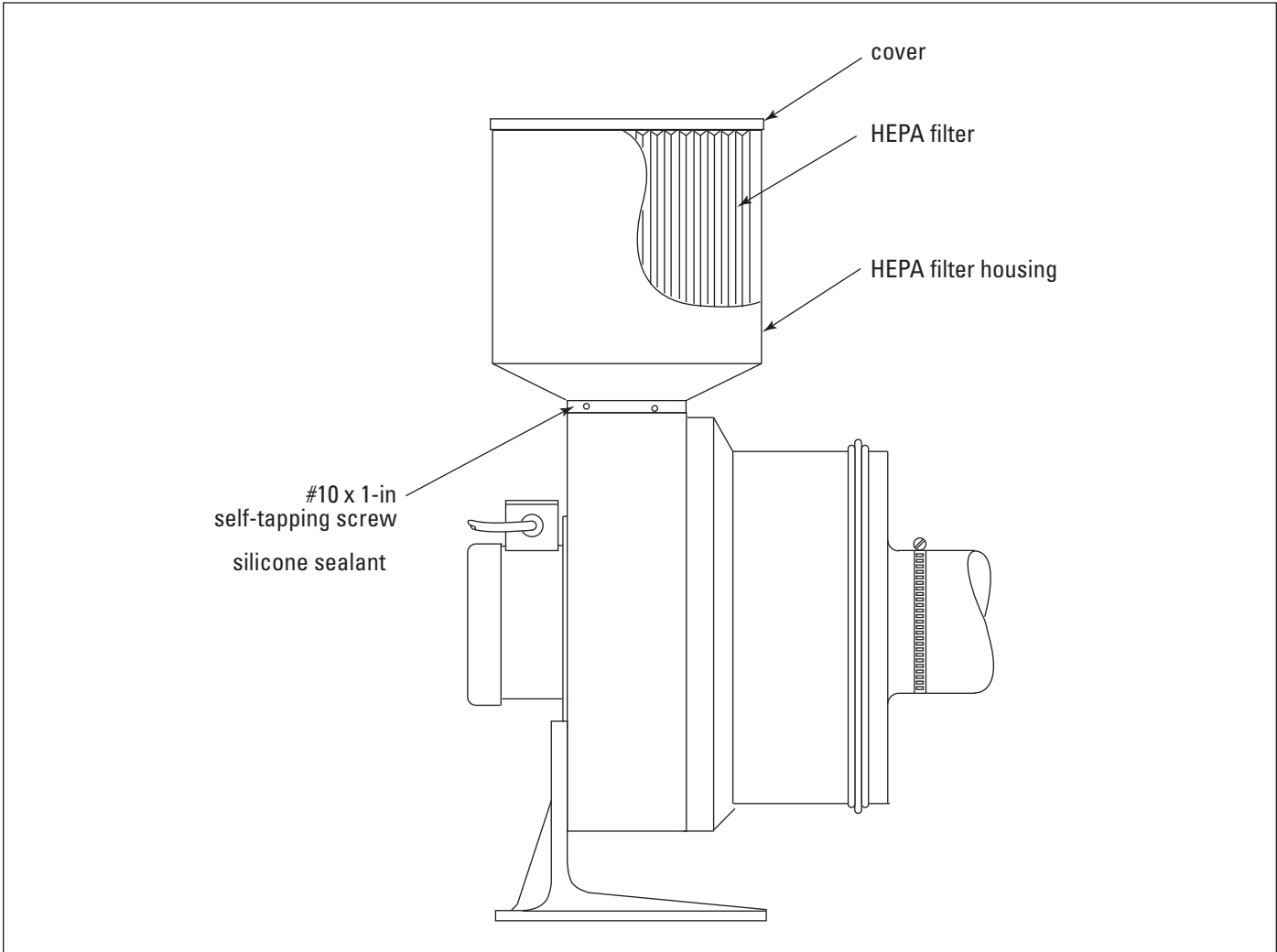
In-Cover Trap

In-Cover Impinger



In-Cover Impinger

HEPA Filter



HEPA Filter

Troubleshooting

Problem	Probable Cause	Remedy
Collector will not start	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.
	Fuse blown	Check and replace as necessary.
	Junction box not wired correctly	Check wiring in junction box for tightness and contact.
	Defective motor	Replace motor.
Collector runs slow	Incorrect voltage	Check power supply circuit for proper voltage.
	Junction box not wired correctly	Check that the junction box is wired according to the wiring diagram.
	Single phase disconnected	Check that the junction box is wired according to the wiring diagram.
	Obstruction between drum and housing	Remove inlet cover. Remove obstruction.
Clean-air outlet discharging mist	Disposable filter liner dirty	See Disposable Filter Liner Replacement section.
	Undersized collector	Collector must be sized for the application. Contact Donaldson for assistance.
Excess Vibration	Mounting bolts loose	Tighten bolts.
	Foreign object in drum	Check and remove obstruction.
	Disposable filter liner dirty	See Disposable Filter Liner Replacement section.
	Drum assembly distorted	Rebalance drum assembly. Contact Donaldson for assistance.

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.

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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.