Donaldson
Torit®

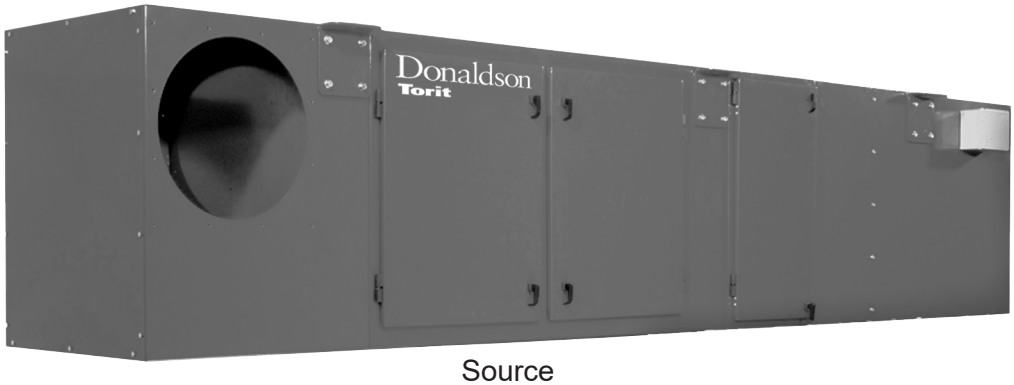
Modular MediaFilter™ Horizontal Series

Ambient (HA-1A, HA-1B, HA-2A, HA-2B) and
Source (HS-1A, HS-1B, HS-2A, HS-2B)

Installation and Operation Manual

Installation, Operation, and Service Information

Ambient



Source

This manual contains specific precautions related to worker safety. The hazard alert image denotes safety related instructions and warnings in this manual. DO NOT install, operate, or perform maintenance on this collector until you have read and understood the instructions, precautions and warnings contained within this manual.

English
Master Language

IOM AD3029501 (ENG)
Revision 3

IMPORTANT NOTES

This manual has been supplied to assist with the installation, operation and maintenance for the collector purchased. Please read the manual before installing, operating, or performing maintenance on the collector as it contains specific precautions for worker safety. It is the owner's responsibility to ensure that this manual is available for use by installers, operators and maintenance personnel that will be working with this collector. This manual is the property of the owner and should be left with the collector when installation has been completed. DO NOT operate this collector until you have read and understood the instructions and warnings located in this manual.

For additional copies of this manual, contact Donaldson Torit.

The Safety Alert Symbol indicates a hazardous situation which, if not avoided could result in death or serious injury. Obey all safety messages following this symbol to avoid possible injury or death. The possible hazards are explained in the associated text messages.

NOTICE

NOTICE indicates a potential situation or practice which is not expected to result in personal injury, but which if not avoided, may result in damage to equipment.

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1 Safety Communication

Improper operation of dust, fume or mist collectors and/or dust, fume or mist control systems may contribute to conditions in a work area or facility which could result in severe personal injury, and product or property damage. All dust, fume or mist collection equipment should be used only for its intended purpose and should be properly selected and sized for its intended use.

Process owners have important responsibilities relating to identifying and addressing potential hazards in their processes. When the potential for handling combustible particulate exists within a process the process owner should include combustion hazards in their risk management activities and should comply with applicable codes and standards relating to combustible hazards.

Electrical installation must be performed by a qualified electrician.

This equipment is not designed to support site ducts, piping, or electrical services. All ducts, piping, or electrical services must be adequately supported to prevent injury and/or property damage.

Site selection must account for applicable load conditions such as wind, seismic and snow.

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

Some components may be heavier than they appear. Use appropriate lifting methods to avoid personal injury and/or property damage.

Combustible Dust Hazards

Among other considerations, the current NFPA standards require owners whose processes involve potentially combustible materials to have a current Dust Hazard Analysis (DHA), which can serve as the foundation for their process hazard mitigation strategy. Mitigation may include but is not limited to:

- Prevention of all ignition sources from entering any dust, fume, or mist collection equipment.
- Selection and implementation of fire and explosion mitigation, suppression, and isolation strategies appropriate for the risks in their process.
- Development and use of work practices to maintain safe operating conditions, and to ensure combustible particulate does not accumulate within their plant or process equipment.

Donaldson designs, manufactures, and sells industrial air filtration products for a wide variety of applications. Some applications may include processes or materials with inherent fire and explosion hazards. Donaldson is neither an expert nor a certified consultant in fire, spark, or explosion detection, suppression, or control. Donaldson does not provide engineering consulting services related to process or dust hazard analyses, or code and standard compliance. Complying with applicable codes and standards and managing the risks associated with the process or materials remains the responsibility of the process owner/ operator. Donaldson may provide referrals to consultants, suppliers of equipment or services related to the detection and/ or mitigation of sparks, fires and/or explosions, but Donaldson does not assume responsibility for any such referrals, nor does Donaldson assume any liability for the fitness of a mitigation strategy or product for a particular installation or application. The process owner's final selection of dust, fume, or mist collection equipment and risk mitigation strategies should be based on the outcome of a Dust Hazard / Process Hazard Analysis performed by the process owner. Although early engagement of a dust collector manufacturer provides helpful insights on the availability and features of various products, process owners should consult with a combustible dust expert and/or a process safety expert before making actual product and mitigation strategy selections.

Donaldson recommends that all industrial air filtration system designs be reviewed and approved by an expert consultant who is responsible for the integrity of the system design and compliance with applicable codes and standards. It is the process owner's responsibility to understand the risks in their process and mitigate those risks in accordance with all applicable laws, regulations and standards, including those published by the NFPA. Donaldson also recommends that proper maintenance and housekeeping procedures and work practices be evaluated, developed, and followed to maintain any industrial air filtration products in safe operating condition.

Many factors beyond the control of Donaldson can affect the use and performance of Donaldson products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the Donaldson products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, product specifications, and data (airflow, capacity, dimensions, or availability) are subject to change without notice, and may vary by region or country.

2 Product Description

The Modular MediaFilter –Horizontal (MMH) Series Ambient and Source collectors are designed to collect airborne mist such as oil- or water-soluble, and synthetic coolant from machining operations. Two stages of filtration plus an optional HEPA / 95% DOP filter help provide a cleaner work environment as well as a more cost efficient means of mist collection. With airflow capacities from 1,500 to 6,000 cfm for the Ambient collector and 1,500 to 3,000 cfm for the Source collector, the Modular MediaFilter –Horizontal Series collectors are used as part of an overall mist collection strategy. The high efficiency filter system allows filtered air to be returned to the plant environment.

Designed to increase the versatility of the collector, standard options include motor starter controls, drain collection containers and control boxes with remote START/STOP or machine interlock capabilities.

Intended Use

Airborne mist is small droplets of liquid that are suspended in the air. Modular MediaFilter Horizontal collectors are used in machine tool operations where metalworking fluids are used. Metalworking fluids include straight oil, water soluble coolants, soluble oil and semi-synthetic coolants.

Rating and Specification Information

General rating and specification information can be found in the product literature provided with the collector and is available on the Donaldson website. For specific load values for a collector, refer to drawings shipped with the collector.

Standard Equipment

Magnehelic® Gauge

The Magnehelic is a differential pressure gauge used to measure the pressure difference between the clean-air and dirty-air plenums and provides a visual display of filter condition. The high-pressure tap is located in the dirty-air plenum and the low-pressure tap is located in the clean-air plenum.

Aluminum Mesh Prefilter

Prefilter is used to trap large particles.

95% ASHRAE Vee-Bag

A fiberglass vee-bag captures the remaining fine mist particles.

40% ASHRAE Vee-Bag (Ambient Standard, Source Standard)

A fiberglass vee-bag capturing the remaining mist particles.

Impinger Filter (Source Standard, Ambient Standard)

The impinger filter is for light to heavy mist or dust collection in wet or dry grinding.

Options and Accessories

HEPA Filter

A secondary afterfilter recommended for applications generating smoke or other fine particulate, the optional HEPA filter features 99.97% efficiency on 0.3-micron particles. The HEPA filter is used in machining processes generating large amounts of heat or in applications using straight oil as a lubricant or coolant.

95% DOP Filter

A secondary afterfilter recommended for applications generating smoke or other fine particulate, the optional 95% DOP filter features 95% efficiency on 0.3-micron particles. The 95% DOP filter is for heavy loading applications.

First Stage High Efficiency Filter

An optional 4-in metal mesh filter is available for heavy liquid load applications. This is a permanent, reusable filter and may need periodic cleaning.

Impinger Filter

The impinger filter is for light to heavy mist or dust collection in wet or dry grinding.

P-Trap with Optional Y-Strainer

Dirty coolant collected in the hopper flows through a standard P-Trap designed to drain coolant while maintaining a seal. Dirt can be removed from the P-Trap by flushing with coolant or opening the optional strainer.

Drain Collection Container

The optional drain collection container is intended for use where small amounts of liquid are collected and requires regularly scheduled service. Failure to empty the collection bottle will result in inlet plenum overflow.

Split Taper™ Bushing

Many fans are furnished with split taper bushings for mounting the impeller to the shaft. When properly assembled, the bushings grip the hub with a positive clamping action.

3 Operation

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

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

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

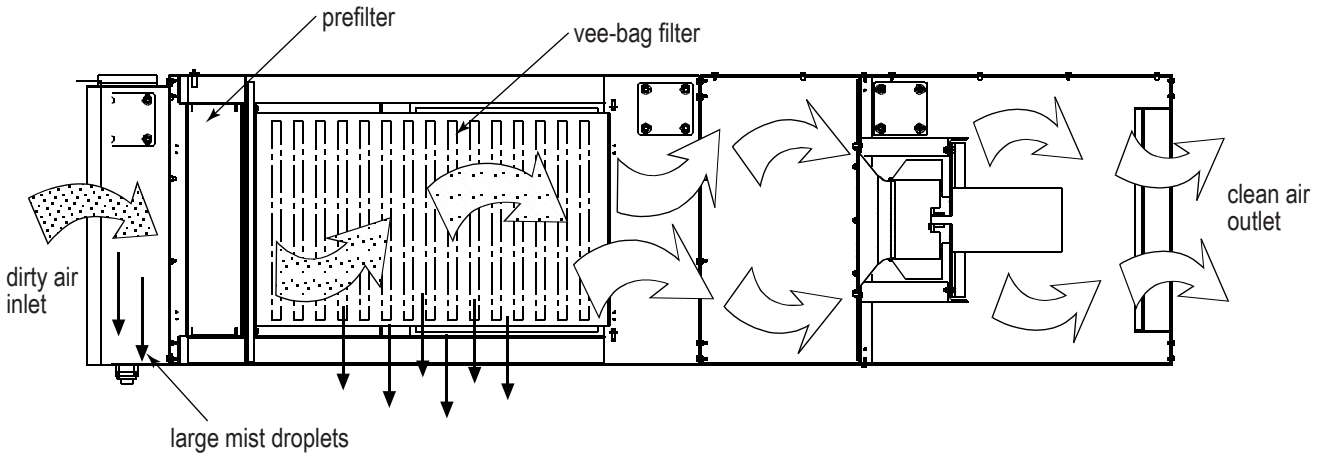
Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Ambient - During normal operation, contaminated air enters the collector through the open inlet located on the back of the collector. The air passes through the first-stage filter assembly designed to collect and coalesce large droplets and particles.

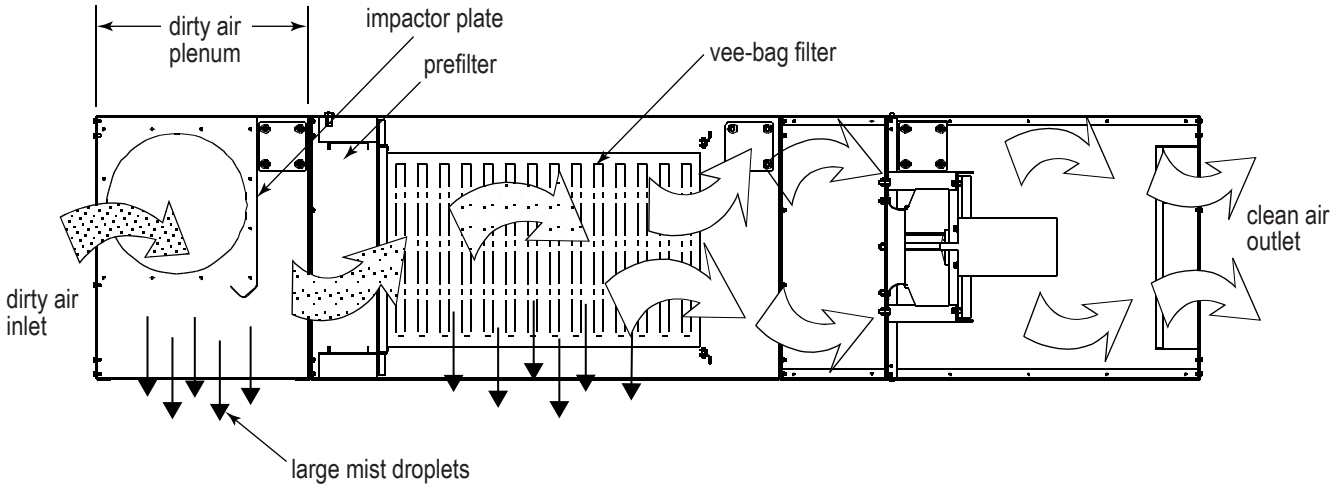
Smaller mist droplets pass to a second-stage fiberglass vee-bag filter. The vee-bag's open pleat design and precise bag spacing allows contaminant loading throughout the life of the filter. As mist particles coalesce and form large droplets, the droplets run down into the bottom of the filter and drain into the hopper(s). The collected liquid drains from the hopper(s) into a P-Trap or collection bottle. Clean, mist-free air exits the filter and discharges through the end of the collector.

Source - During normal operation, contaminated air enters the collector through one of the two side inlet collars. The dirty-air plenum is designed to reduce the incoming airflow velocity and cause large droplets to separate from the airstream. The reduced-velocity air passes across an impactor plate which separates the droplets from the airstream where they fall into the first hopper. The air passes through a reusable first-stage filter designed to collect and coalesce large droplets and particles.

Ambient



Source



Collector Operation

4 Product Service

During service activities there is some potential for exposure to the mist in the collector. Most mists present safety and health hazards that require precautions. Wear eye, respiratory, head and other protection equipment suitable for the type of mist when performing any service activities.

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

LOCK-OUT all energy sources prior to performing any service or maintenance on the equipment.

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

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 may indicate a change in operating conditions and possibly a fault to be corrected.

   If the pressure gauge is high, clean or replace the first-stage filter. If the reading remains high, the second-stage vee-bag filter may need replacement.

3. Monitor exhaust. Exhaust should remain visually clean throughout filter life. If leaks are visible, check the filters and optional HEPA/95% DOP filter for positive gasket seals.

4. Monitor hopper drainage. If slow or stopped, check hopper and drain lines for obstructions and clean as necessary. Check that the Drain or P-Trap is full. Refill P-Trap if low or dry.

Filter Replacement

Most mists present safety and health hazards that require precautions. Wear eye, respiratory, head and other protection equipment suitable for the type of mist.

Use proper safety and protective equipment when removing contaminants and filters.

Dirty filters may be heavier than they appear. Use appropriate lifting methods to avoid personal injury and/ or property damage.

Turn all power OFF and lock out all power before performing service or maintenance work.

Do not operate with missing or damaged filters

First-Stage Filter Cleaning

1. Remove the first-stage filters through the lower access door.
2. Clean the first-stage filter by gently tapping over an appropriate waste container to dislodge particulate. If further cleaning is required, soak or wash in an appropriate wash tank, rinse, dry, and reinstall.
3. The collector can now be returned to service.

NOTICE Do not operate the MediaFilter Horizontal collector without the first-stage filter in place. Significant reduction in primary filter life can result.

Second-Stage Vee-Bag

1. Open the two filter access doors.
2. Remove the vee-bag filter's support rod by lifting the rod from its retaining brackets.
3. Pull rod from the bag loops.
4. Move the vee-bag filter to the filter track side of the collector and slide it off its track while guiding the trailing bags from the cabinet and dispose of in accordance with local requirements for the materials being collected.
5. Inspect and clean the sealing surface if necessary.

NOTICE Clean dust from gasket sealing area to ensure a positive filter gasket seal.

6. Check for any accumulation of dust in the storage area and remove as necessary.
7. Install a new vee-bag filter in the track and carefully place the individual bags in the cabinet. For one module collectors, skip to Step 9.
8. For two module collectors only: proceed to the next filter bag and repeat Steps 1-7.
9. Inspect cover gaskets. Clean and/or replace as necessary.
10. Reach through the adjacent door and fan out the bags. Insert the support rod through all loops.
11. Place the rod in the retaining brackets at each end.
12. Inspect the door gaskets for condition and replace as necessary.
13. Close and secure filter access doors.
14. The collector can now be returned to service.

HEPA / 95% DOP Filter

1. Open the HEPA / 95% DOP filter module's access door.
2. Pull the two clamping handles up to lower the filter from its seal.
3. Remove the filter and dispose of in accordance with local requirements for the materials being collected.
4. Install new HEPA / 95% DOP filter with the filter gasket and the airflow direction arrow pointing toward the fan motor. Push clamping handles down to raise the filter to the seal.
5. Inspect the door gaskets. Clean and/or replace as necessary.
6. Close and secure filter module access door.
7. For two module collectors only: proceed to next filter and repeat Steps 1-6.
8. The collector can now be returned to service.

Dirty-Air Inlet Hopper

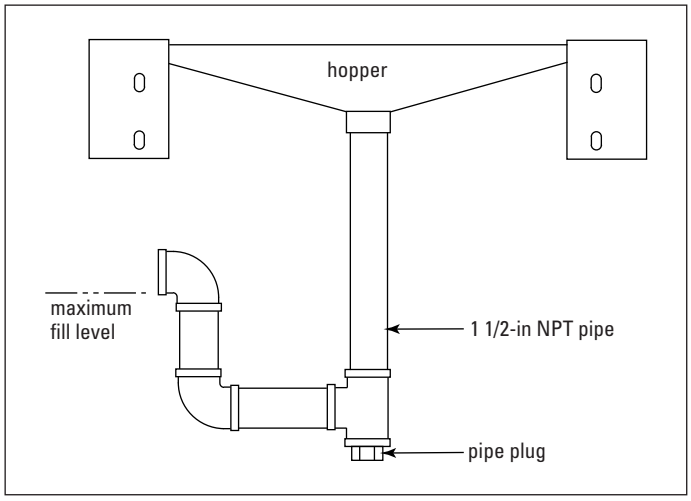
1. Clean hopper by scraping the particulate out.
2. Do not allow particulate to fall into drain.

Vee-Bag Filter Module Hopper

1. Access the filter section hopper through the access doors located on the front of the collector.
2. Remove the vee-bag filter.
3. Clean hopper by scraping the particulate out. Do not allow particulate to fall into drain.

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.



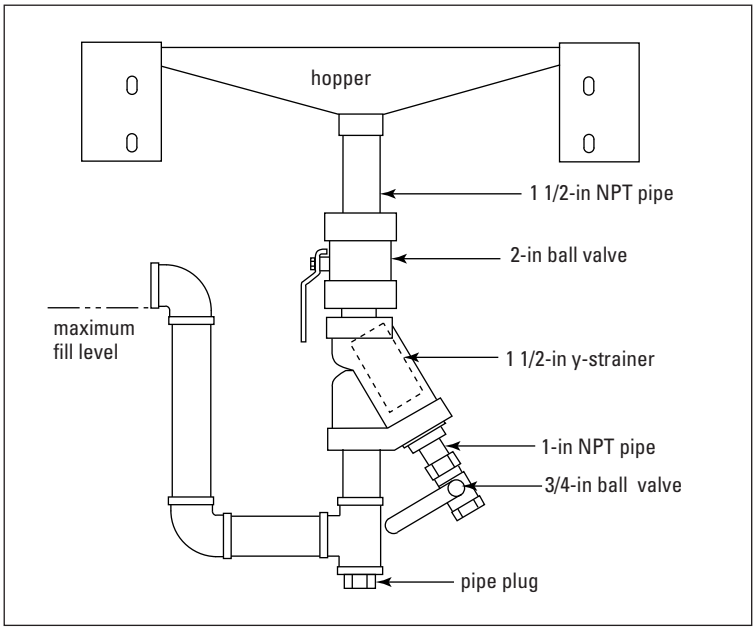
P-Trap Service

P-Trap with Y-Strainer, Screen Cleaning and Removal

1. Placing a suitable container under the screen clean-out valve, turn power to the collector OFF.
2. Close the P-Trap valve.
3. Open open the screen clean-out valve, allowing fluid and particulate to drain.
4. With the clean-out valve open, slowly open the P-Trap valve. This allows fluid still trapped in the hopper to drain.

NOTICE A substantial amount of fluid may be trapped in the hopper and could exceed the container capacity. Open the P-Trap valve slowly.

5. Close the P-Trap valve.
6. Unscrew the screen cap and pull the screen out.
7. 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.
8. Close the clean-out valve.
9. Open the P-Trap valve.
10. Refill the P-Trap with suitable fluid.
11. Turn power to the collector ON.
12. The collector can now be returned to service.



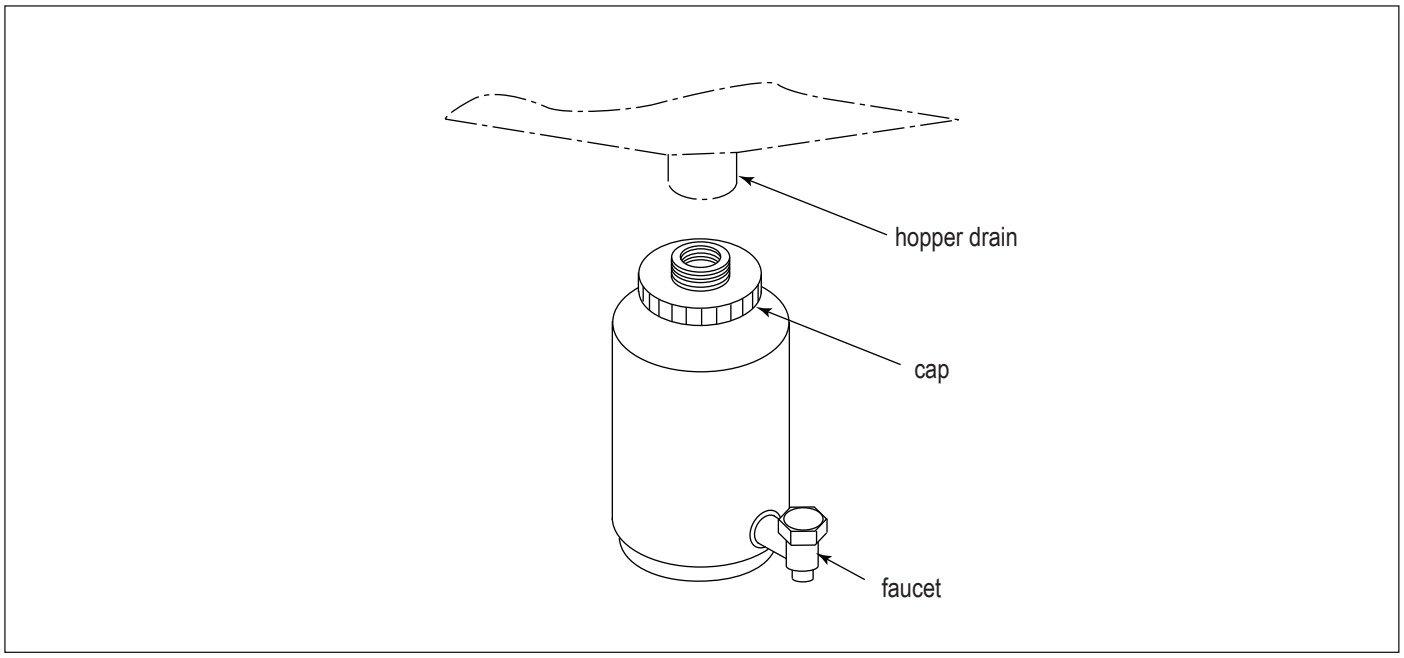
P-Trap with Y-Strainer

Drain Collection Container

1. Turn power to the collector OFF.
2. Remove the drain collection container by unscrewing the container from the cap.
3. Open the drain collection container faucet.
4. Clean the drain collection container and faucet and reinstall.

NOTICE Close the faucet before turning the collector back ON

5. Turn power to the collector ON.
6. The collector can now be returned to service.



Drain Collection Container

Troubleshooting

Problem	Probable Cause	Remedy
Fan blower and motor do 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.
	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.
	Damaged motor	Replace damaged motor.
Fan blower and motor start, but do not stay running	Incorrect motor starter installed	Check for proper motor starter and replace if necessary.
	Electrical circuit overload	Check that the power supply circuit has sufficient power to run all equipment.
Clean-air outlet discharging dust	Filters not installed correctly	See Filter Replacement.
	Filter(s) damaged or worn	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Replacement.
	Access cover(s) loose	Tighten access doors securely. See Filter Replacement.
Insufficient airflow	Fan rotation backwards	Proper fan rotation is clockwise when viewed from the motor side or counterclockwise when viewed through the inlet cone. See Start-Up/Commissioning.
	Access doors open or not closed tight	Check that all access doors are in place and secured. Check that the hopper discharge opening is sealed and that dust container is installed correctly.
	Fan exhaust area restricted	Check fan exhaust area for obstructions. Remove material or debris.
	Filters need replacement	Remove and replace using genuine Donaldson replacement filters. See Filter Replacement.
Insufficient hopper discharge	Plugged P-Trap	Clean P-Trap. See P-Trap Maintenance.
	Plugged drain collection container	Remove and clean collection container and faucet. See Drain Collection Container.
Liquid leaking from collector door	Plugged P-Trap	Clean P-Trap. See P-Trap Maintenance.
	Drain collection container full or plugged	Turn collector OFF. Drain collection container. See Drain Collection Container.

Appendix A - Installation

Installation

Electrical Installation (including bonding and grounding of the collector) must be performed by a qualified electrician.

This equipment is not designed to support site ducts, piping, or electrical services. All ducts, piping, or electrical services must be adequately supported to prevent injury and/or property damage.

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

Service must be performed by trained and qualified maintenance personnel.

Turn all power off and lock out all power before performing service or maintenance work. It is not unusual for the equipment to be operated from a remote location, so equipment may start or stop unexpectedly.
Equipment may reach peak sound pressure levels above 80 dB (A). Noise levels should be considered when selecting equipment location.

Location and Site Selection

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.

Equipment location must conform to all codes and standards, should be suitable for the type of dust being handled and should ensure easy access for service and utility connections. Collector intended for indoor installation and can be located on a foundation, structural framing, suspended or hung from overhead supports. The structure must be adequate to support all applicable loads of the collector and installation performed to reduce sway or vibration to the collector.

Provide clearance from heat sources and interferences with utilities when selecting the location for suspended collectors.

Delivery and Inspection

Upon arrival inspect equipment and report any damage to delivery carrier. File any damage claims with the delivery carrier. Request a written inspection report from the Claims Inspector to substantiate all damage claims.

Compare the equipment received with the description of product ordered. Report any incomplete shipments to the delivery carrier and your Donaldson Torit representative.

Unloading and Positioning

Equipment should be lifted only by qualified crane or fork truck operators.

Failure to lift the equipment correctly can result in severe personal injury and/or property damage.

1. Remove any crates or shipping straps.
2. Lift the packaged collector from transport container.
3. Inspect for any damage and/or missing parts and report to freight carrier.
4. Check for any hardware which may have become loose during shipment and tighten as necessary.

Lifting Information

Failure to lift the equipment or sub-assemblies correctly can result in severe personal injury and/or property damage.

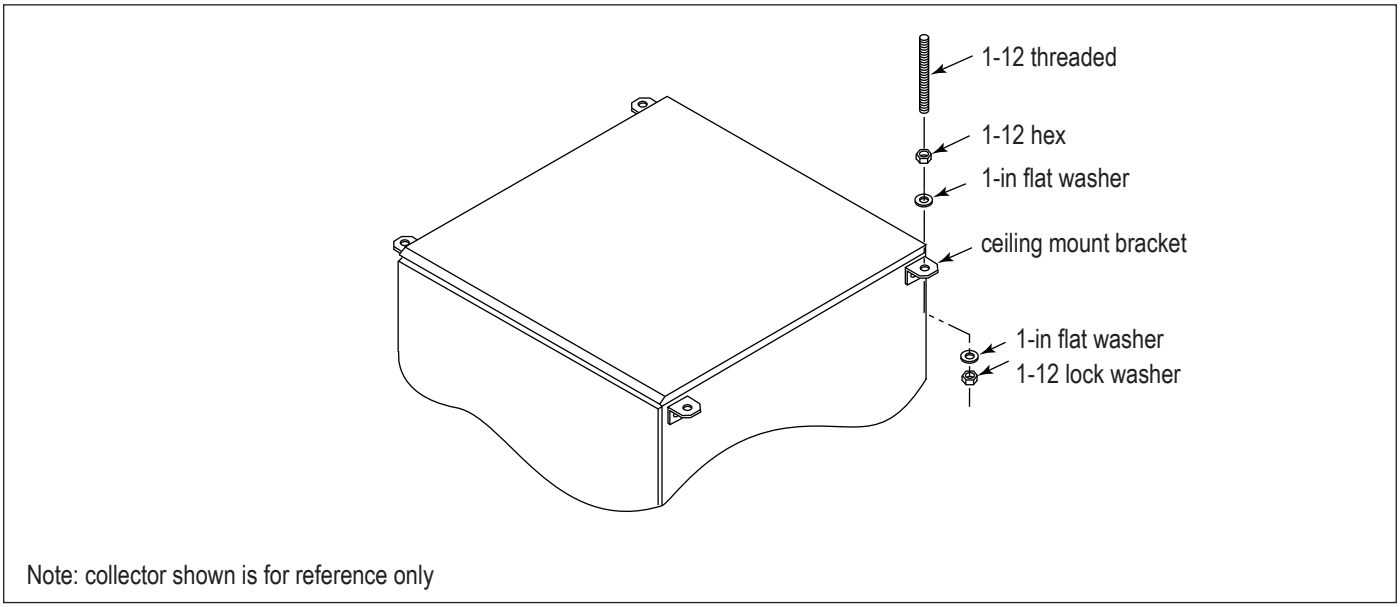
Only qualified crane or forklift operators should be allowed to lift equipment.

1. Use all lifting points provided.
2. Use clevis connectors, not hooks, on lifting slings.
3. Use spreader bars to prevent damage to equipment.
4. Check the drawing(s) shipped with the collector for weight and dimensions of the collector and components to ensure adequate crane capacity.
5. Lift collector and accessories separately and assemble after collector is in place.
6. Use drift pins to align holes in section flanges during assembly.

Standard Equipment

Ceiling Mounted

1. Position the collector as close to the mist source as possible allowing optimum extraction air movement.
2. Remove the transportation support from the power pack.
3. Install the discharge cover.
4. Use six pieces of 1-12 threaded rod to suspend the collector.
5. Place a 1-in flat washer on the threaded rod and thread a 1-12 lock nut a minimum of 1-1/2-in.
6. Insert rod with washer and hex nut through the ceiling mount bracket from the bottom up.
7. Place another 1-in flat washer from the top down and secure with a hex nut as shown.
8. Lift the collector into position and secure to ceiling joists.
9. Level collector and tighten all hardware.



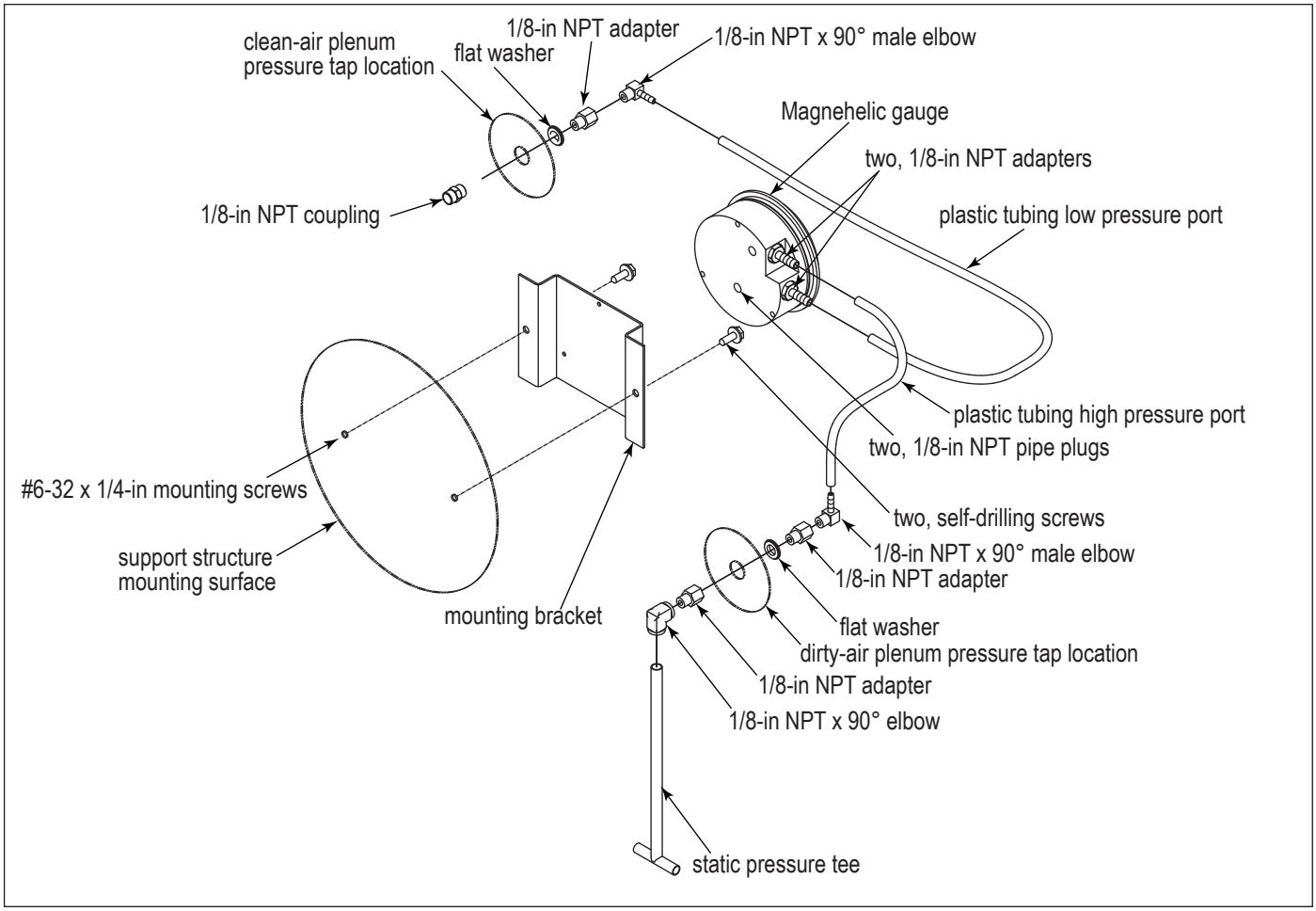
Ceiling Mount

Cleaning Controls and Sensors

Magnehelic® Gauge

1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.

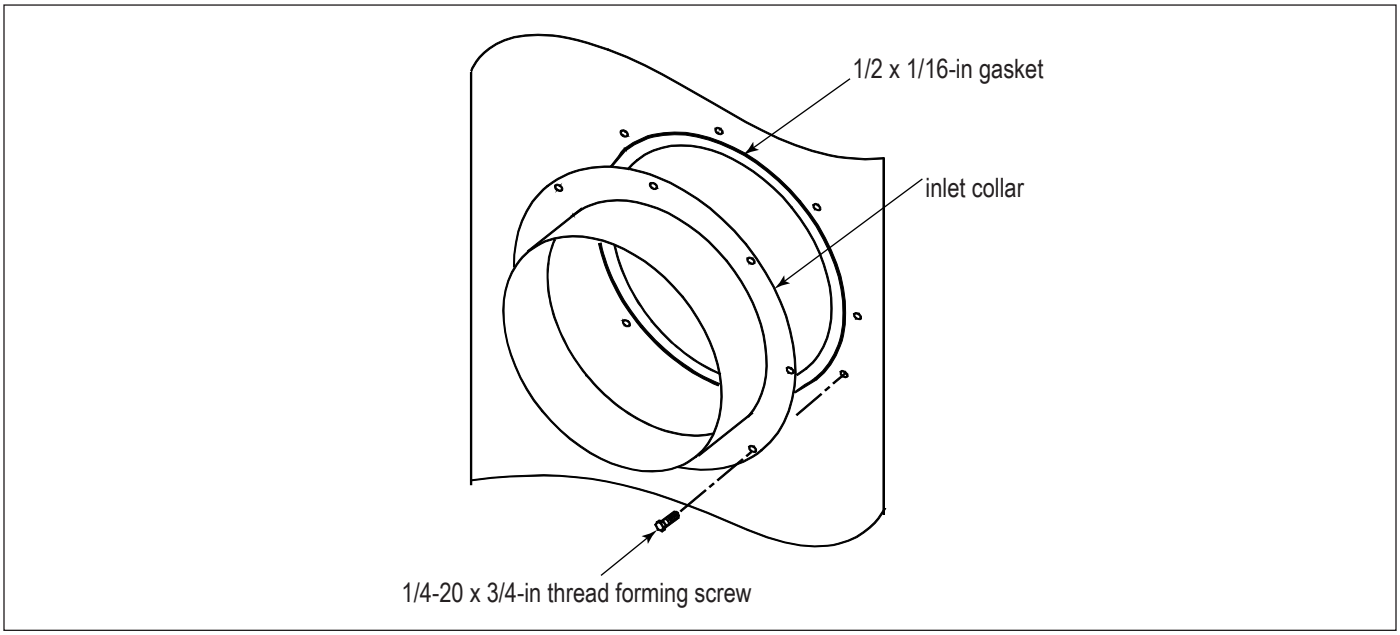
   If collector is equipped with factory-installed pressure taps, skip to Step 5.
2. Before drilling, place a piece of non-combustible cloth over the filter opening in the clean-air plenum to protect them from drilling chips.
3. Place a piece of wood behind the drill location in the dirty-air plenum to protect the filters from damage by the drill bit.
4. Mount the pressure tap hardware on the clean-air plenum panel and the dirty-air plenum.
5. Plug the pressure ports on the back of the gauge using two, 1/8-in NPT pipe plugs supplied. Install two, 1/8-in NPT male adapters supplied with the gauge into the high- and low-pressure ports on the side of the gauge.
6. Attach the mounting bracket using three, #6-32 x 1/4-in screws supplied.
7. Mount the gauge and bracket assembly in an accessible location using two, self-drilling screws.
8. Thirty-five feet of plastic tubing is supplied and must be cut in two sections for vacuum pressure systems. Connect one section of tubing from the gauge's high-pressure port to the pressure fitting located in the dirty-air plenum. Connect remaining tubing from the gauge's low-pressure port to the fitting in the clean-air plenum. Additional tubing can be ordered from your representative.
9. Carefully remove the cloth protecting the filters. Close access doors and tighten securely by hand.
10. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.
11. Repeat steps 1-10 to install the Magnehelic gauge for the HEPA module.



Magnehelic Gauge Installation

Inlet Collar (Source Only)

1. Remove the inlet cover plate.
2. Apply the 1/2 x 1/16-in gasket toward the inside edge of the bolt pattern on the collector.
3. Install the inlet collar using 1/4-20 x 3/4-in thread-forming screws.



Inlet Collar (Source Only)

Electrical Wiring

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

Turn all power off and lock out all power before performing service or maintenance work. It is not unusual for the equipment to be operated from a remote location so equipment may start or stop unexpectedly.

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

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

Control Box

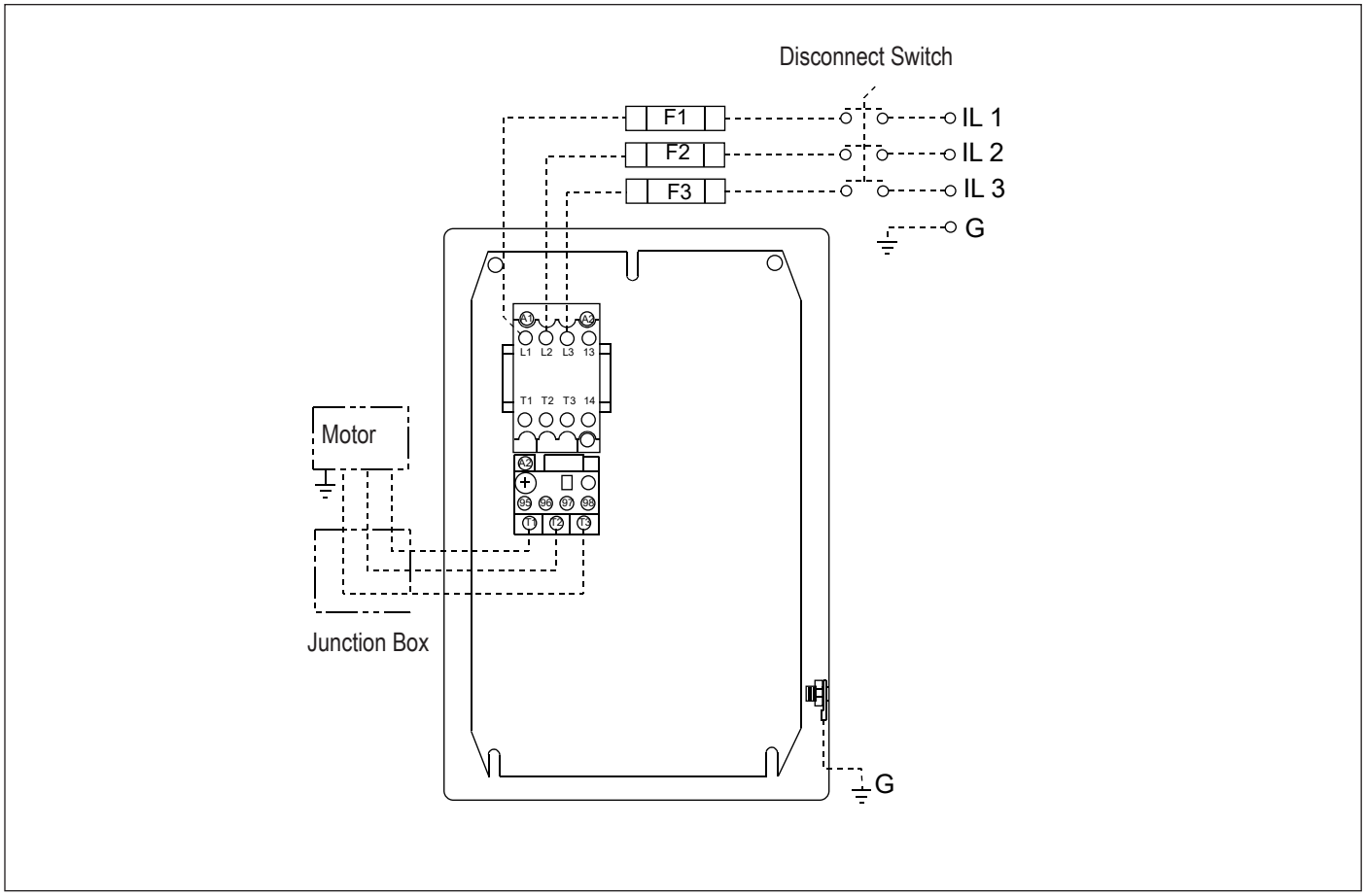
Modular MediaFilter-Horizontal Series collectors must be equipped with a customer-supplied safety disconnect with short circuit protection, contactors and overload protection.

1. Mount the control box in a convenient, accessible location.
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 label.

   Note: All electrical components must be sized for the supply voltage and motor horsepower.
3. Turn the fan motor ON then OFF and compare fan rotation to the rotation label (located on the fan housing) direction.
4. To reverse rotation, single-phase power supply:

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

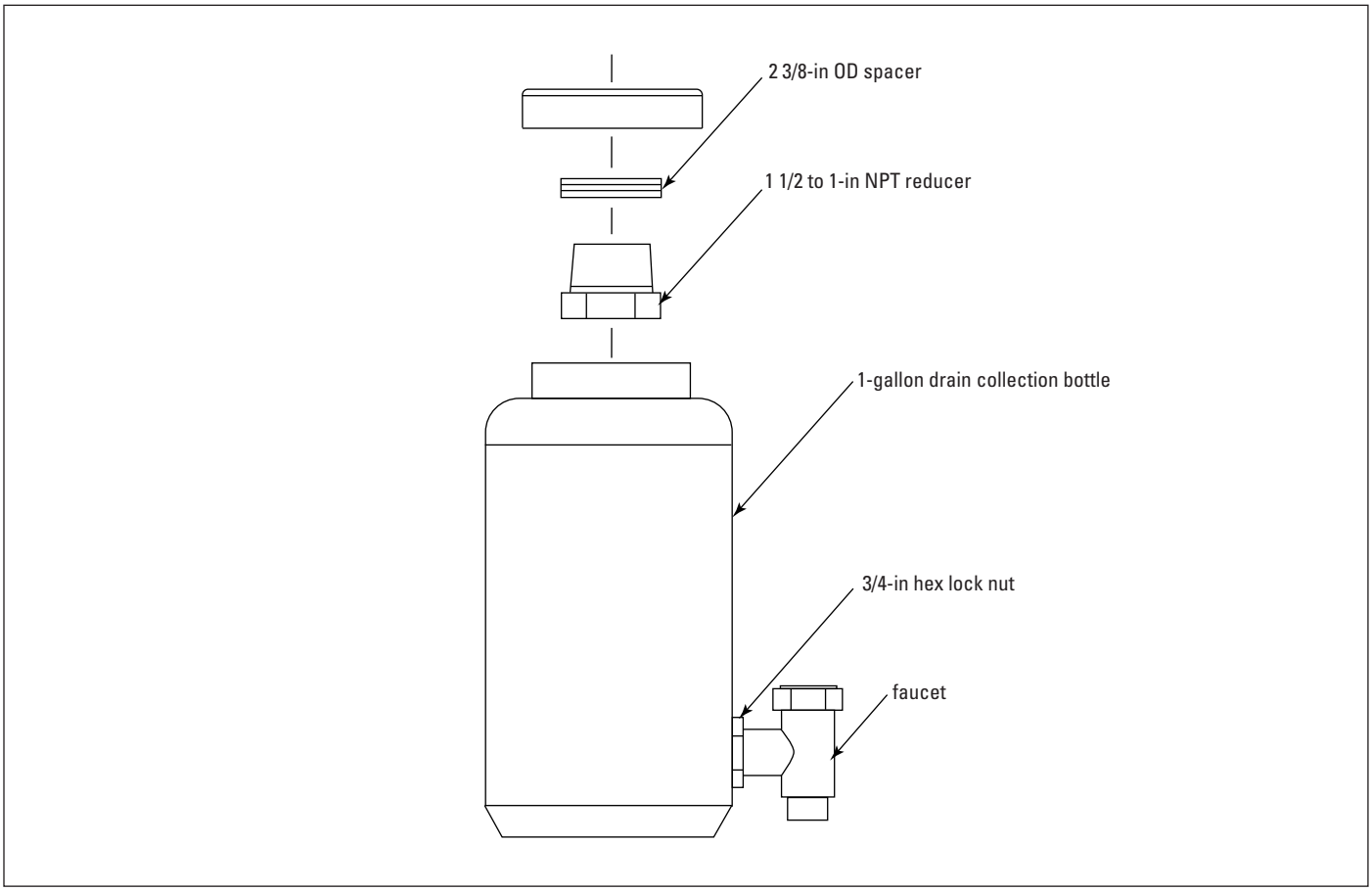
   Turn electrical power OFF at source and switch any two leads on the output-side of the fan- motor starter.



Options and Accessories

Drain Collection Container

Install the drain collection container during installation or after collector has been placed in its final operating position.



Drain Collection Container

P-Trap or Y-Strainer Installation

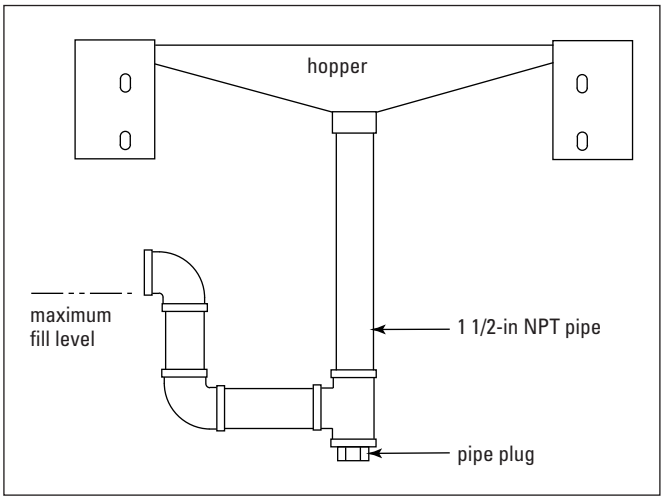
NOTICE

Ensure collected material properly flows through the P-Trap. The P-Trap dimensions should accommodate a column of coolant greater than the static capacity of the fan to avoid coolant pooling in the collector and potentially causing property damage.

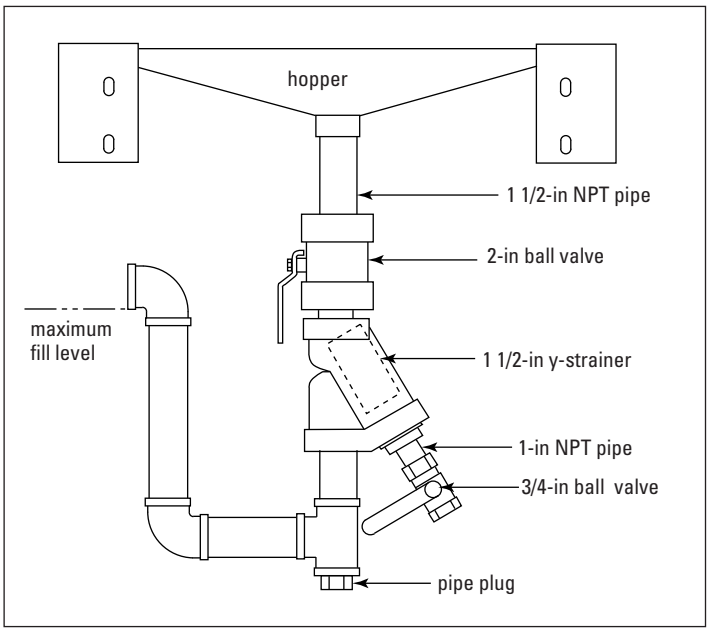
1. Install the 1 1/2-in NPT pipe as shown below.
2. Plumb the P-Trap to a receptacle or install a return line back to the machine center.
3. Fill P-Trap before starting collector.

NOTICE

The characteristics of some machining fluids change with time, use, and exposure to air. Check the condition of the collected fluid before re-using.



P-Trap Installation



Y-Strainer Installation

Split Taper™ Bushing Mounting Instructions

Many fans are furnished with split taper bushings for mounting the impeller to the shaft. When properly assembled, the bushings grip the hub with a positive clamping action.

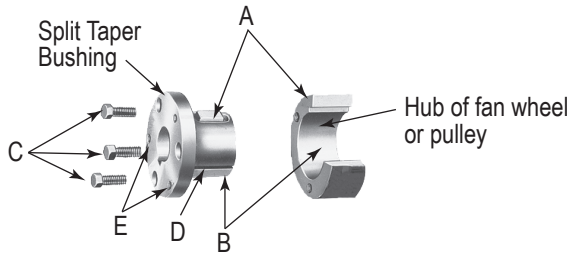
1. Bushel barrel and bore of impeller are tapered to ensure concentric mounting and a true running propeller.
2. Capscrews, when tightened, lock bushing in propeller. Use special plated capscrews and nylock nuts.

Bushing No.	Bolt Size	Torque Ft-Lbs
QT/QH/L/H	1/4-20	7-1/2

3. Bushing is split so that when the locking capscrews force bushing into tapered bore, the bushing grips the shaft with a positive clamping fit. This will withstand vibration and heavy loads without being loosened.
4. Impeller and bushing assembly is keyed to the shaft and held in place by compression, which adds driving strength.

NOTICE

Before assembly, ensure shaft and keyway are clean and smooth. Check key size with both shaft and bushing keyway.



A. External key, except G, H and Idler Bushings
B. Bushing barrel and product bore are tapered
C. Bushing cap screws
D. Bushing barrel is split (except idler bushings)
E. Removal holes are threaded, installation holes are not

Spilt Taper Bushing Installation

5. To assemble, insert the capscrews through the clearance holes in the bushing and install bushing loosely into the impeller. Do not press or drive. Start capscrews by hand, turning them just enough to engage threads in the nylock nut. Do not use a wrench at this time. The bushing should be loose enough in the propeller to move freely. Slide impeller and bushing assembly onto shaft, allowing adequate clearance for shaft end play to prevent friction. Fit key into keyway. Do not force impeller and bushing onto shaft. If it does not go on easily, check shaft, bushing, and key sizes once again.

   Tighten capscrews gradually and evenly with wrench similar to mounting an automobile wheel. Rotate a quarter turn on each capscrew successively until all capscrews are tight. These capscrews force the taper bushing into the hub, which in turn compresses the bushing onto the shaft. This makes a positive clamping fit. The torque must not exceed the value specified in the table.

Do not attempt to pull bushing flange flush with hub end. There should be a clearance which varies approximately 3/16-in to 1/4-in with the bushing size when tightened. This is not a locating dimension.

Impeller Assembly Removal

1. Remove all capscrews from impeller and hub assembly.
2. Insert capscrews into the threaded holes in the bushing flange.
3. Tighten each bolt in quarter of a turn increments to push the impeller off the bushing. This forces the bushing loose from the propeller hub and releases the compression so that the entire assembly will slide from the shaft.
4. Pull the bushing off the shaft.

NOTICE

If the assembly has been in place sometime it may be necessary to use a wheel puller to remove the bushing. Never use a wheel puller on the impeller.

Start-Up/Commissioning Collector

Instruct all personnel on safe use and maintenance procedures.

Electrical installation, service, or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes. This equipment may start or stop unexpectedly from a remote location.

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

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

Do not operate 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 on all motors as described below.

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 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.

   a. “Bump” the fan to initiate rotation.
   b. As the fan is winding down (unpowered) compare fan rotation to the rotation label (located on fan housing) direction.
3. If the fan rotation is reversed, correct the rotation.

   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.

   a. Turn off the collector and Lock-Out all energy sources.
   b. Within the junction box, swap the connection location of two power leads on the terminal block, making certain not to swap a power lead and the ground wire.

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

4. Ensure all equipment access panels are sealed and secure.
5. Check and remove all loose items in or near the inlet and outlet of the collector.
6. Check that all remote controls and solenoid enclosures (if applicable) are properly wired and all service switches are in the OFF position.
7. Check that all optional accessories are installed properly and secured.
8. Turn power ON at source.
9. Turn fan motor ON.

Decommissioning Collector

Once the collector has reached the end of operational life it will need to be decommissioned.

During decommissioning, there is potential for exposure to the dust in the collector. Most dusts present safety and health hazards that require precautions. Wear eye, respiratory, head, and other protection equipment suitable for the type of dust when performing any decommissioning activities.

LOCK-OUT all energy sources prior to performing any decommissioning activities on the equipment.

Electrical service must be performed by a qualified electrician.

Disconnection of ducts must be performed by a qualified contractor.

1. Lock-out all energy sources to the collector, material handling system and other associated equipment.
2. Remove all filters from the collector and dispose of in a suitable fashion for the dust in the collector. (See Filter Replacement for removal instructions). Close and secure front access doors after filters are removed.
3. Remove and empty the drain collection container of any residual liquid.
4. Clear residual dust accumulations from surfaces inside the collector and associated components in a fashion suitable for the dust, prior to further disassembly.
5. Disconnect electrical power from the collector and material handling system components and remove any associated conduit or hardware from the exterior of the collector.
6. Seal the inlet and discharge openings of the collector with shipping covers to prevent residual dust from migrating from the collector during transport for disposal.
7. Disconnect all ducts from the collector.
8. Proceed to disassemble equipment by removing sub-assemblies in the reverse order of the steps given in Appendix A.
9. Pick up the collector and place in a location suitable to prepare it for transportation. (See Lifting Information for lifting guidance.)
10. Secure all collector components to a suitable transport carrier and transport to a disposal site suitable for the dust in the collector.

Product Information (Process Owner to complete and retain for your records)

Model Number _____ Serial Number _____

Ship Date _____ Installation Date _____

Filter Type_____

Collected Dust _____

Dust Properties: Kst _____Pmax_____ MIE _____ MEC _____

Accessories _____

Other _____

_____

Service Notes

Date	Service Performed	Notes

Service Notes

Date	Service Performed	Notes

Donaldson Industrial Air Filtration Warranty

Donaldson warrants to the original purchaser only that the Goods will be free from defects in material and manufacture for the applicable time periods stated below: (1) Major structural components for a period of ten (10) years from the date of shipment; (2) Non-Structural, Donaldson-built components and accessories including Donaldson Airlocks, TBI Fans, TRB Fans, Fume Collector products, Donaldson built electrical control components, and Donaldson-built Afterfilter housings for a period of twelve (12) months from date of shipment; and (3) Donaldson-built filter elements for a period of eighteen (18) months from date of shipment.

Buyer is solely responsible for determining if goods fit Buyer's particular purpose and are suitable for Buyer's process and application. Seller's statements, engineering and technical information, and recommendations are provided for the Buyer's convenience and the accuracy or completeness thereof is not warranted. If, after Seller receives written notice, within the warranty period, that any goods allegedly do not meet Seller's warranty, and Seller, in its sole discretion, determines that such claim is valid, Seller's sole obligation and Buyer's exclusive remedy for breach of the foregoing warranty or any Seller published warranty, will be, at Seller's option, either: (i) repair or replacement of such goods or (ii) credit or refund to Buyer for the purchase price from Seller. In the case of repair or replacement, Seller will be responsible for the cost of shipping the parts but not for labor to remove, repair, replace or reinstall the allegedly defective goods. Refurbished goods may be used to repair or replace the goods and the warranty on such repaired or replaced goods shall be the balance of the warranty remaining on the goods which were repaired or replaced. Any repair or rework made by anyone other than Seller is not permitted without prior written authorization by Seller, and voids the warranty set forth herein. Seller warrants to Buyer that it will perform services in accordance with the Sales Documents using personnel of required skill, experience and qualifications and in a professional and workmanlike manner in accordance with generally recognized industry standards for similar services. With respect to any services subject to a claim under the warranty set forth above, Seller shall, in its sole discretion, (i) repair or re-perform the applicable services or (ii) credit or refund the price of such services at the pro rata contract rate and such shall be Seller's sole obligation and the exclusive remedy for breach of the foregoing warranty on services. Products manufactured by a third party ("Third Party Product") may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the goods. Buyer agrees that: (a) Third Party Products are excluded from Seller's warranty in this Section 7 and carry only the warranty extended by the original manufacturer, and (b) Seller's liability in all cases is limited to goods of Seller's design and manufacture only. EXCEPT FOR SELLER'S WARRANTY OF TITLE TO THE GOODS, SELLER EXPRESSLY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES WHATSOEVER, WHETHER, EXPRESSED OR IMPLIED, ORAL, STATUTORY, OR OTHERWISE, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY AND ANY WARRANTIES ARISING FROM TECHNICAL ADVICE OR RECOMMENDATIONS, COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE. Seller's obligations do not cover normal wear and tear or deterioration, defects in or damage to any goods resulting from improper installation, accident or any utilization, maintenance, repair or modification of the goods, or any use that is inconsistent with Seller's instructions as to the storage, installation, commissioning or use of the goods or the designed capabilities of the goods or that, in its sole judgment, the performance or reliability thereof is adversely affected thereby, or which is subjected to abuse, mishandling, misuse or neglect or any damage caused by connections, interfacing or use in unforeseen or unintended environments or any other cause not the sole fault of Seller, and shall be at Buyer's expense. Seller's warranty is contingent upon the accuracy of all information provided by Buyer. Any changes to or inaccuracies in any information or data provided by Buyer voids this warranty. Seller does not warrant that the operation of the goods will be uninterrupted or error-free, that the functions of the goods will meet Buyer's or its customer's requirements unless specifically agreed to, or that the goods will operate in combination with other products selected by Buyer or Buyer's customer for its use.

The terms of this warranty may only be modified by a special warranty document signed by a Director, General Manager or Vice President of Donaldson. To ensure proper operational performance of your equipment, use only genuine Donaldson replacement parts.

This Product is provided subject to and conditioned upon Donaldson's Terms of Sale ("Terms"), a current copy of which is located at termsofsale.donaldson.com. These Terms are incorporated herein by reference. By purchasing or using this Product, the user accepts these Terms. The Terms are available on our website or by calling our customer service line at 1-800-365-1331.

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IOM AD3029501 ENG, Revision 3 (January 2025)