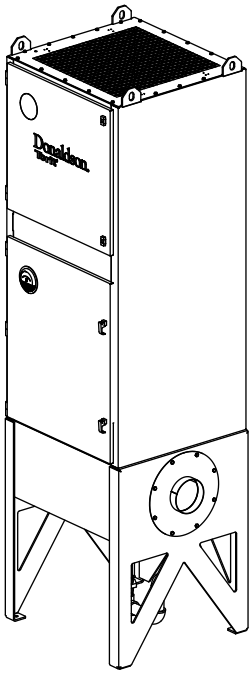
Donaldson
Torit®

WSO Mist Collector

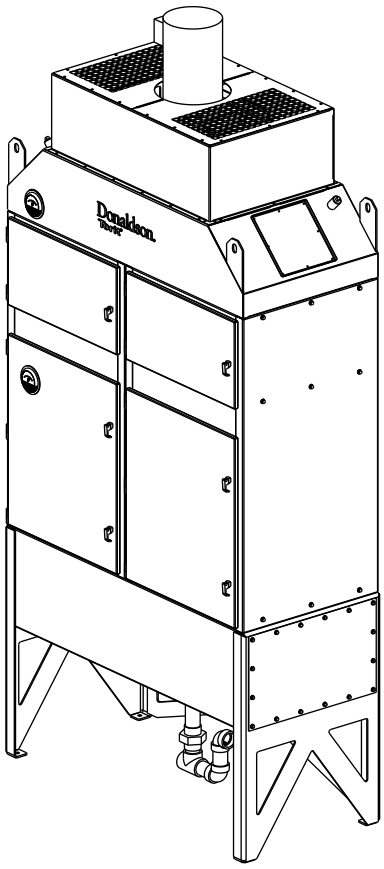
WSO 20, 25-1, 25-2 and 25-3

Installation and Operation Manual

Installation, Operation, and Service Information



WSO 25-1



WSO 25-2

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

Illustrations are for reference only as actual product may vary.

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

English
Master Language

IOM AD3616801 (ENG)
Revision 4

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 instruction 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

The Notice symbol 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.

Data Sheet

Model Number _____ Serial Number _____

Ship Date _____ Installation Date _____

Customer Name _____

Address _____

_____

Filter Type _____

Accessories _____

Other _____

Contents

Safety Communication

Improper operation of dust collectors and/or dust 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 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 dust 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 dust.

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.

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, 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.

Donaldson recommends process owners consult experts in combustion risks to ensure these responsibilities are met. Some processes may involve materials or processes which have inherent fire and explosion hazards. The process owner retains responsibility to comply with applicable codes and standards and to manage the risks associated with the process or materials. 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.

Donaldson may provide referrals to consultants and/or 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 collection 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 can provide helpful insights on the availability and features of various products, process owners should consult with combustible dust experts and/or process safety experts before making actual product and mitigation strategy selections.

Donaldson recommends all industrial air filtration system designs be reviewed and approved by an expert consultant responsible for the integrity of the system design and compliance with applicable codes and standards. It is the process owner's responsibility to understand 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 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.

Description

Designed for versatility, the WSO (Water, Smoke, and Oil) mist collector is specifically engineered for water-based, smoke, and oil-based mist applications. WSO mist collector, Models WSO 20, 25-1, 25-2, and 25-3 collect airborne mist such as oil, water-soluble, semi-synthetic and synthetic coolant from machining operations. Two stages of filtration, plus an optional HEPA or 95% DOP filter, provide a cleaner, healthier work environment as well as a more cost effective means of mist collection. With maximum airflow capacities up to 2,000 cfm for WSO 20 and 25-1 and 5,500 cfm for WSO 25-2 and 25-3, the WSO is a strategic component to meeting industrial and government air-quality standards. The high efficiency filter cartridges allow air and coolants to be recycled.

Designed to increase the versatility of the collector, a variety of filter media specifically designed for mist collection is a standard offering on the product line. The WSO 20 contains a 20 inch tall primary filter and the WSO 25-1, 25-2, and 25-3 contain a 25 inch tall primary filter uniquely designed for either water-based coolants, straight oils, or thermally-generated smoky applications. Standard options include drain collection containers, P-Traps, and afterfilters.

WSO models 20 and 25-1 include the blower and motor. WSO models 25-2 and 25-3 are available with or without a blower and motor.

Purpose and Intended Use

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

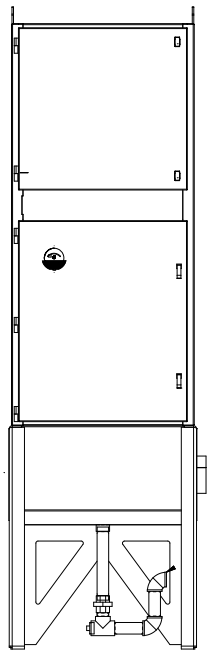
Do not misuse or modify.

Airborne mist is small droplets of metalworking fluids suspended in the air. Metalworking fluids include straight oils, water-soluble coolants, semi-synthetic and 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.

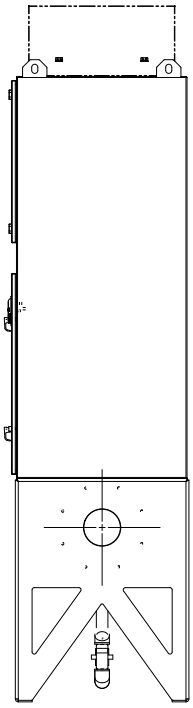
Mist is created two ways: mechanical action or thermal effects. Mechanical action involves coolant used for light lubrication and generally creates mist greater than one micron in size. Thermal effects occur when heat vaporizes the coolant, the vapor cools and recondenses into a mist. Thermal effects 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 vaporization of the oil or coolant are also generated when using metalworking fluids.

The WSO mist collector is not designed to handle water mist alone. There should be some type of oil content to allow coalescing or water vapor will simply pass through the filters. The extremes of very heavy oil and light, thin oil should be avoided. Very heavy oil, similar to tar consistency, will not drain while very light, thin oil, similar to paint thinner consistency, may evaporate.

Rating and Specification Information



Front
WSO 25-1



Typical Side View
WSO 25-1

Collectors are rated for the following loads as calculated per relevant sections of the IBC 2006 code*:

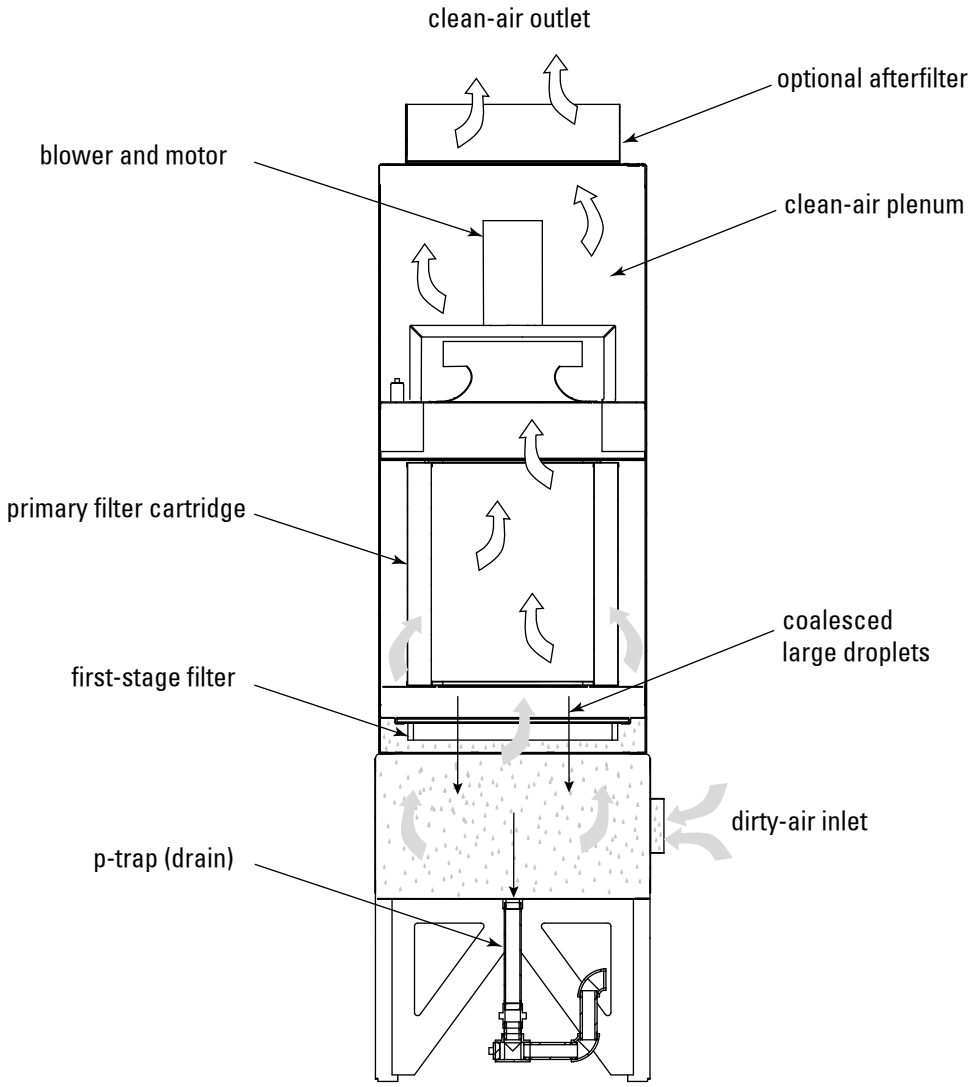
Seismic Spectral Acceleration, S_s .....1.5 g
Seismic Spectral Acceleration, S_1 .....0.6 g
Installed Unit Base Elevation .....Grade
Occupancy Category.....1.0
Housing rating, inches water gauge ..... - 20
Power and controls ..... 208-Volt, 230/460-Volt, 575-Volt, 3 Ph, 60 Hz

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

Operation

During normal operation, contaminated air enters the collector through one or both dirty-air inlets located on each side, toward the bottom of the collector. The incoming air slows and turns upward, causing large mist droplets and particles to fall out of the air stream and into the hopper. The air passes through a reusable first-stage filter designed to collect and coalesce large droplets and particles.

The primary stage of filtration is the pleated filter cartridge specifically designed to collect, coalesce, and drain fine mist. As the mist coalesce, the droplets are big enough to run down the cartridge and drain back into the collector. The droplets will drain on both the inside and outside of the cartridge. Liquid that collects on the inside of the cartridge drains through the bottom portion of the porous media and into the hopper. Clean, mist-free air exits the cartridge and discharges through the top of the collector.



Collector Operation, WSO 25-1 shown

Inspection on Arrival

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

Installation Codes and Procedures

Codes may regulate recirculating filtered air in your facility. Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding recirculating filtered air.

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

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

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

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

NOTICE

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

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

Installation

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

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

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

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

Site selection must account for wind, seismic zone, and other load conditions when selecting the location for collectors.

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

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

Consult a qualified engineer for final selection of anchorage.

Foundations or Support Framing

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

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

Collector Location

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

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

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

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

Site Selection

This collector can be located on a foundation or structural framing.

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

Ceiling-Mounted Collectors (WSO 20 and 25-1)

Lifting lugs on the unpowered collector (25-2 or 25-3) are not intended for ceiling suspension. Collector is floor-mount only. Failure to comply may result in personal injury and/or property damage.

Ensure weight of oil-laden collector plus weight of required materials and equipment will be adequately supported. Failure to comply may result in personal injury and/or property damage.

WSO 20 and 25-1 can be suspended or hung from overhead supports. The supports must be adequate to carry the live load of the collector and installation performed to reduce sway or vibration to the collector. The dry collector weight is shown on the specification control drawing shipped with the collector.

The live load will include the weight of all ancillary hardware attached to the mist collector, as well as the weight of the mist-laden, wet filters. Consult the coolant MSDS for the specific gravity of the coolant to estimate the weight of the mist-laden, wet filters.

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

Rigging Instructions

Suggested Tools & Equipment

Clevis Pins and Clamps	Lifting Slings
Crane or Forklift	Pipe Sealant
Drift Pins	Pipe Wrenches
Drill and Drill Bits	Screwdrivers
End Wrenches	Socket Wrenches
Adjustable Wrench	Spreader Bars

Torque Wrench (inch/lbs, 9/16-in Socket)

Hoisting Information

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

Use appropriate lifting equipment and adopt all safety precautions needed for moving and handling the equipment.

A crane or forklift is recommended for unloading, assembly, and installation of the collector.

Location must be clear of all obstructions, such as utility lines or roof overhang.

Use all lifting points provided.

Use clevis connectors, not hooks, on lifting slings.

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

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

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

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

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

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

Standard Equipment

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

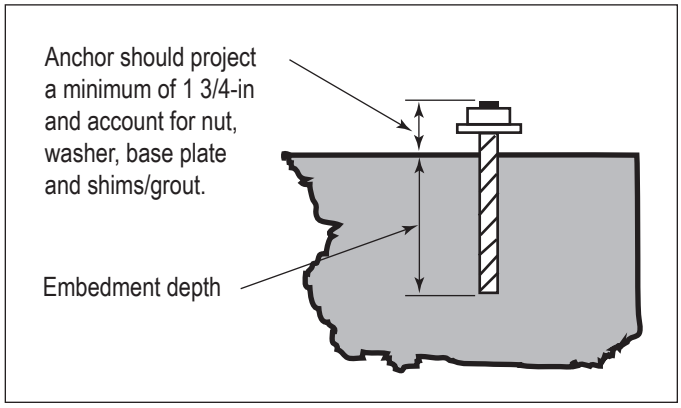
Secure the collector to the lifting device.

Use care when moving the collector.

The WSO mist collector is shipped in two sections, an inlet plenum with legs and a filter cabinet section with a blower and motor (for powered WSO 20 and 25-1 models) or without a blower and motor (for unpowered WSO 25-2 and 25-3 models).

Provisional Anchor Bolt Recommendations

1. Consider Hilti HIT-HY 200 Anchor System or equivalent. Quantity of anchor bolts should match the number of holes provided in the base plates.
2. Anchor diameter is typically 1/8-in less than baseplate hole diameter.
3. Corrosive environment or outdoor installation may require stainless steel anchors.



Typical Floor Mount Installation

Anchors must comply with local code requirements and must be capable of supporting dead, live, wind, seismic, and other applicable loads.

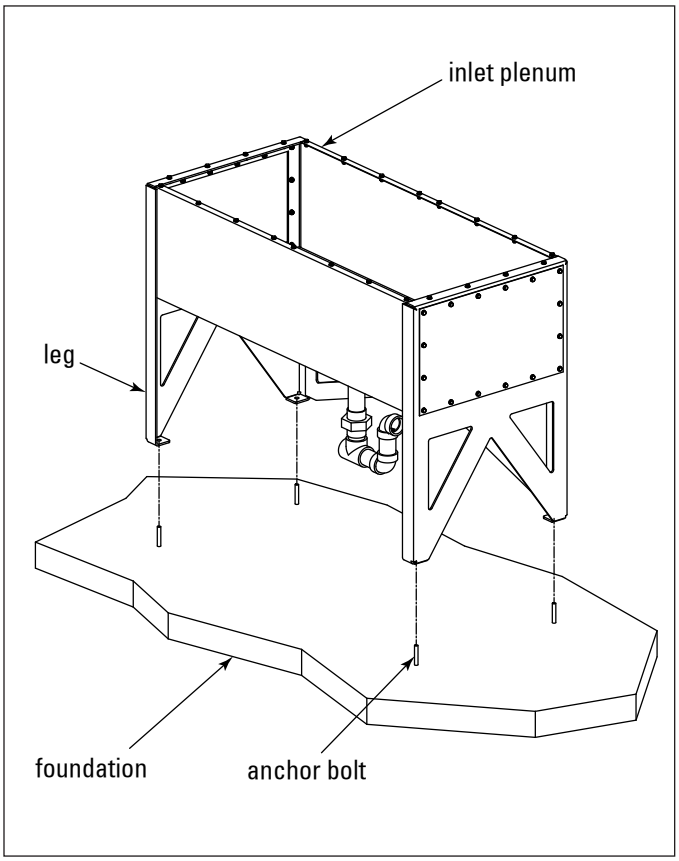
Anchor sizes shown are provisional, as final anchor sizing will depend on jobsite load conditions, collector location, foundation/ framing design variables and local codes.

Consult a qualified engineer for final selection of suitable anchors.

Leg sets for standard collector sizes are shown in the Rating and Specification Information. Reference Typical Foundation Anchor and leg assembly drawing shipped with the collector prior to starting assembly.

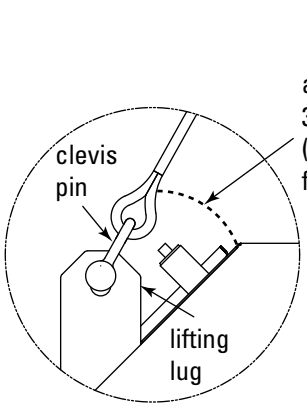
1. Prepare the foundation or support framing in the selected location. Locate and install anchors.
2. Using a crane or forklift, raise the inlet plenum to the required height.

   Note: When using a crane, use clevis pins and a sling attached to four lifting lugs.
3. For the WSO 20, attach legs to the outside of the collector's stub legs with supplied fasteners. Do not tighten hardware at this time.
4. Lower the inlet plenum with legs to the anchor bolts.
5. Level inlet plenum and secure all hardware.
6. Apply supplied sealant to the top flange of the inlet plenum.

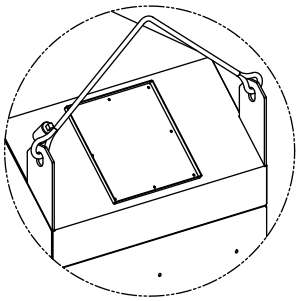


Inlet Plenum Installation, WSO 25-2 shown

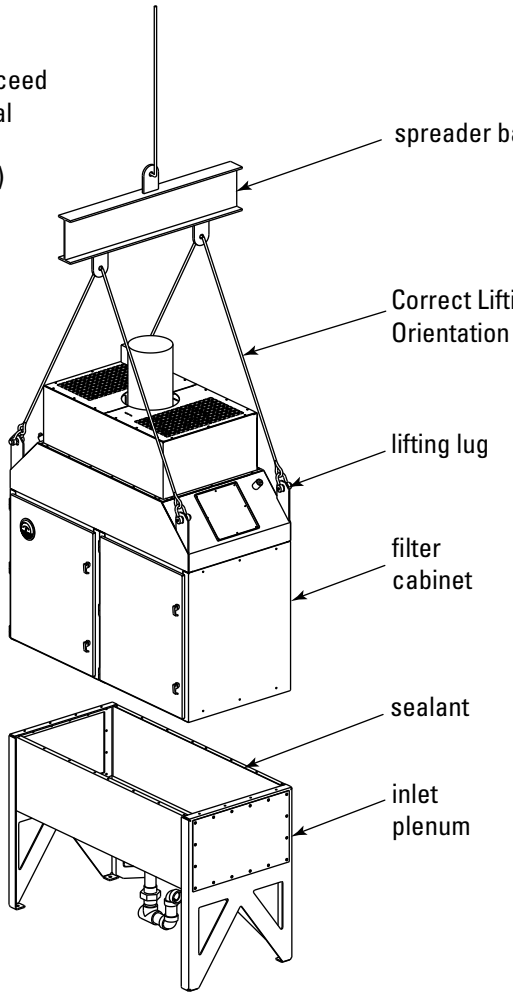
7. Remove the first stage and primary filters from the filter cabinet and set aside.
8. Using a crane or forklift, raise the filter cabinet section to the required height. See below illustration for correct lifting orientation.
9. Set cabinet on top of the inlet plenum flange and attach with the supplied fasteners.
10. Remove crane or forklift.
11. Re-install the first stage and primary filters.



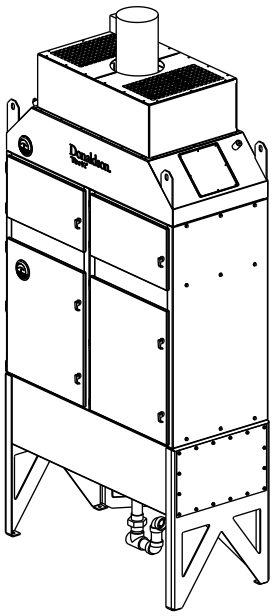
Lifting Lug Angle



Incorrect Lifting Orientation (correct lifting orientation shown to the right)



Filter Cabinet Installation



Completed Installation

Completed Installation, Powered WSO 25-2 shown

Ceiling Mount (WSO 20 and 25-1)

Failure to lift the collector correctly can result in severe personal injury or property damage.

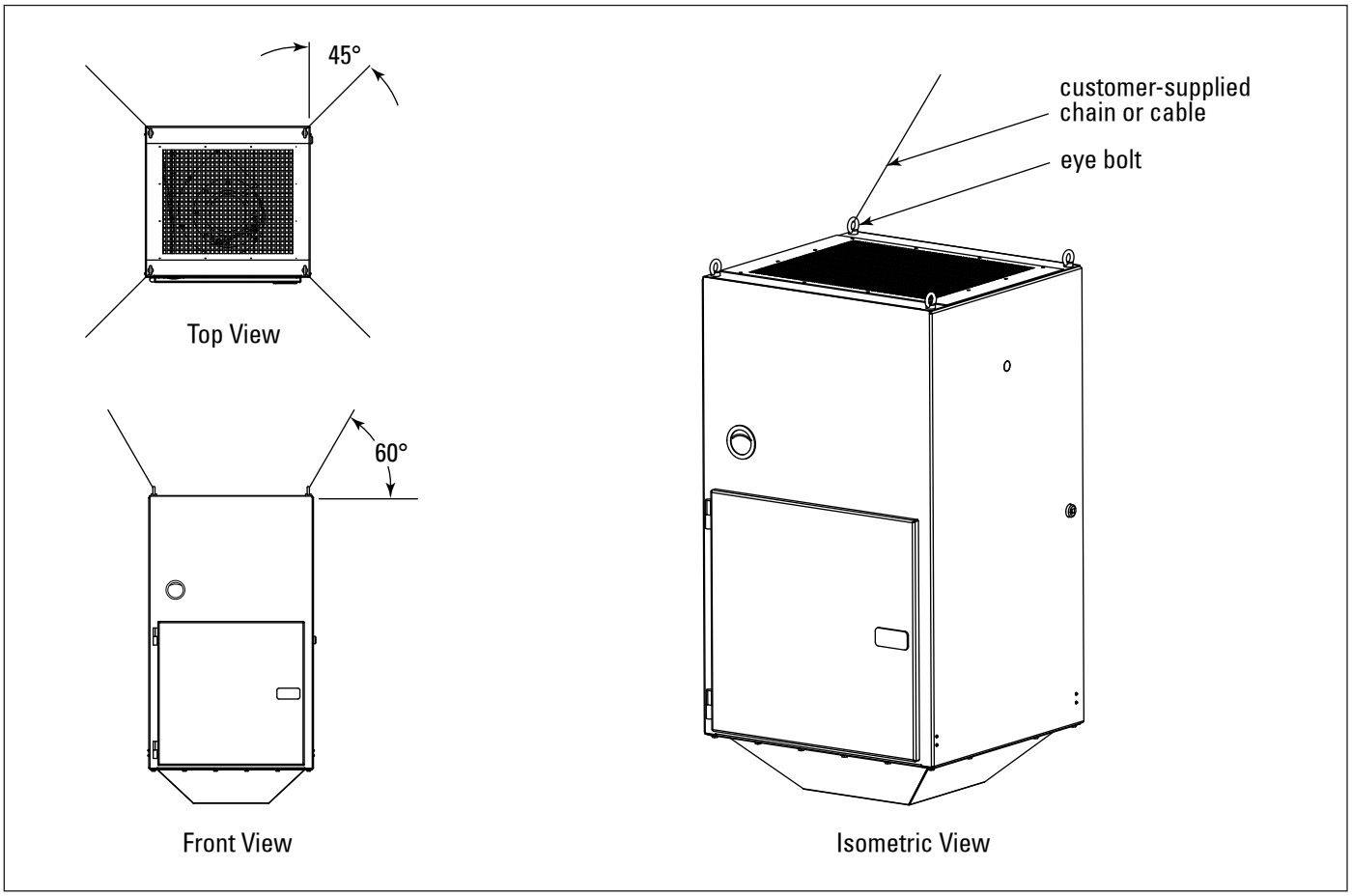
Use appropriate lifting equipment and adopt all safety precautions needed for moving and handling the equipment.

A crane or forklift is recommended for unloading, assembly, and installation of the collector.

Location must be clear of all obstructions, such as utility lines or roof overhang.

Ensure weight of oil-laden collector plus weight of required materials and equipment will be adequately supported. Failure to comply may result in personal injury and/or property damage.

1. Verify that the ceiling attachment points can bear the live load.
2. Use properly sized cable or chain to attach to each of the four WSO attachment lugs (WSO 25-1) or eyebolts (WSO 20) to suspend the collector from the ceiling.
3. To prevent sway, position the chain or cable to form a 60 degree angle to the top of the collector and a 45 degree angle along the sides.



Ceiling Mount Installation, WSO 20 shown

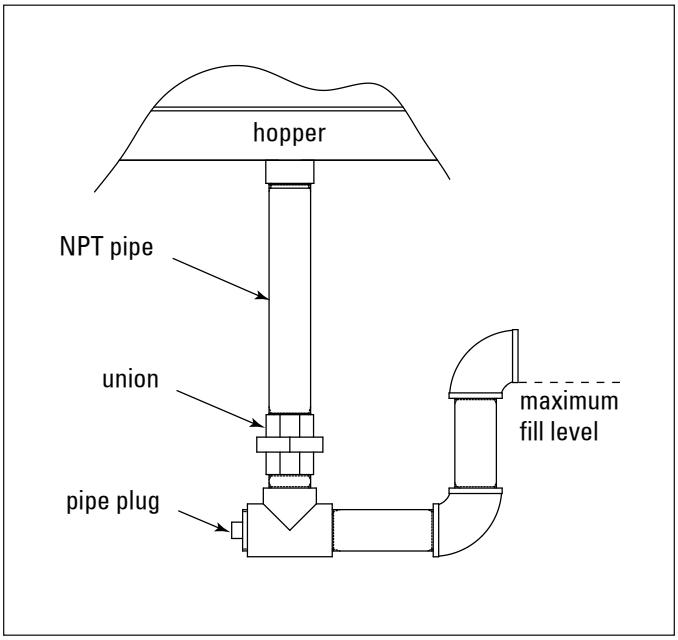
P-Trap Installation

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 P-Trap as shown in P-Trap Installation.
2. Position the P-Trap outlet to the proper location and tighten the union.
3. Plumb the P-Trap to a receptacle or install a return line back to the machine center.
4. Fill P-Trap before starting collector.

   Note: 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

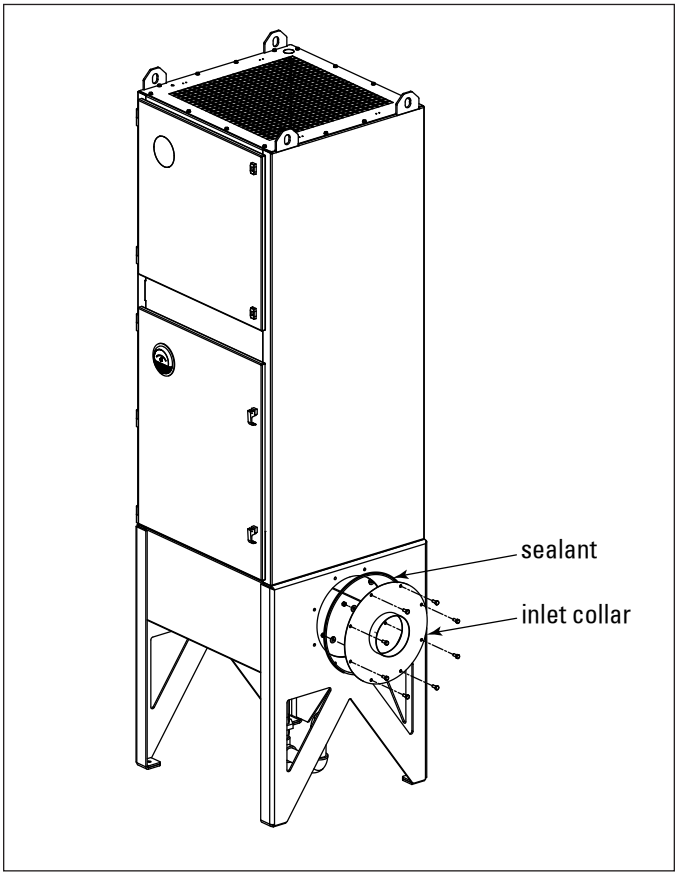
Inlet Collar Installation

(WSO 20 and 25-1)

1. Install the inlet collar to the desired inlet location using the supplied sealant and hardware.
2. For single-inlet configurations, install the inlet blank to the inlet opposite the inlet collar using the supplied sealant and hardware.

(WSO 25-2 and 25-3)

1. Refer to the Specification Control Drawing to get the dimensions and bolt pattern of the inlet. Typically, a rectangle-to-round transition, custom to your particular installation, is obtained from the ducting supplier. Install the rectangle-to-round transition to the desired inlet location using the supplied sealant and hardware.
2. For single-inlet configurations, install the inlet blank to the inlet opposite the inlet collar using the supplied sealant and hardware.



Inlet Collar Installation, WSO 25-1 shown

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 collector may start or stop unexpectedly from a remote location. Turn power off and lock out electrical power sources before performing service or maintenance work.

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

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

Check local ordinances for additional requirements that apply.

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

An electric disconnect switch having adequate amp capacity shall be installed in accordance with Part IX, Article 430 of the National Electrical Code (NFPA No. 70-latest edition). Check collector's rating plate for voltage and amperage ratings.

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

Preliminary Start-Up Check

Instruct all personnel on safe use and maintenance procedures.

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

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

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

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

Optional fans over 600 lbs must be independently supported.

Motor Starter Control Box

Mount the motor starter control box in a convenient location. For the WSO 20 and 25-1, an electrical knockout, sized for 1/2-in fittings, is provided on the left-hand side of the blower cabinet. Increase knockout size using a drill as required.

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

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

2. Check all electrical connections for tightness and contact.
3. Check for proper rotation as noted on the fan and/or hopper discharge device housing. Clockwise for WSO 25-1, powered WSO 25-2 and 25-3 and see rotation arrow on the motor's mounting plate for WSO 20.

   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.

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

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

Stand clear of exhaust to avoid personal injury.

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

4. Check that all filters are properly installed.
5. All access panels should be sealed and secure.
6. Check and remove all loose items in or near the inlet and outlet of the collector.
7. Check that all remote controls are properly wired and all service switches are in the OFF position.
8. Check that all optional accessories are installed properly and secured.
9. Fill P-Trap if equipped, or close faucet valve on drain collection container if used.
10. Turn blower fan motor ON.

Maintenance Information

Instruct all personnel on safe use and maintenance procedures.

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

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

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

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

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

Operational Checklist

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

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

2. Monitor pressure drop across filters.

   Abnormal changes in pressure drop may indicate a change in operating conditions and possibly a fault to be corrected.

3. Monitor exhaust.
4. Monitor hopper drainage. If slow or stopped, check hopper for obstructions and clean as necessary.
5. Check that the P-Trap is full. Refill if low or dry.
6. If equipped with a HEPA or 95% DOP, monitor pressure drop across after filter. Initial final filter pressure drop is approximately 1-2”wg. Replace the final filter when the gauge reads 3.5 to 4.0”wg. Do not attempt to clean or wash the final filter. Replace only.

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

Filter Removal and Installation

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

Dirty filters may be heavier than they appear.

Use care when removing filters to avoid personal injury and/or property damage.

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

Do not operate with missing or damaged filters.

First Stage Filter Cleaning and Installation

Remove the first stage filter through the lower access door. Clean the first-stage screen by tapping it gently over an appropriate waste container. If further cleaning is required, wash in an appropriate wash tank. To clean the first-stage filter, soak in an appropriate wash tank, rinse, dry, and re-install.

NOTICE High temperature, steam-cleaning methods should not be used with the polypropylene filters due to the temperature limitations.

Do not operate the WSO mist collector without the first-stage filter in place. Significant reduction in primary filter life can result.

Primary Filter Installation

Note: With the collector's airflow off, allow mist-laden, wet filter to drain into the inlet plenum for at least 15 minutes prior to removal.

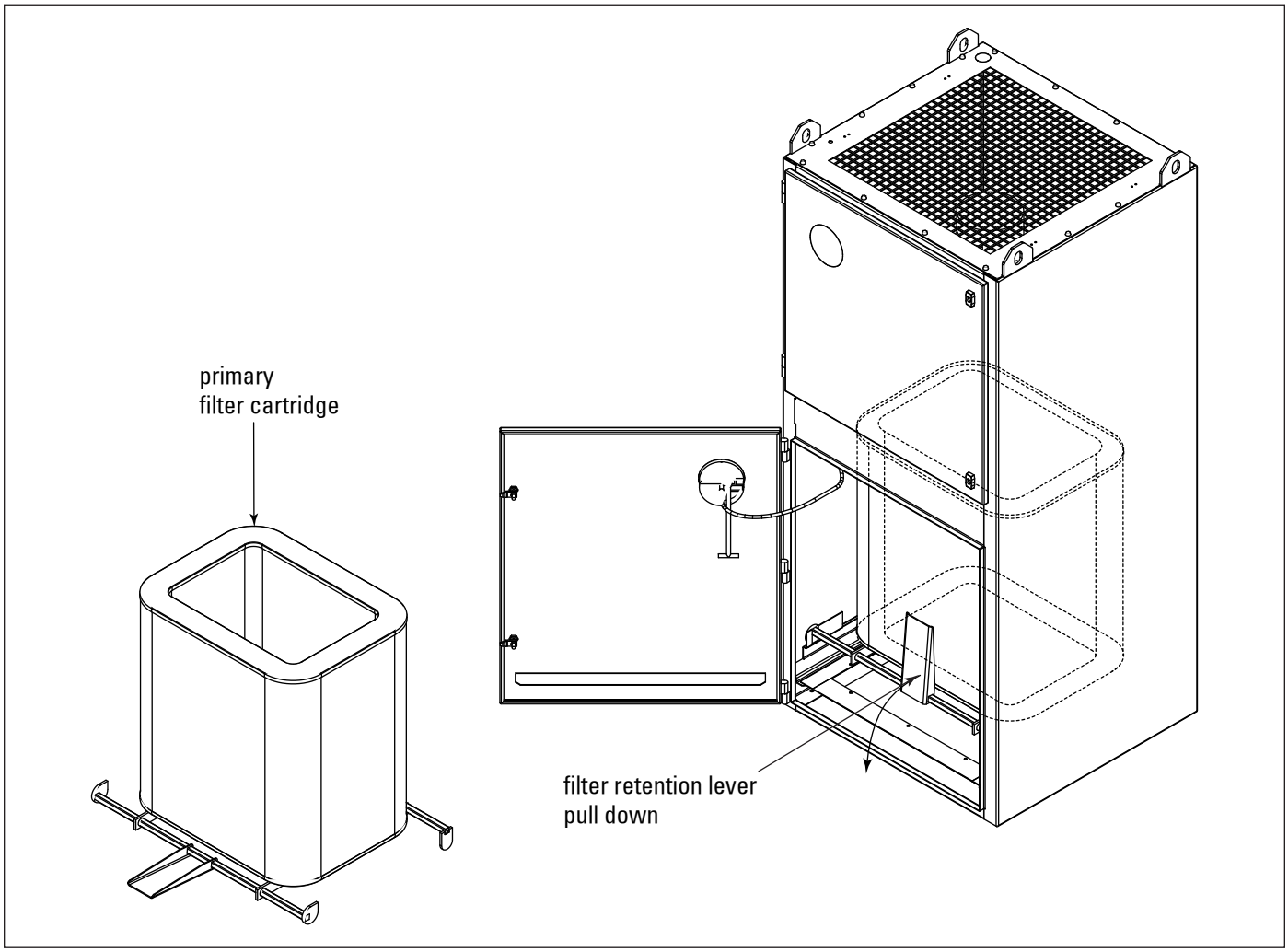
1. Remove the filter cartridge by pulling the filter retention lever down to a horizontal position. Remove cartridge from collector and dispose of properly for the materials collected.

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

2. Place new filter on the filter retention platform, gasket side up. Slide filter back as far as it will go.

   Note: The primary filter must be replaced. Do not wash.

3. Lift the filter retention lever up and close access door.



Primary Filter Replacement, WSO 25-1 shown

Final Filter Installation (WSO 20 and 25-1)

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

1. Unlatch the final filter on top of the collector.
2. Remove the filter and dispose of properly for the materials collected.

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

3. Install the replacement filter gasket-side down.
4. Latch the new filter in place.

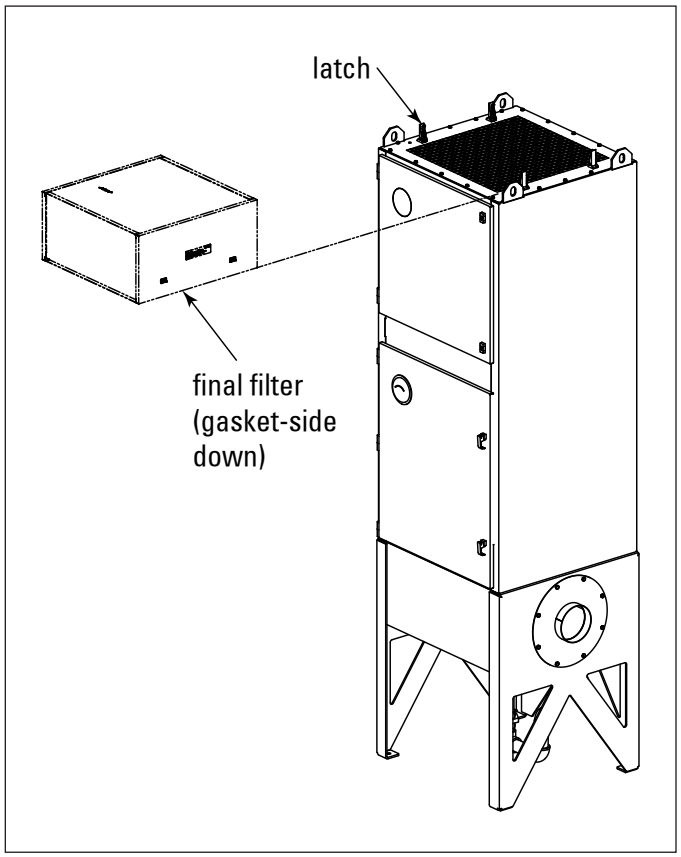
Final Filter Installation (WSO 25-2 and 25-3)

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

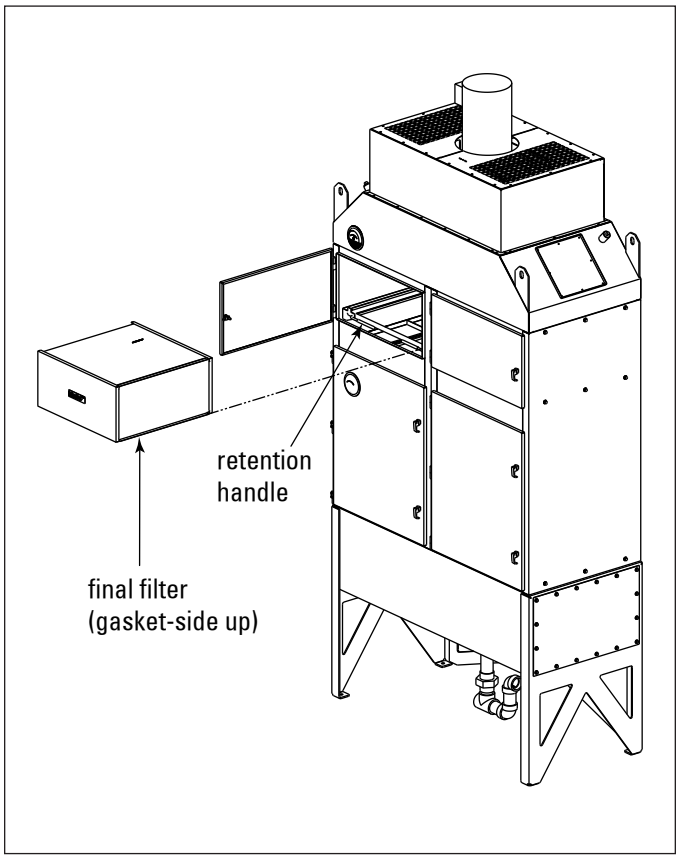
1. Open the final filter access door and lower the retention handles to release the filter.
2. Remove the filter and dispose of properly for the materials collected.

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

3. Install the replacement filter gasket-side up.
4. Seal the filter in place by lifting the retention handles to the upright position.



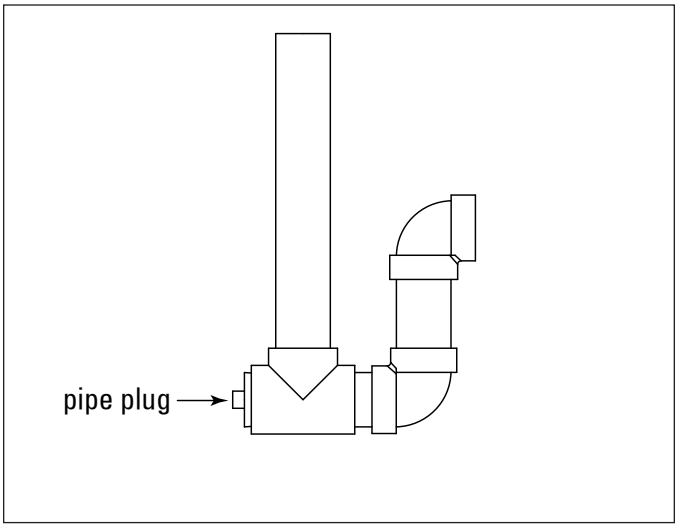
Final Filter Installation, WSO 25-1 shown



Final Filter Installation, Powered WSO 25-2 shown

P-Trap Service

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



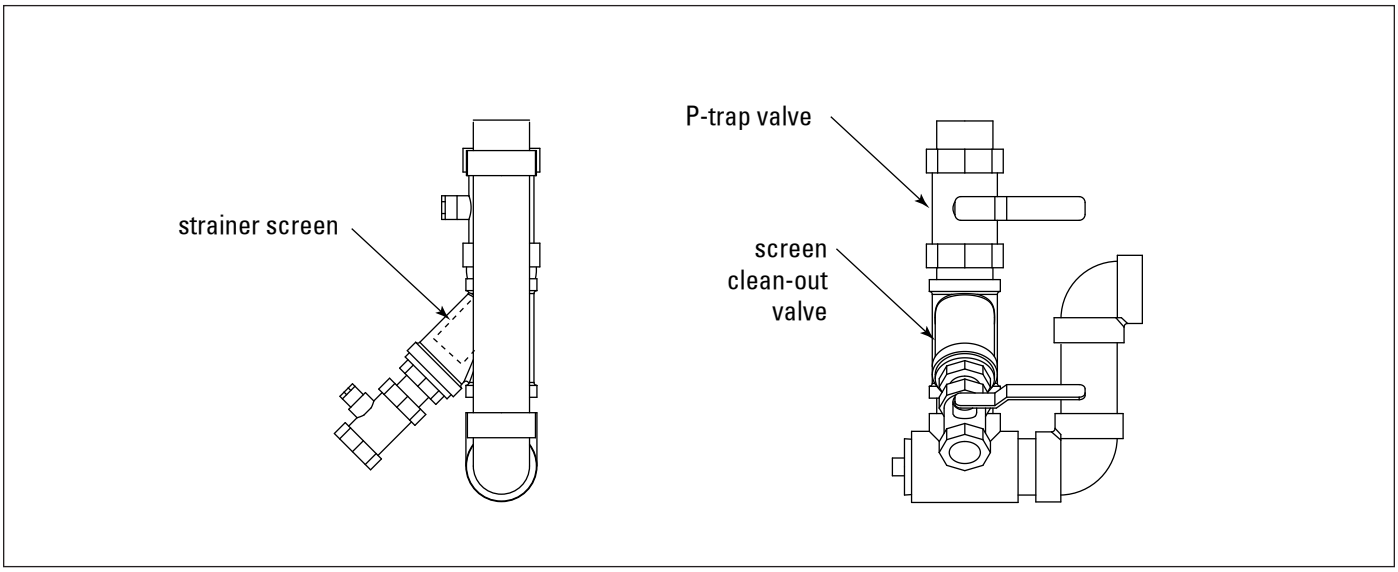
P-Trap

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

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

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

4. Close the P-Trap valve.
5. Unscrew the screen cap and pull the screen out.
6. 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.
7. Close the clean-out valve.
8. Open the P-Trap valve.
9. Refill the P-Trap with suitable fluid before restarting the collector.



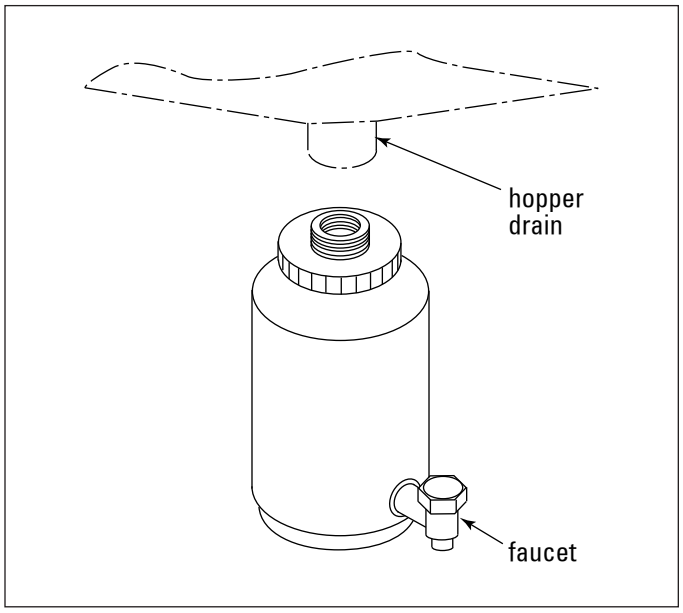
P-Trap with Y-Strainer

Drain Collection Container

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

1. Install the drain collection container during installation or after collector is in its' final operating position.
2. Turn collector OFF.
3. Remove the container by unscrewing the container from the cap. Clean the container, faucet, and re-install.

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



Drain Collection Container

Optional Equipment

Fan Blower

The WSO integral fan is pre-installed on Models 20, 25-1, 25-2 and 25-3.

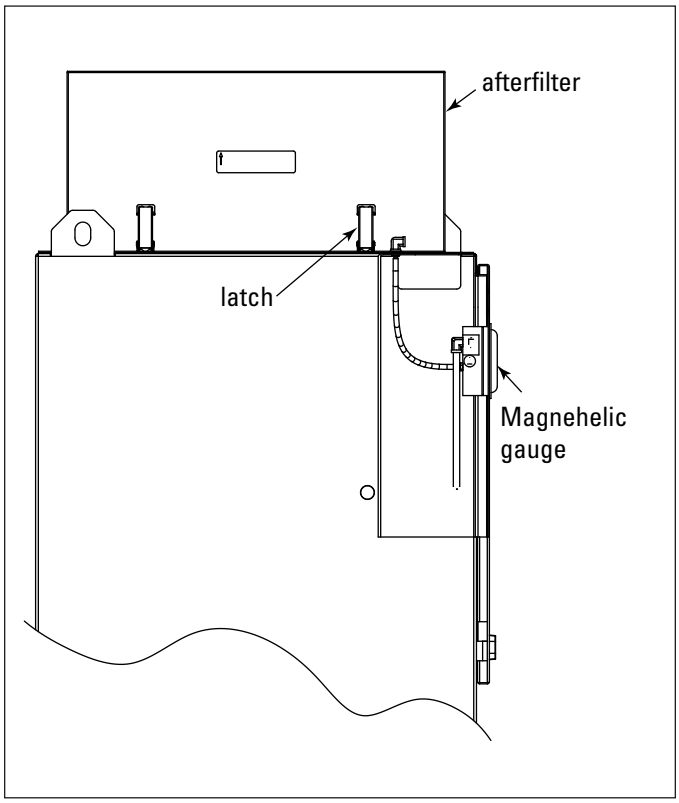
Additional options are available for WSO Models 25-2 and 25-3 and the collector can accept direct mounted fan blowers, Torit Backward Inclined (TBI) or Torit Radial Blade (TRB), to the top of the collector.

For complete information, see the most current version of the TBI or TRB Fan Installation, Operation and Maintenance manual.

Factory-Installed HEPA/95% DOP Filter

Any HEPA or 95% DOP Filter module ordered with any WSO collector comes with a factory-installed Magnehelic or Minihelic gauge for measuring the pressure drop across the filter.

On WSO 20 and 25-1, the HEPA or 95% DOP afterfiler is attached to the top of the WSO collector using side-mounted latches.

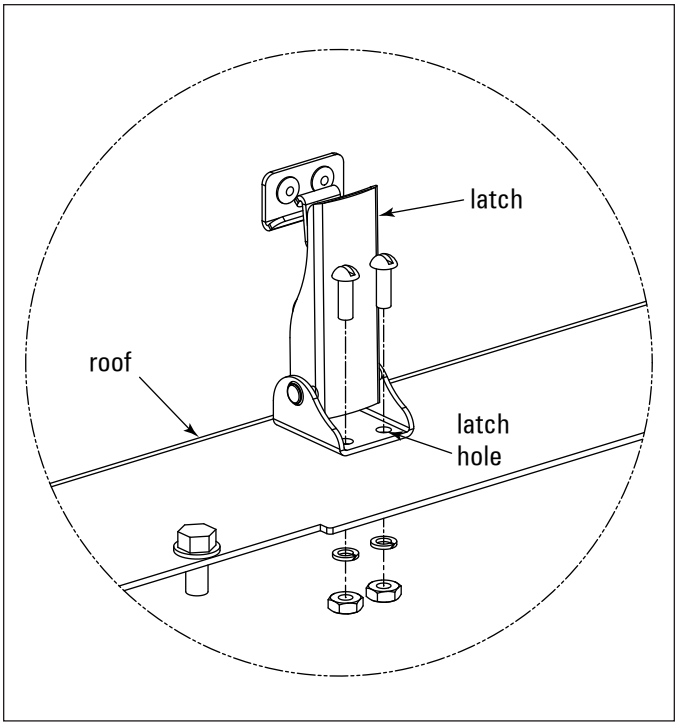


Magnehelic Gauge Configurations
with HEPA/95% DOP Module, WSO 25-1 shown

Field Installation Afterfilter (WSO 20 and 25-1)

An afterfilter installation kit is available for customers who decide to add a HEPA or 95% DOP filter to an existing field-operating WSO 20 or 25-1 collector originally configured with a standard exhaust. The field kit includes: afterfilter, latches, hardware, and Magnehelic gauge kit.

1. Turn the blower motor off.
2. Open the blower motor access door (WSO 25-1) or remove the exhaust grill by removing the 12 bolts (WSO 20). The exhaust grill on WSO 20 is not reinstalled.
3. Locate the existing four (4) sets (WSO 25-1) of 0.180 diameter latch holes on the roof.
4. Using the latch hardware provided, install the latches as shown in the Latch Installation.
5. Place the afterfilter, gasket side down, on top of the exhaust outlet, and secure with the latches.

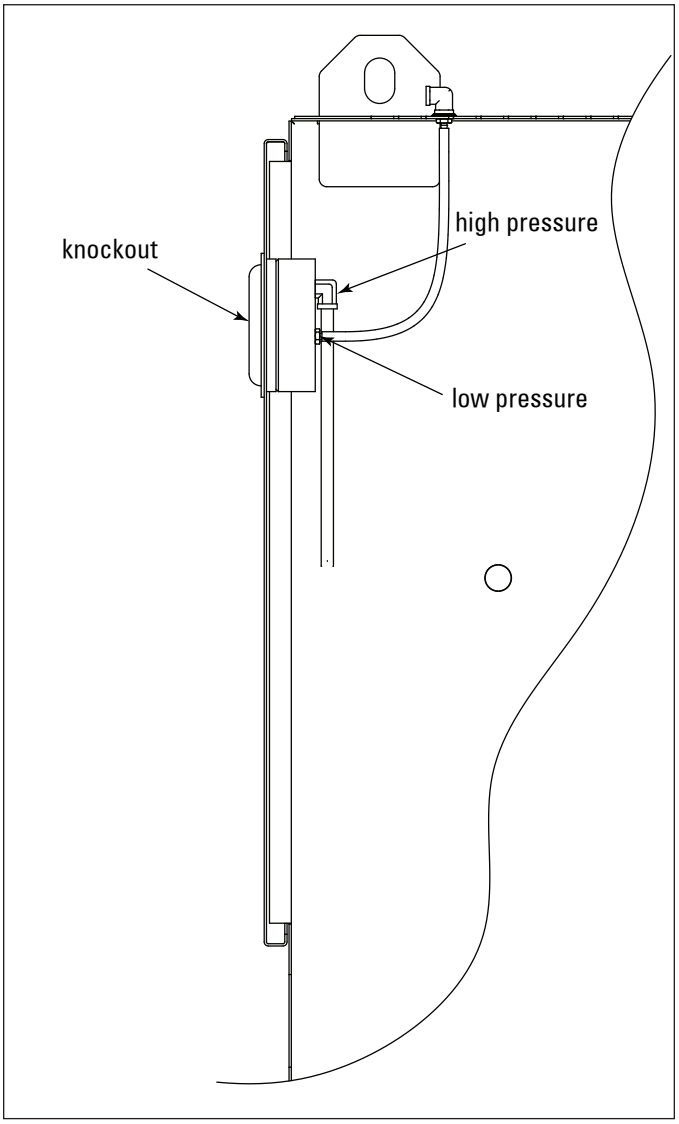


Latch and Afterfilter Installation

Magnehelic® or Minihelic® Installation (WSO 20 and 25-1)

The Magnehelic or Minihelic Gauge is used to measure the pressure drop across the afterfilter.

1. Locate the Magnehelic or Minihelic knock-out in the top left corner of the blower motor access door (WSO 25-1) or cabinet (WSO 20).
2. Remove the diameter knockout from the door panel.
3. Install the Magnehelic or Minihelic gauge per the Magnehelic or Minihelic installation sketch.



Afterfilter Magnehelic Gauge, WSO 25-1 shown

Remote-Mount Magnehelic Installation

The Magnehelic 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. The high-pressure tap is located in the dirty-air plenum and the low-pressure tap is located in the clean-air plenum.

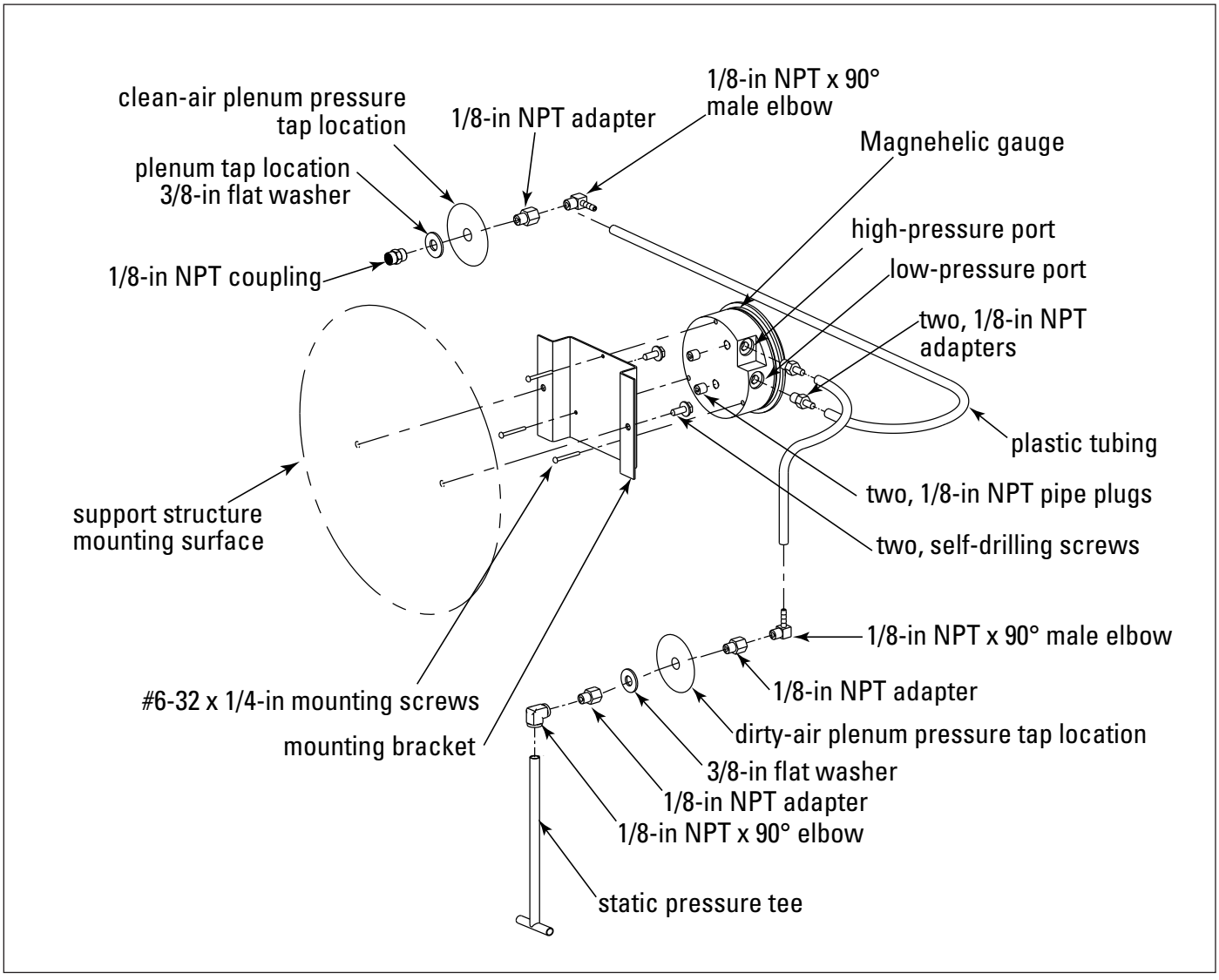
1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.

If collector is equipped with factory-installed pressure taps, skip to Step 5.

Thoroughly clean an collected coolants or material from the collector prior to drilling to reduce the risk of combustion. Failure to comply may result in personal injury and/or property damage.

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 to the supporting structure using two, self-drilling screws.
8. Thirty-five feet of plastic tubing is supplied and must be cut in two sections. 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.



Remote-Mount Magnehelic Gauge

Damper and Silencer, TBI (WSO Unpowered 25-2 and 25-3)

Top Mount

1. Install the blower and motor as described in the previous section.
2. Attach the damper to the blower exhaust outlet using the hardware supplied.
3. Attach the flange to the damper using the bolts, washers, and hex nuts supplied.
4. Apply sealant to the flange and attach silencer to flange. Tighten all hardware.
5. Loosely assemble the silencer's support brackets.

Support Brackets, Top Mount

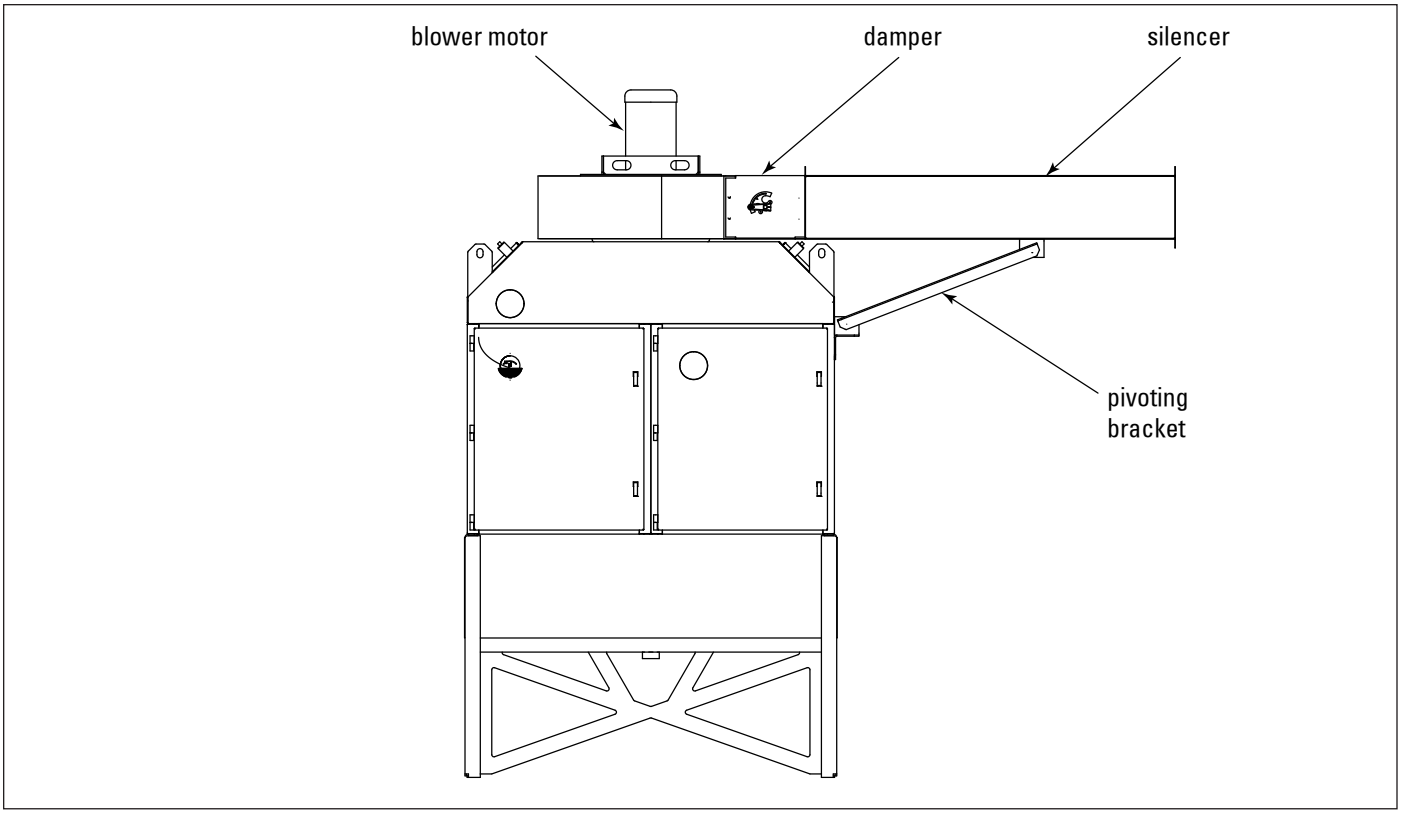
a. Align the pivoting support brackets to extend a minimum of 30-in from the collector and mark the drill locations.

Thoroughly clean any collected coolants or material from the collector prior to drilling to reduce the risk of combustion. Failure to comply may result in personal injury and/or property damage.

b. Drill pilot holes with a 0.339-in bit.

c. Secure brackets using 3/8-in thread-forming bolts.

d. If a gap exists between the silencer and the damper, install the panel filler using the screws provided.



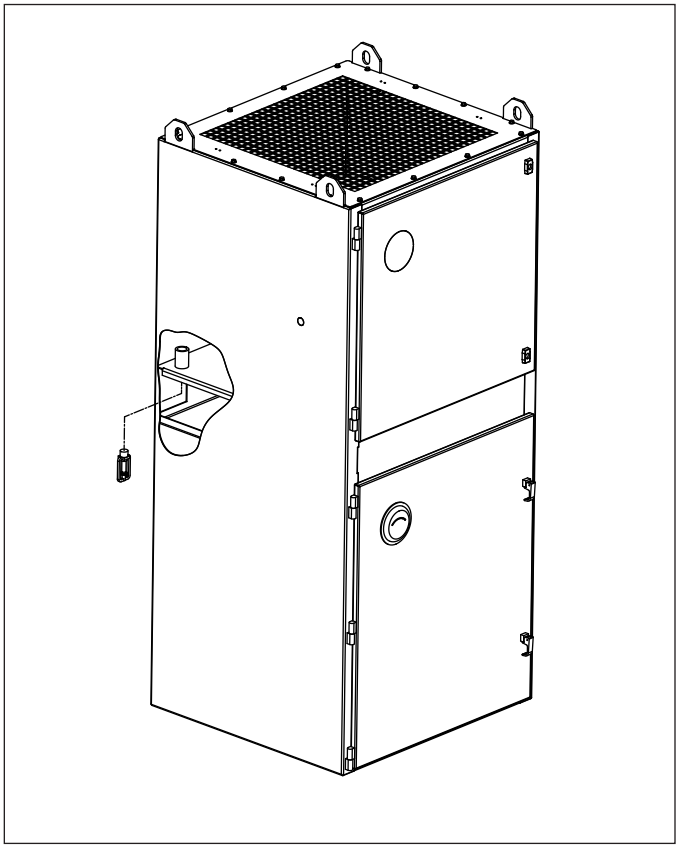
Top-Mount Silencer and Damper Installation, WSO Unpowered 25-2 shown

Sprinkler

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

NOTICE

Consult with local authorities when installing fire control systems on dust collection equipment.



Sprinkler (Blower Cabinet), WSO 25-1 shown

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.
Blower and motor start, but do not stay running	Incorrect motor starter installed	Check for proper motor starter and replace if necessary.
	Access doors are open or not closed tight	Close and tighten access doors. See Filter Installation.
	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 Installation.
	Filter damage, dents in the end caps, gasket damage, or holes in media	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Installation.
Insufficient airflow	Fan rotation backwards	Proper fan rotation is clockwise from the top of the collector. The fan can be viewed through the back of the motor. See Preliminary Start-Up Check.
	Access doors open or not closed tight	Check that all access doors are in place and secured.
	Fan exhaust area restricted	Check fan exhaust area for obstructions. Remove material or debris.
	First Stage filter plugged	Remove and clean or replace.
	Primary filter needs replacement	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Installation.
	Plugged HEPA filter	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Optional Equipment.

Troubleshooting

Problem	Probable Cause	Remedy
Insufficient hopper discharge	Plugged hopper screen	Remove and clean hopper screen.
	Plugged P-Trap	Clean P-Trap. See P-Trap Service.
Liquid leaking from collector door	Plugged P-Trap	Clean P-Trap. See P-Trap Service.
	Plugged or full drain collection container	Remove and clean or empty the drain collection container.

Service Notes

The Donaldson Torit Warranty

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

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Donaldson
FILTRATION SOLUTIONS

Parts and Service

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

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

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