

Donaldson.
Torit®

Dryflo® Machine Mountable Mist Collector

MMA and MMB

Installation and Operation Manual

Installation, Operation and Service Manual



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.

Englis
Master Language

IOM 7236900 (ENG)
Revision 7

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 the installation and operation 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 mist collectors and/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 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 mist exists within a process the process owner should include combustion hazards in their risk management activities and should comply with applicable codes and standards related to combustible mist.

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 wind, seismic zone, and other load conditions.

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

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

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

Combustible Mist Hazards

Among other considerations, the current NFPA standards require owners whose processes involve potentially combustible materials to have a current Dust Hazard Analysis, 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 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 dust 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 collectors 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 supplier 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 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.

Intended Use

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 as 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, may evaporate.

Standard Equipment

Machine Mount

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

Inlet Gasket

Used on machine centers that have a large, flat unobstructed top surface.

Integral Housed Fan

The integrated fan assembly provides airflow for the collector.

Minihelic® Gauge

The Minihelic is a differential pressure gauge used to measure the pressure difference between the clean- and dirty-air plenums and provides a visual display of filter change requirements.

Exhaust Pack

The exhaust pack provides an exit for clean air with additional HEPA and DOP filter options.

Options and Accessories

Inlet Hopper with Impact Separator

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

Inlet Hopper with Flex-Duct

Available for ceiling mounted collectors or collectors on customer-supplied stands. Included components are a 6-in diameter collar, 10-ft flexible duct, two 6-in hose clamps and a 6-in mounting collar.

Drain Collection Container

The drain collection container is available for an impact separator only. The semi-clear one-gallon collection container attaches to the bottom of the impact separator and collects small particles and coolant.

Junction Box

This option offers quick and easy wiring to the collector. The three phase motor is prewired to a customer requested voltage per order. Labeled voltage on junction box should be verified to match supply voltage at installation.

HEPA Filter

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

MMA Only:

Inlet Hopper with Vibration Isolators

A vibration isolation kit for top-mounted collectors 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.

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 collector and a hopper mounted to the right side provide a raised, level surface on the machine center.

Ceiling Mount

Collector can be suspended or hung from overhead supports.

Collector Stand

For applications with limited mounting surfaces, an adjustable stand is available. The stand's base is bolted securely to the floor. After attaching collector, the stand height can be adjusted from 84 to 102-in.

Cart

Available for applications requiring a mobile mist collector.

MMB Only:

Inlet Hopper with Gussets

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 collector and a hopper mounted to the right side provide a raised, level surface on the machine center.

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

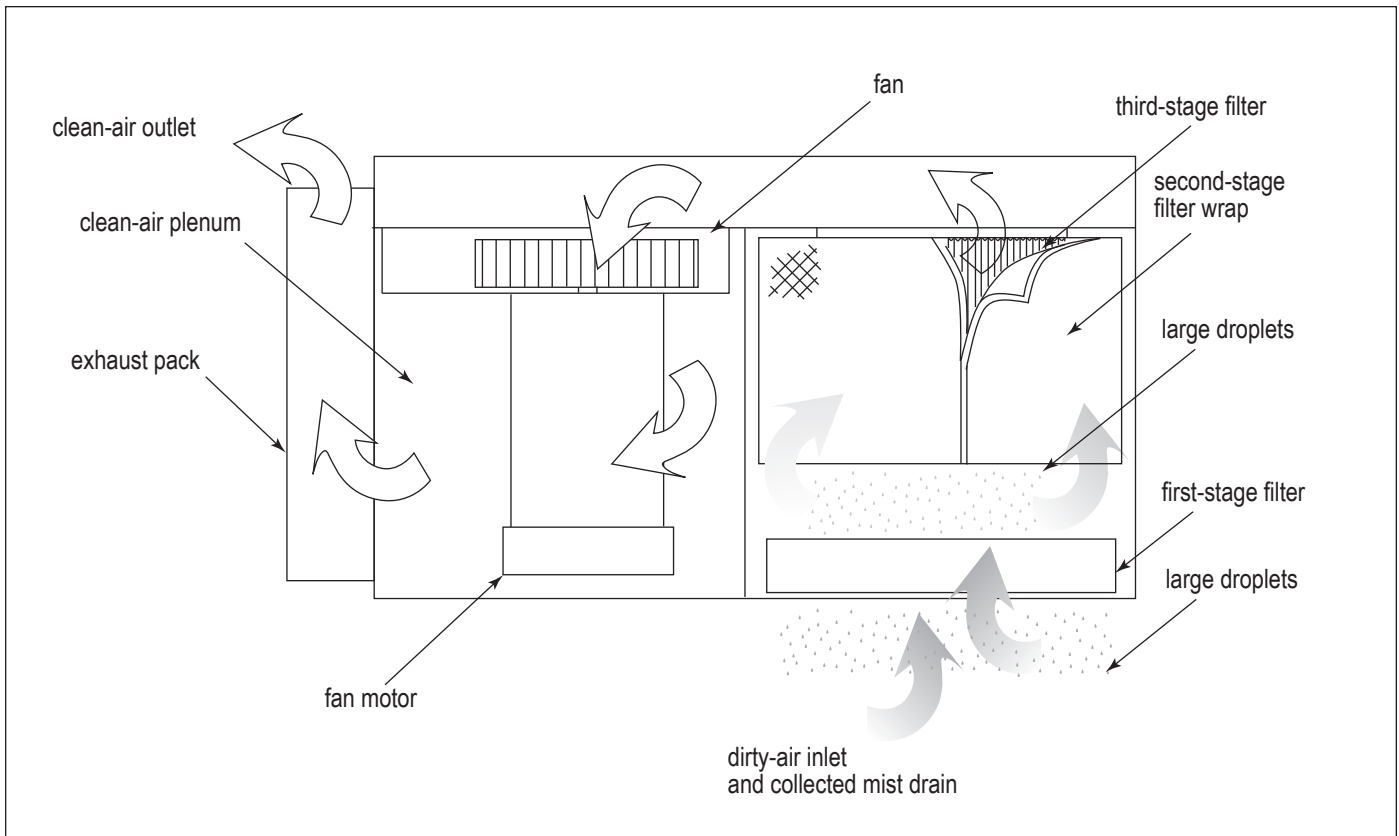
Turn compressed air supply off, bleed and lock out lines before performing service or maintenance work.

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.

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 coalesces, 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 discharges near the top of the collector.



Collector Operation

4 Product Service



During any 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 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 collector, and check the pressure gauge reading. If the gauge is now in the green zone, continue to operate the collector with the new wrap. If the gauge still reads in the red zone, the filter cartridge needs replacement.

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.

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

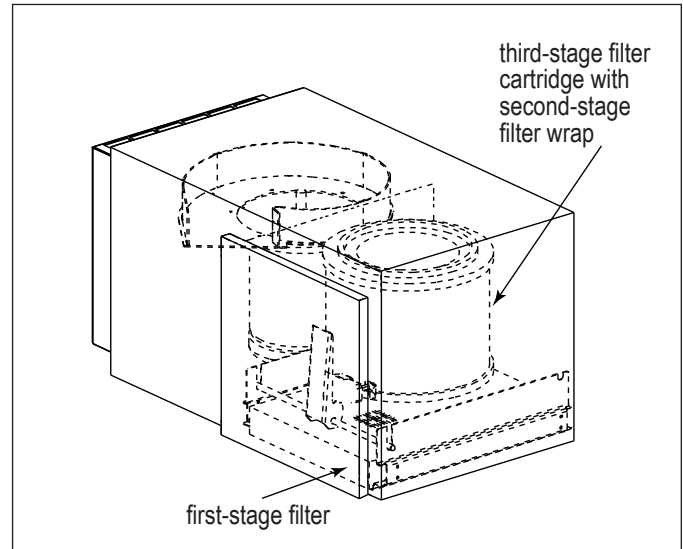
Do not operate with missing or damaged filters

First-Stage Filter

1. Remove first-stage filter by sliding it out along the guide rails.
2. Properly dispose of first-stage filter.
3. Replace first-stage filter by sliding it in along guide rails until filter stops.

Second-Stage Filter and Wrap

1. Remove the filter cartridge by pulling the filter retention lever out and down to a horizontal position. Remove filter cartridge from collector.
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. Fasten securely with hook and loop fastener.
4. Replace filter cartridge and secure with filter retention mechanism.



First-Stage Filter Replacement

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

NOTICE

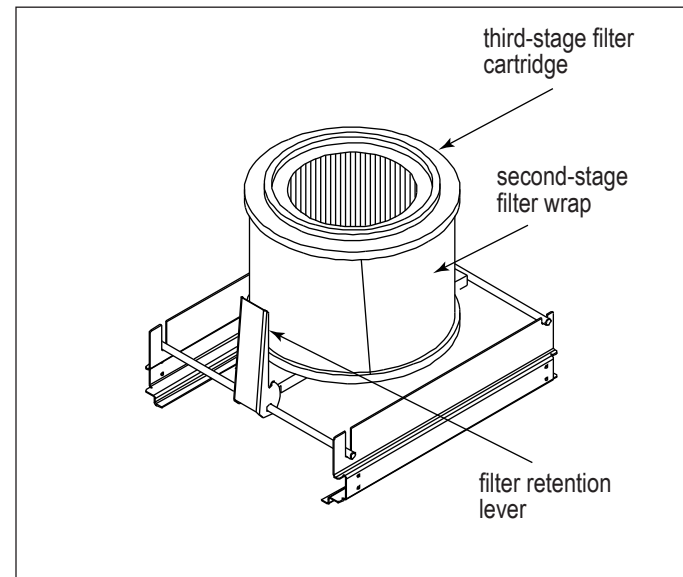
Replace the second-stage filter wrap and third-stage filter cartridge at the same time for easy maintenance.

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

NOTICE

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 collector 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.



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 collector.

Integral Housed Fan

1. To access wheels, remove exhaust pack, motor and bolts. Lift out motor/wheel assembly.
2. To reinstall motor wheel assembly, apply sealant to the outside edge of the bolt pattern on the fan blower housing. Reinstall the motor/wheel assembly using hardware from Step 1.

Note: Wheel assembly should extend $1/8 +0.0$ to $-1/16$ past the top of the inlet ring when properly installed.

Torque set screw to 10-11 Ft Lb, not to exceed 13-Ft Lb for aluminum hubs (typical).

For steel hubs, set torque to 11-13 Ft Lb, not to exceed 14-Ft Lb

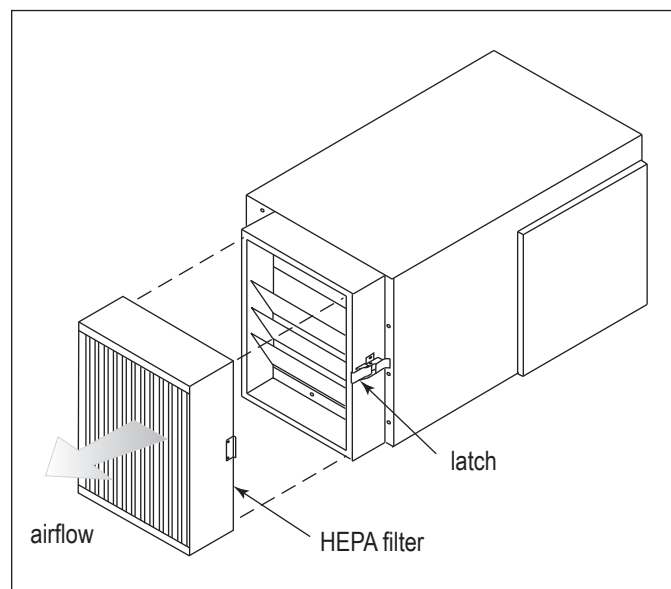
3. Rotate fan wheel after installation to ensure proper rotation.

Minihelic Gauge

1. Periodically check the filters to establish the maintenance requirements for the specific application. All applications will be different based on the operating conditions and load potential of the machinery being served. As the filters load, the system resistance increases, and the pressure indicator increases.

Note: Monitor all filters initially. Not all filters have the same replacement cycle because they are designed for different efficiencies and extend the life of the third-stage filter. Also, note that as the filters load, system suction pressure decreases.

2. When observation or insufficient airflow indicates filter maintenance, document the reading of the pressure gauge. This pressure reading represents filter maintenance required. Because not all filters load at the same rate, the operator determines which filter to use as a guide for planned maintenance. When this is established, use the setscrew on the front of the gauge to set the systems operating range.

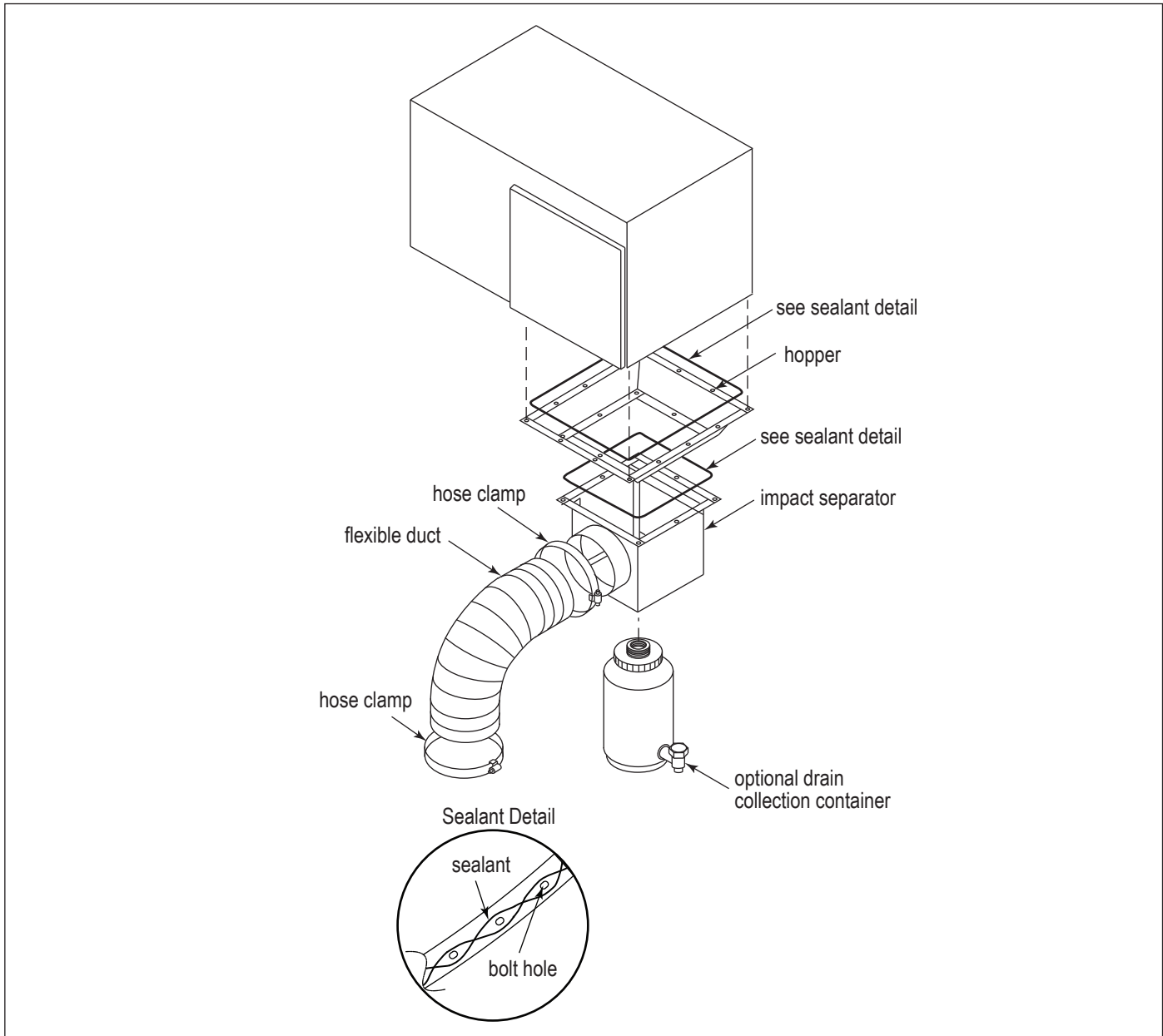


HEPA Filter Replacement

Options and Accessories Replacement

Inlet Hopper with 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.



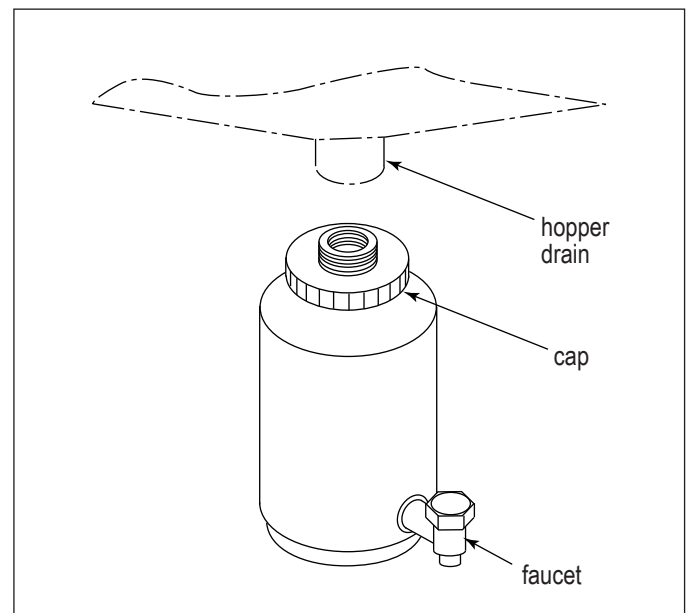
Inlet Hopper with Impact Separator

Drain Collection Container

1. Turn collector OFF.
2. Turn faucet on to drain the collection container.
3. If the collection container needs cleaning after it has been drained, remove the container by unscrewing the container from the cap.
4. Clean the collection container and faucet.
5. Screw the collection container back onto the cap to reinstall.

NOTICE

Close the faucet before turning the collector back ON.



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.
	Overload relay tripped	Reset. Check amp draw on motor leads.
	Defective overload heater or overload assembly	Replace as necessary.
Fan blower and motor start, but do not stay running	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.
Clean-air outlet discharging oil mist	Filters not installed correctly	See Filter Replacement.
	Filter(s) damaged or worn	Replace filter as necessary. Use only genuine Donaldson replacement parts. See Filter Replacement.
	Access cover(s) loose	Tighten access doors securely.

Problem	Probable Cause	Remedy
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 Collector.
	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.
Liquid leaking out bottom of door	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.

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.

This equipment may start or stop unexpectedly from a remote location

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. Site selection must account for wind, seismic zone and other load conditions. Collector intended for indoor installation and can be located on a foundation, structural framing, suspended or hung from overhead supports.

The equipment must be anchored once in final position. Consult a qualified engineer for final selection of foundation or support framing.

Note: Ensure the inlet has at least five diameters of straight duct prior to the collector inlet including a transition to the full inlet dimensions. Inlet transition should have a taper with a maximum of a 90-degree included angle.

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.

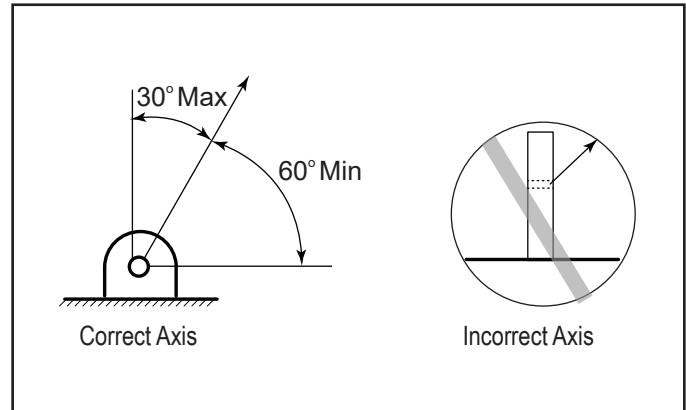
Lifting Information



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. Check the Specification Control drawing for weight and dimensions of the collector and components to ensure adequate crane capacity.
4. Lift collector and accessories separately and assemble after collector is in place.
5. Use drift pins to align holes in section flanges during assembly.



Typical Lifting Guidance

Electrical Wiring



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.

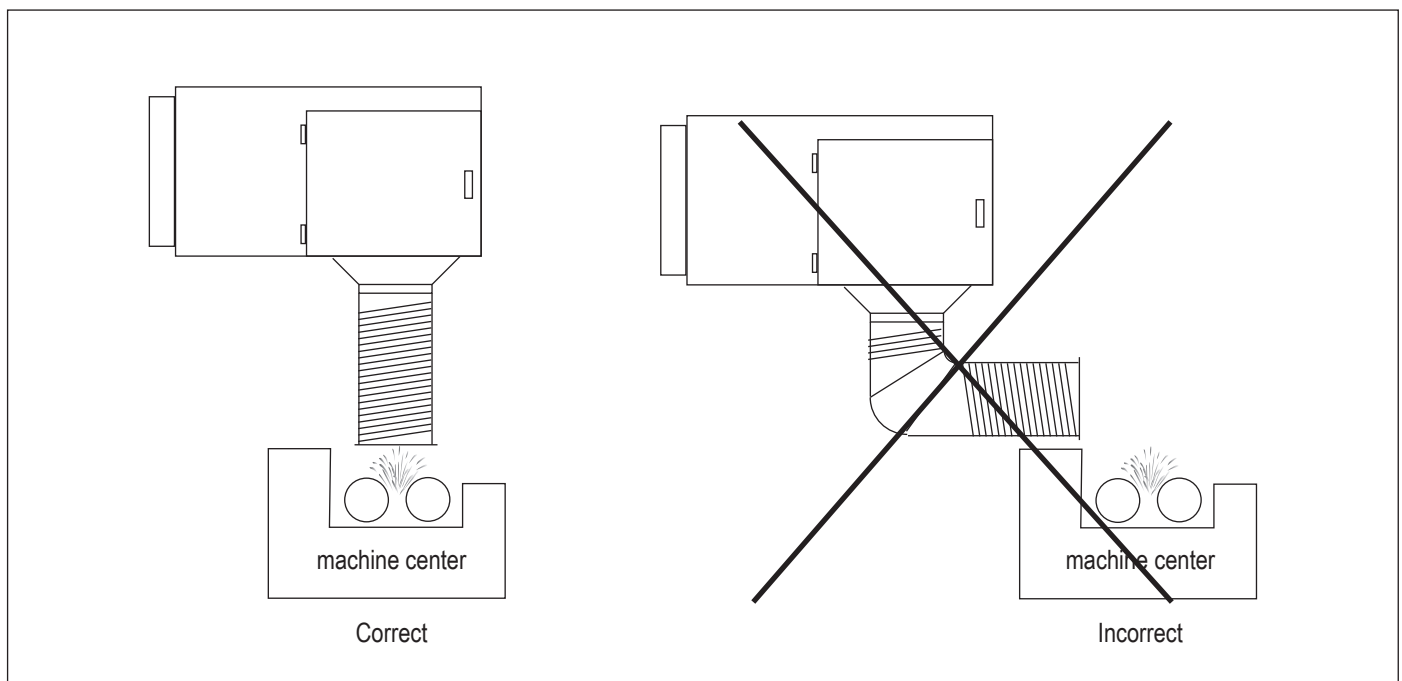
Turn power off and lock out all power before performing service or maintenance work.

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

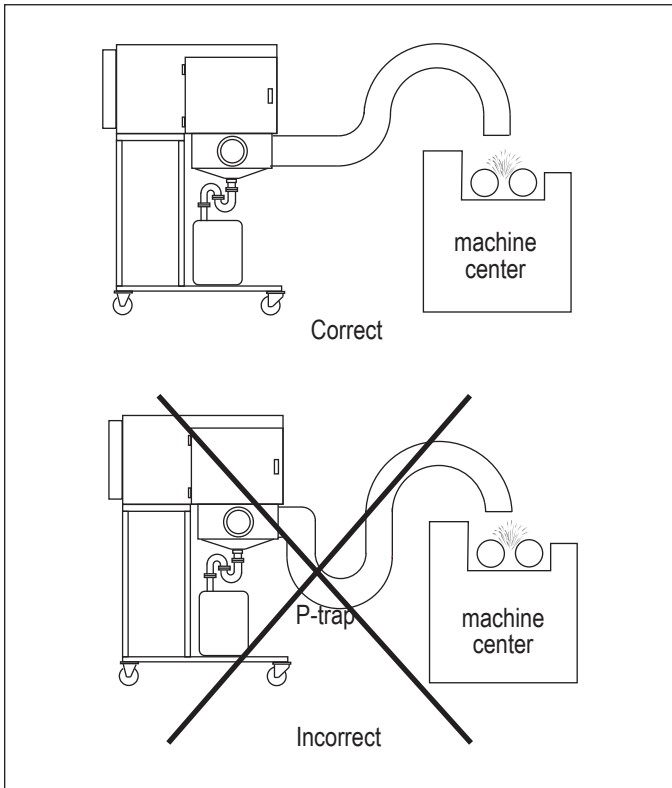
Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Machine Installation

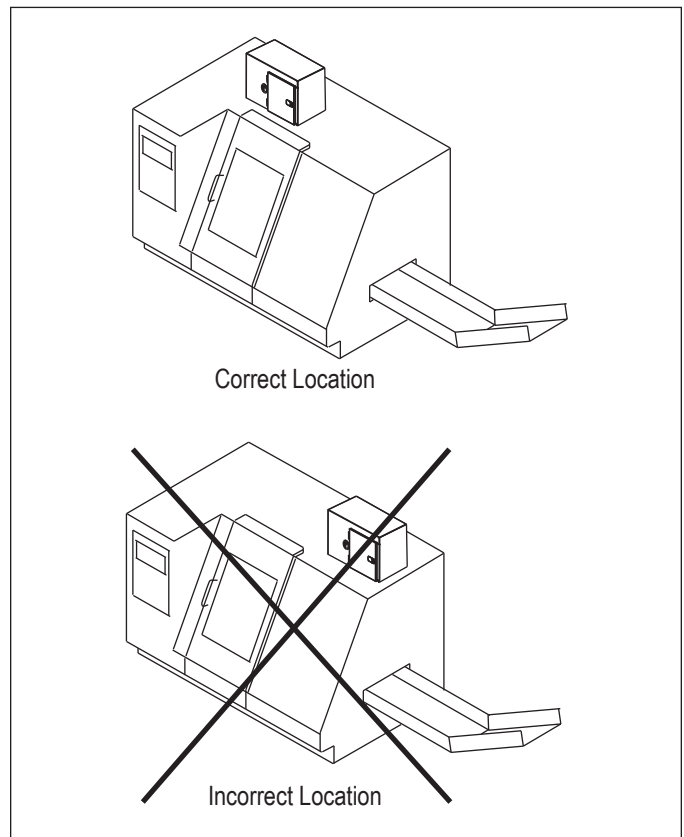
1. Apply a generous amount of sealant when installing attachments.
2. Position the collector above the mist-capture zone. See Collector Positioning.
3. Do not allow a P-Trap to form when using flexible duct. See Flex-Duct Positioning.
4. On enclosed machine installations, mount the collector as far from the chip conveyor opening as possible. Installing too close allows the negative pressure created by the collector to draw clean shop air, not mist, into the collector. See Enclosed-Machine Installation.
5. On open machine installations, position the collector'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 collector will collect large droplets and particulate instead of mist. See Open Machine Installation.



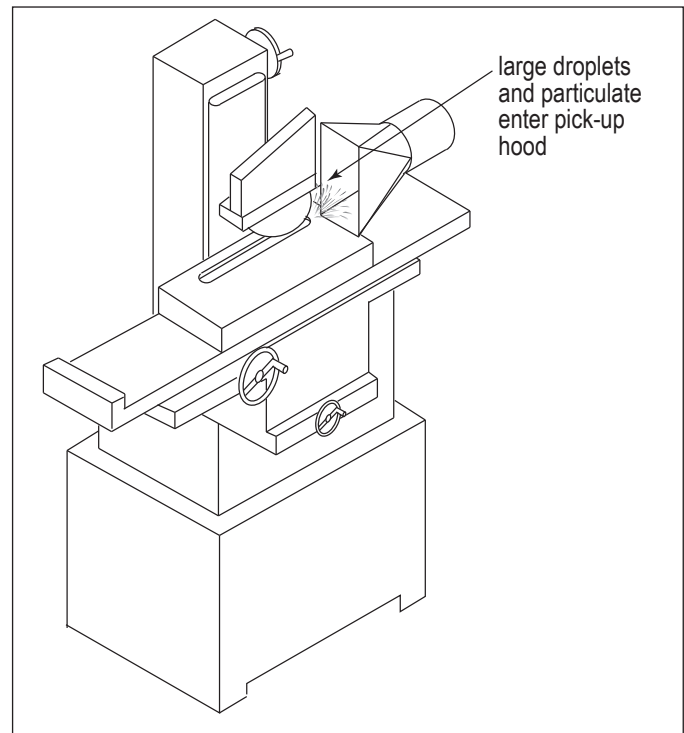
Collector Positioning



Flex Duct Positioning



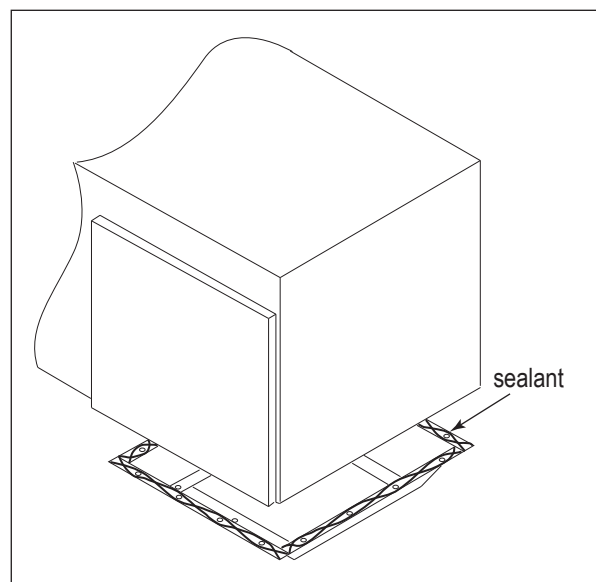
Enclosed Machine Installation



Open Machine Installation

Machine Mount

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



Sealant

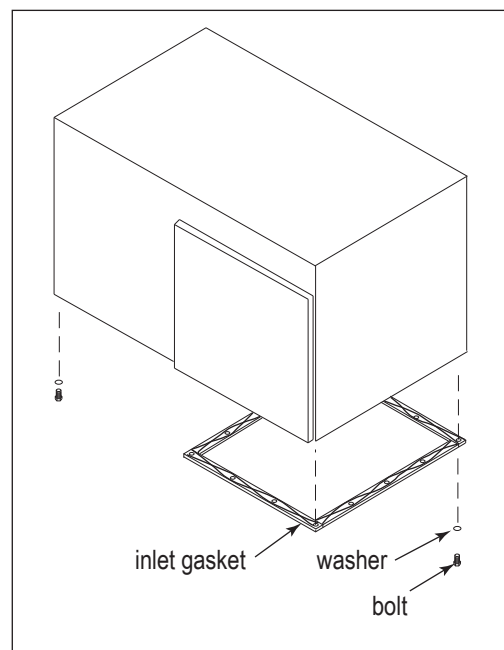
Inlet Gasket

1. Lift the collector into position over the machine center and lower slowly.
2. Open the collector'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 collector.
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 collector into position and lower slowly. Fasten using 6mm bolts, washers, and hex nuts supplied.



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

Integral Housed Fans

1. The fan blower assembly housing is integral to the collector. The wheel and motor are bolted to the housing.

Note: Wheel assembly should extend 1/8 +0.0 to -1/16 past the top of the inlet ring when properly installed.

Torque set screw to 10-11 Ft Lb, not to exceed 13-Ft Lb for aluminum hubs (typical).

For steel hubs, set torque to 11-13 Ft Lb, not to exceed 14-Ft Lb

2. Rotate fan wheel after installation to ensure proper rotation.

Minihelic Gauge

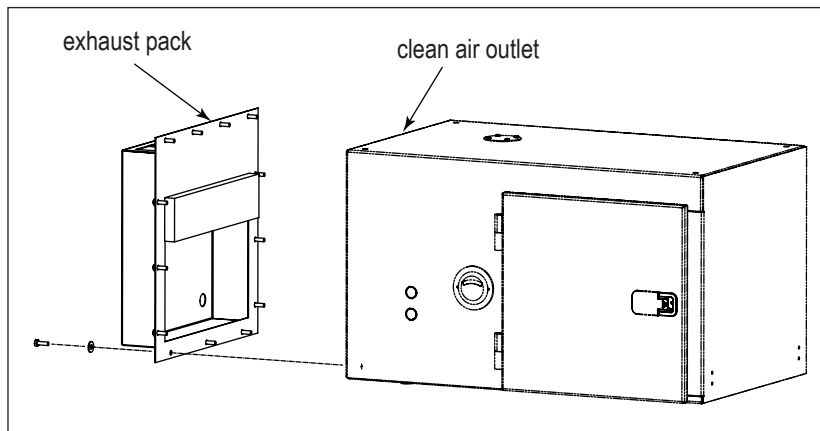
1. Install the gauge following the manufacturer's installation instructions.
2. Turn collector ON and document the pressure reading. This is the initial operating point of the system representing clean filter operation.
3. Periodically check the filters to establish the maintenance requirements for the specific application. All applications will be different based on the operating conditions and load potential of the machinery being served. As the filters load, the system resistance increases, and the pressure indicator increases.

Note: Monitor all filters initially. Not all filters have the same replacement cycle because they are designed for different efficiencies and extend the life of the third-stage filter. Also, note that as the filters load, system suction pressure decreases.

4. When observation or insufficient airflow indicates filter maintenance, document the reading of the pressure gauge. This pressure reading represents filter maintenance required. Because not all filters load at the same rate, the operator determines which filter to use as a guide for planned maintenance. When this is established, use the setscrew on the front of the gauge to set the systems operating range.

Exhaust Pack

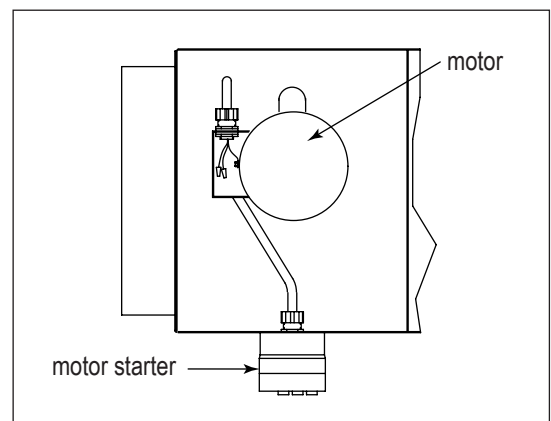
Install exhaust pack by securing to clean air outlet with hardware provided.



Exhaust Pack

Motor Starter

1. Connect motor starter to motor using diagram provided.
2. Secure motor starter to collector with hardware provided.



Motor Starter

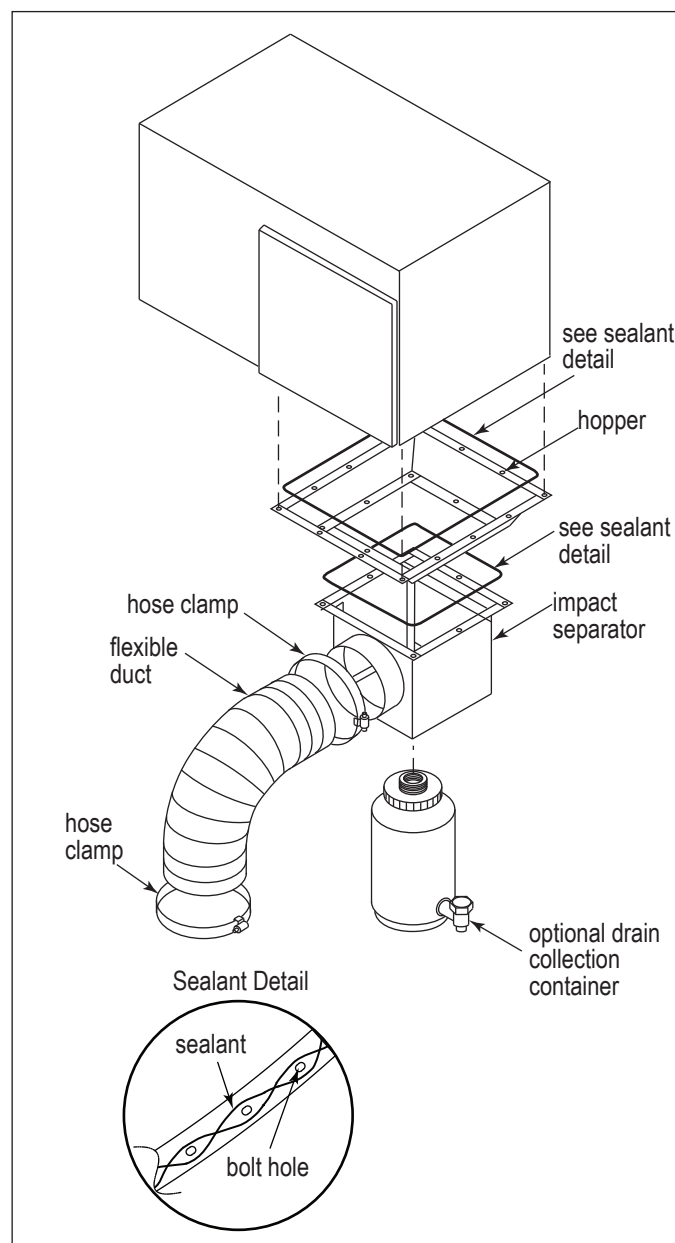
Options and Accessories

Inlet Hopper with Impact Separator

1. Lift the collector high enough to assemble.
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 with flex hose connection oriented as desired. 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 collector 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.



Impact Separator and Inlet Hopper

Inlet Hopper with Flex-Duct

1. Lift the collector high enough to assemble.
2. Apply sealant around the flex-duct collar toward the outside of the bolt pattern.
3. Align the flex duct collar 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 collector and secure using 6mm bolts and washers supplied.

Note: Install a 6mm bolt into every rivnut.

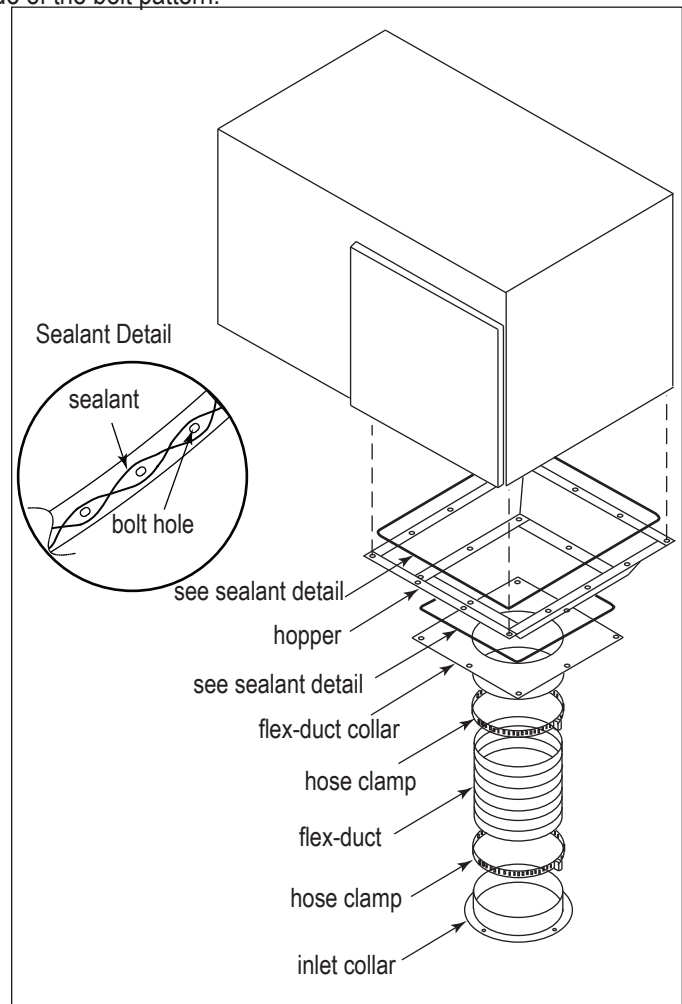
6. Fasten one end of the flexible duct to the collar using a six inch hose clamp.
7. Position the inlet collar on the machine center and trace the inlet opening and bolt pattern. Remove inlet collar, cut inlet hole, and drill bolt holes using a 3/16-in diameter drill bit.
8. Apply a 1/4-in bead of sealant 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

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

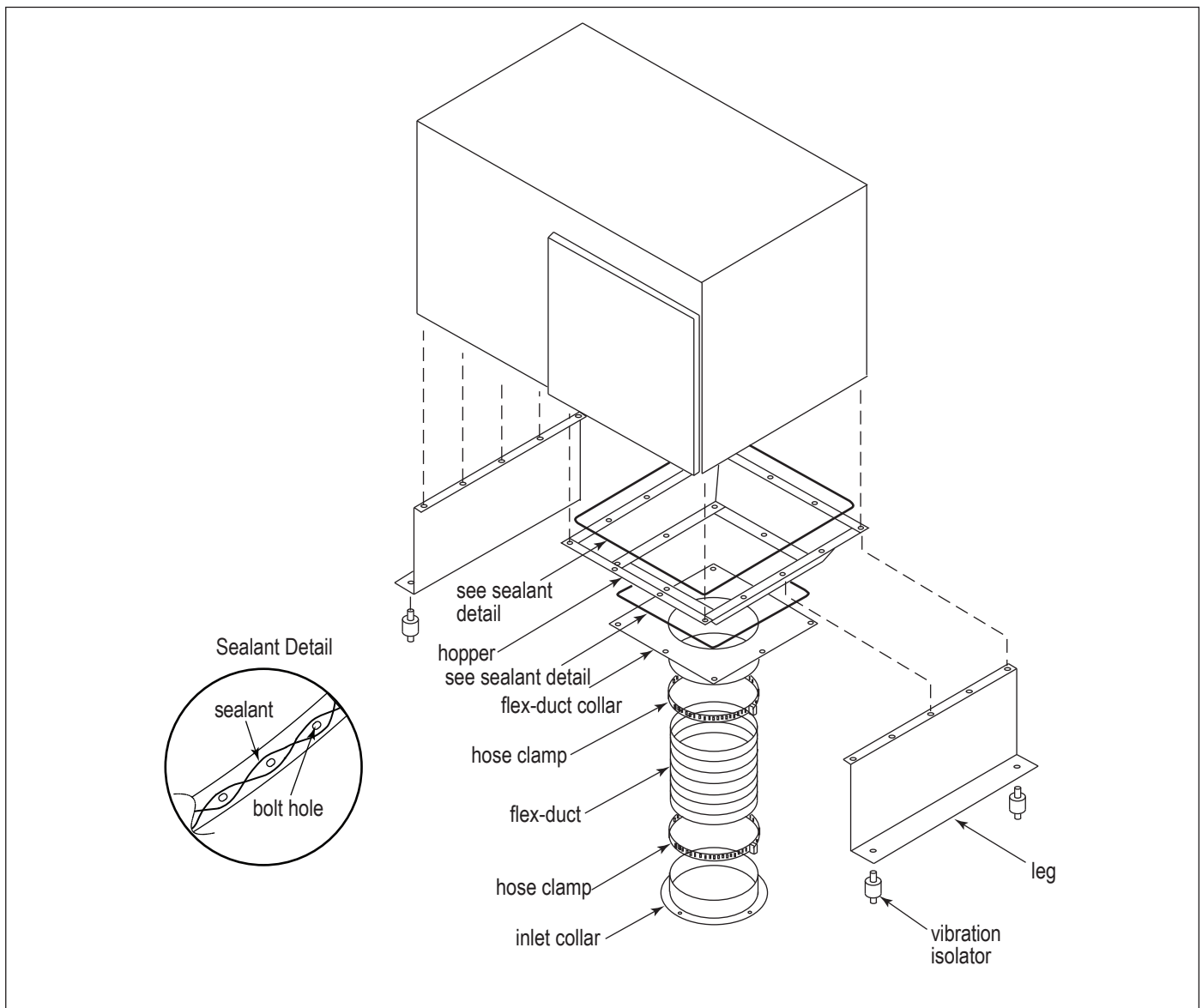
Inlet Hopper with Vibration Isolators

1. Carefully lift collector and turn over so the bottom inlet is facing up.
2. Remove plugs or existing hardware from the five holes on the collector's left side (exhaust side).
3. Apply sealant to the leg's top flange and secure to collector 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 collector and secure using 6mm bolts and washers supplied.
7. Attach remaining leg to the right side of the collector following the same procedure.
8. Turn collector upright, lift into position over the machine center and lower slowly. Do not remove crane.



Inlet Hopper with Flex-Duct

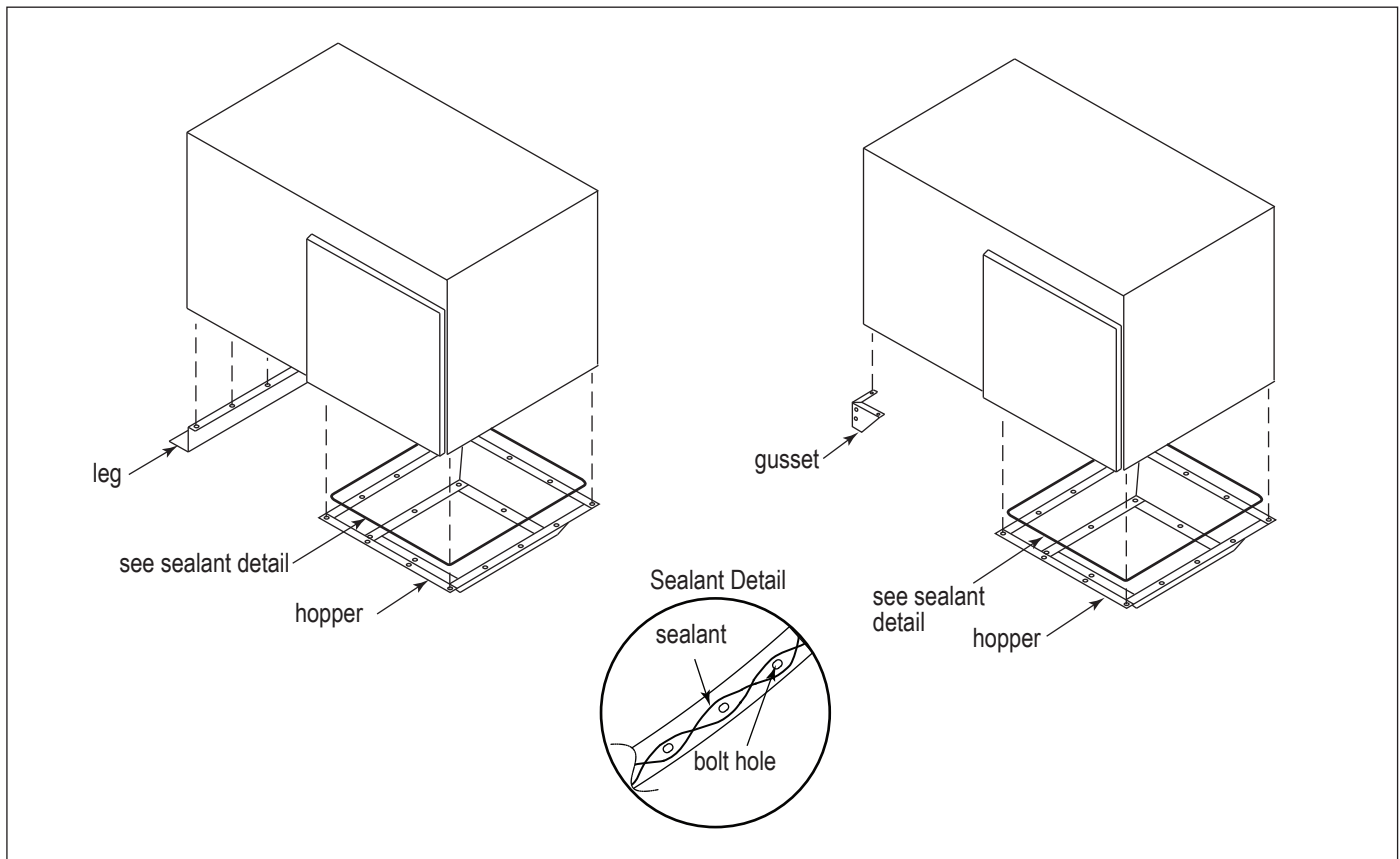
9. Match-drill four holes in the machine center for securing the legs.
10. Open the collector's access door and remove the filter cartridge, filter retention mechanism, and the first-stage filter.
11. Position the inlet collar on the machine center and trace the inlet opening and bolt pattern. Remove 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 collector 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

Inlet Hopper with Legs

1. Lift the collector high enough to assemble legs/gussets.
2. **MMA:** remove plugs or existing bolts from the five holes on the bottom left side of the collector. Apply sealant to the leg flange. Align the holes in the leg with the five holes on the collector 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 collector into position over the machine center and lower slowly. Do not remove crane.
6. Open the collector'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 collector, 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 collector into position and lower slowly aligning bolt patterns. Fasten collector to machine center using 1/4-in customer-supplied bolts, washers, and hex nuts.



Inlet Hopper with Legs or Gussets

Drain Collection Container

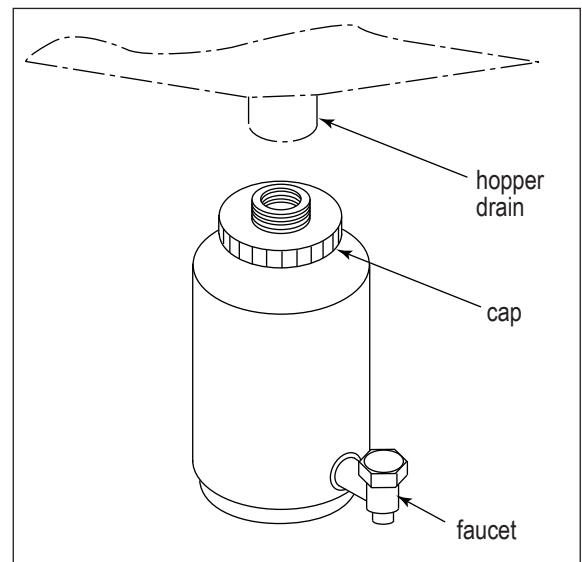
To install, simply thread the container onto the bottom of the impact separator. The container's faucet must be closed when the collector is in operation.

Junction Box

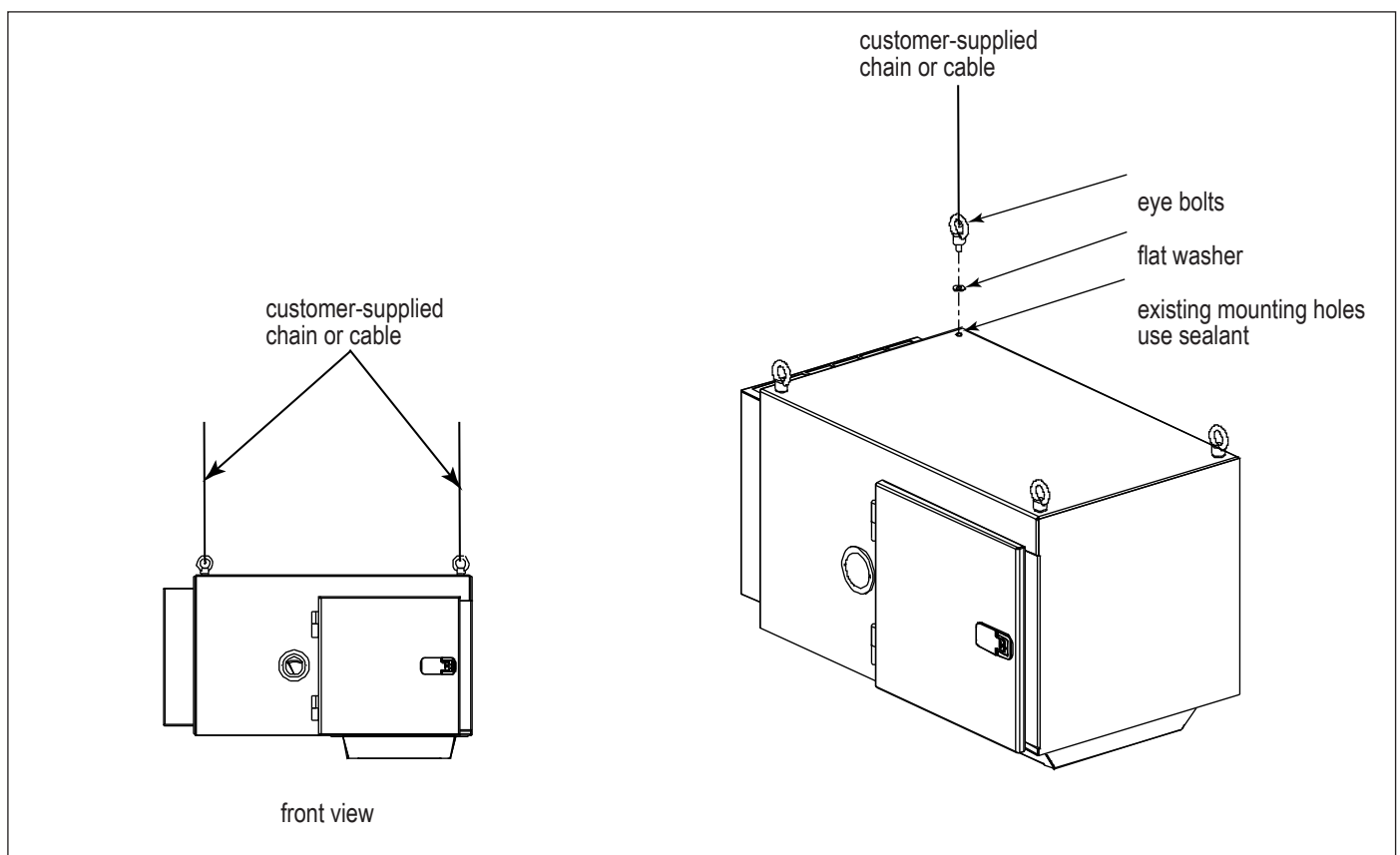
1. Remove the junction box cover plate.
2. Attach the ground wire to the ground terminal and the three hot wires to the remaining terminals.
3. Replace junction box cover plate.

Ceiling Mount

1. Use cable or chain attached to each eyebolt to suspend the collector from the ceiling.
2. Position the chain vertically on eye bolt.
3. Level collector in all directions.



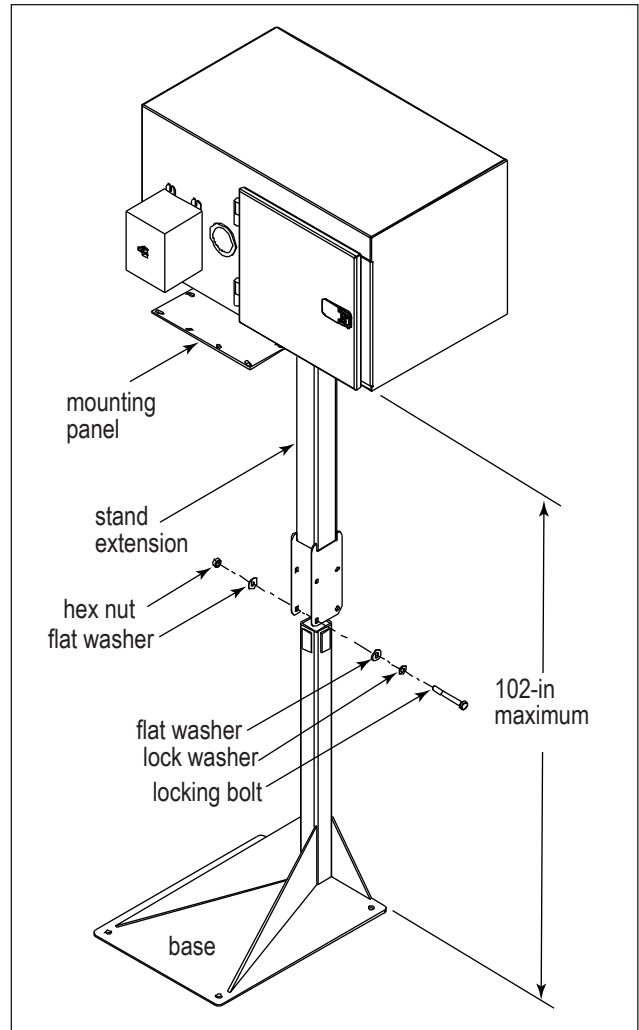
Drain Collection Container



Ceiling Mount

Collector Stand

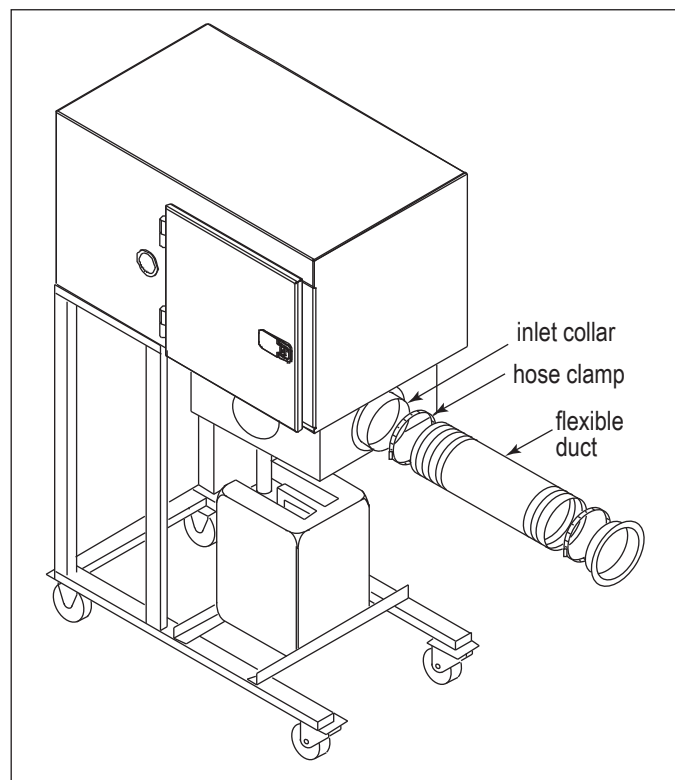
1. Install customer-supplied 3/8-16 anchor bolts in the floor extending 1 1/2-in above surface.
2. Level the collector stand and tighten anchor bolts securely.
3. Lift the collector and remove the bolts from the access panel located on the bottom of the collector. (Existing sealant will temporarily hold access panel in place without bolts). Align mounting panel holes with access panel holes and secure using existing bolts. Mounting panel will secure against bottom of 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 collector into position over the stand and lower slowly.
6. Fasten the top plate of the stand to the collector using the bolts removed in Step 3.
7. Tighten all hardware and remove crane.



Cart

1. Turn the collector 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 illustration.
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 collector to the cart using eight M6 x 38mm bolts and washers supplied.

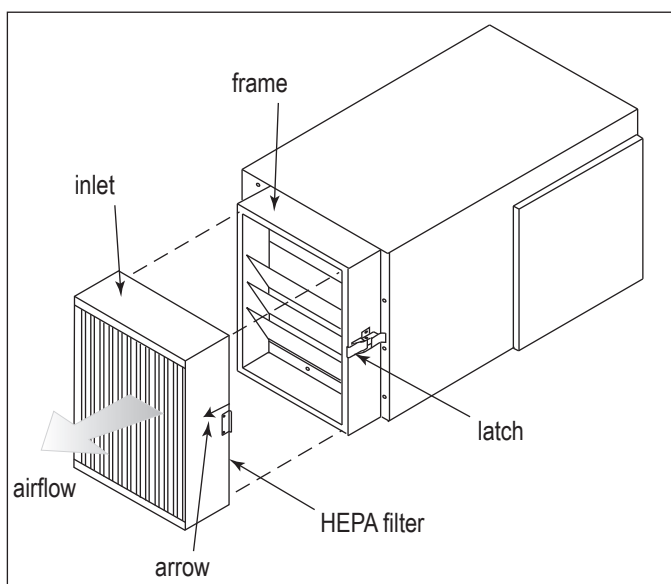
7. Turn cart and collector assembly upright.
8. Thread the P-Trap assembly to the hopper drain. Stop when the P-Trap tailpiece is toward the back of the collector. See Flex-Duct Positioning.
9. Remove cover from collection container and place container under the collector's hopper. Insert the P-Trap 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

HEPA Filter

1. Place HEPA filter inlet against frame with arrow pointing in airflow direction.
2. Secure HEPA filter to frame with latch.



Optional HEPA Filter

Electrical Wiring



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

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.

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 Collectors

Pre-wired collectors include contactors and overload protection and requires a customer supplied safety disconnect switch. Complete the wiring as shown in Motor Starter Wiring.

Unwired Collectors

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. Reinstall exhaust pack.
4. Turn the fan-motor ON then OFF and check for proper rotation by viewing through the opening on top of the collector.

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

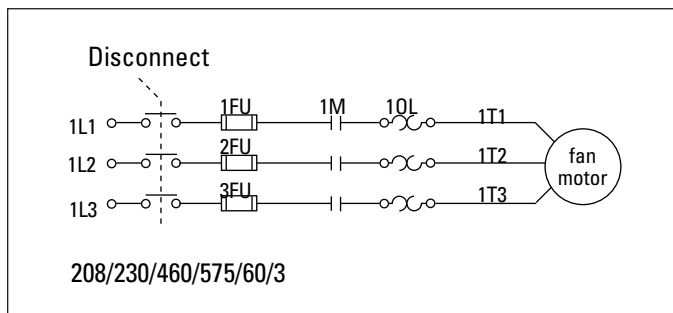
To reverse rotation, three-phase power supply:
Switch any two leads on the motor junction box.



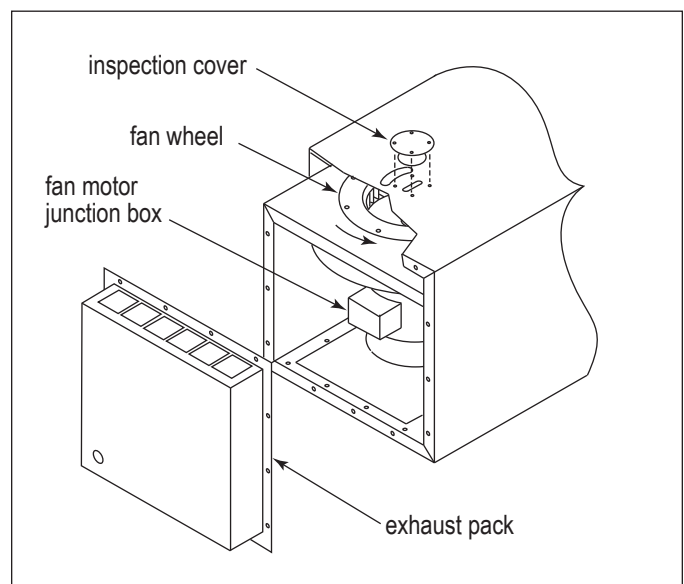
Check that the exhaust plenum is free of tools or debris before checking fan rotation.

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.



Motor Starter Wiring



Fan Blower

Start-up / Commissioning

Once the Dryflo has been placed, anchored, connected to power and ducts attached to the appropriate equipment, the collector is ready for initial start-up and commissioning.

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

Turn compressed air supply OFF, bleed and lock out lines 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 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 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.

Decommissioning Collector

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



During decommissioning, there is a 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 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 tinsmith or contractor.

1. Turn off the collector and Lock-Out all energy sources.
2. Remove all filters from the collector and dispose of in a suitable fashion for the mist in the collector (See Filter Replacement for instructions). Close and secure front access doors after filters are removed.
3. Disconnect electrical power from the collector and remove any associated conduit or hardware from the exterior of the collector.
4. 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.
5. Remove anchor bolts and hardware from the collector.
6. Pick up the collector and place in a location suitable to prepare it for transportation. (See Lifting Information for lifting guidance.)
7. Secure the collector to a suitable transport carrier and transport to a disposal site suitable for the mist in the collector.

Product Information

Model Number _____	Serial Number _____
Ship Date _____	Installation Date _____
Filter Type _____	
Collected Dust _____	
Dust Properties: Kst _____	Pmax _____ MIE _____ MEC _____
Accessories _____	
Other _____	

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

Significantly improve the performance of your collector with genuine Donaldson Torit replacement filters and parts.

Important Notice: 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 products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, product specifications, availability and data are subject to change without notice, and may vary by region or country.



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