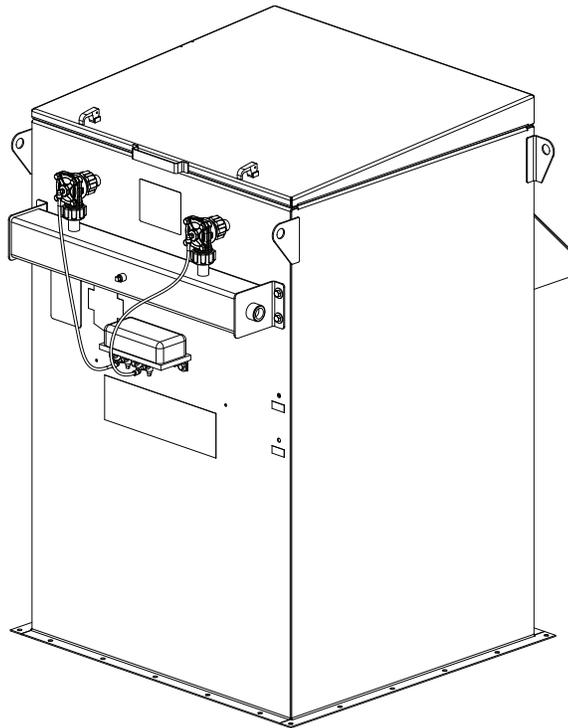


Bin Vent

TBV-2, TBV-4 and TBV-6

Installation and Operation Manual

Installation, Operation, and Service Information



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.

IMPORTANT NOTES

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

For additional copies of this manual, contact Donaldson Torit.



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

NOTICE

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

Contents

IMPORTANT NOTES	2
1 Safety Communication	4
2 Product Description	2
3 Operation	5
4 Product Service	6
Dust Disposal	7
Filter Replacement	7
Compressed Air Components	10
Troubleshooting	11
Appendix A - Installation	13
Support Installation	15
Standard Equipment	15
Compressed Air Installation	16
Electrical Wiring	16
Solid-State Timer Installation	18
Filter Installation (For Insertable Cabinet Models Only)	20
Options and Accessories	21
Fan Controls	21
Cleaning Controls and Sensors	22
Magnehelic® Gauge	22
Photohelic® Gauge	23
Delta P and Delta P Plus Control	25
Weather Hood	26
Plenum Silencer	27
Start-up / Commissioning	28
Decommissioning	29
Product Information	30
Service Notes	30
Donaldson Industrial Air Filtration Warranty	31

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1 Safety Communication



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

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

Electrical installation must be performed by a qualified electrician.

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

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

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

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

Combustible Dust Hazards

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

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

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

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

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

2 Product Description

Torit Bin Vents (TBVs) apply cartridge technology to a continuous-duty dust collection system, offering significant advantages. They are designed specifically for silo, storage bin and conveyor transfer applications. Standard models include both the Insertable-mounted cabinet and the Plenum-mounted cabinet, with each available in three filter configurations: a two (2) filter collector (TBV-2), a four (4) filter collector (TBV-4) and a six (6) filter collector (TBV-6). All standard Bin Vents include Donaldson Torit® Ultra-Web® filters with continuous air pulse-jet cleaning. This provides for a highly efficient self-cleaning filtration system ensuring long filter life and a reduced maintenance schedule. The Bin Vent was designed for simple filter service and maintenance with a “tool-less” approach. The collector incorporates top-side (clean air plenum) filter removal and replacement, making it unnecessary to enter the silo or storage container. No tools are needed for the quick release pipe couplers when replacing filters. This reduces the risk of contamination of the customer product stored in the silo/storage container.

The filters in the Bin Vent are the key to efficient, long life operation. With the high efficiency filtration from this dust collector, exhaust air can often be recirculated to the factory. To ensure high efficiency operation, always use genuine Donaldson replacement filters.

Intended Use

The Torit Bin Vent is used to vent displaced air and contain valuable and/or harmful products in bins or silos. As materials are conveyed to a bin by various means (mechanical, gravity, and pneumatic), air inside the enclosed bin is displaced. The process by which excess air is removed is called bin venting. The most common industries for the Bin Vent are food/agriculture such as grain and process/manufacturing such as chemical/pharmaceutical, cement, wood, foundries (clay, sand, additives), and waste treatment. The most common dusts are lime, cement, carbon, plastics, and wood.

Rating and Specification Information

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

Standard Equipment

Filters

Filters are shipped installed for Bin Vent plenum-mounted models.

Filters for the Bin Vent Insertable Cabinet models extend past the bottom of the collector cabinet when installed. The filters are shipped loose as to not be crushed or damaged under the weight of the collector. Filters are installed once the collector has been installed in a permanent site. Reference Filter Installation for instructions.

Fan Controls

Torit Bin Vents are shipped without the fan blower/motor packs installed. Reference the manuals shipped with the collector for installation instructions.

Options and Accessories

Fan Controls

The collector can accept a direct mounted fan, Torit Radial Blade (TRB), to the side of the collector.

Cleaning Controls and Sensors

Magnehelic® Gauge

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

Photohelic® Gauge

The Photohelic combines the functions of a differential pressure gauge and a pressure-based switch. The gauge function measures the pressure difference between the clean-air and dirty-air plenums and provides a visual display of filter condition. The high-pressure tap is located in the dirty-air plenum and a low-pressure tap is located in the clean-air plenum. The pressure-based switch function provides high-pressure ON and low-pressure OFF control of the filter cleaning system.

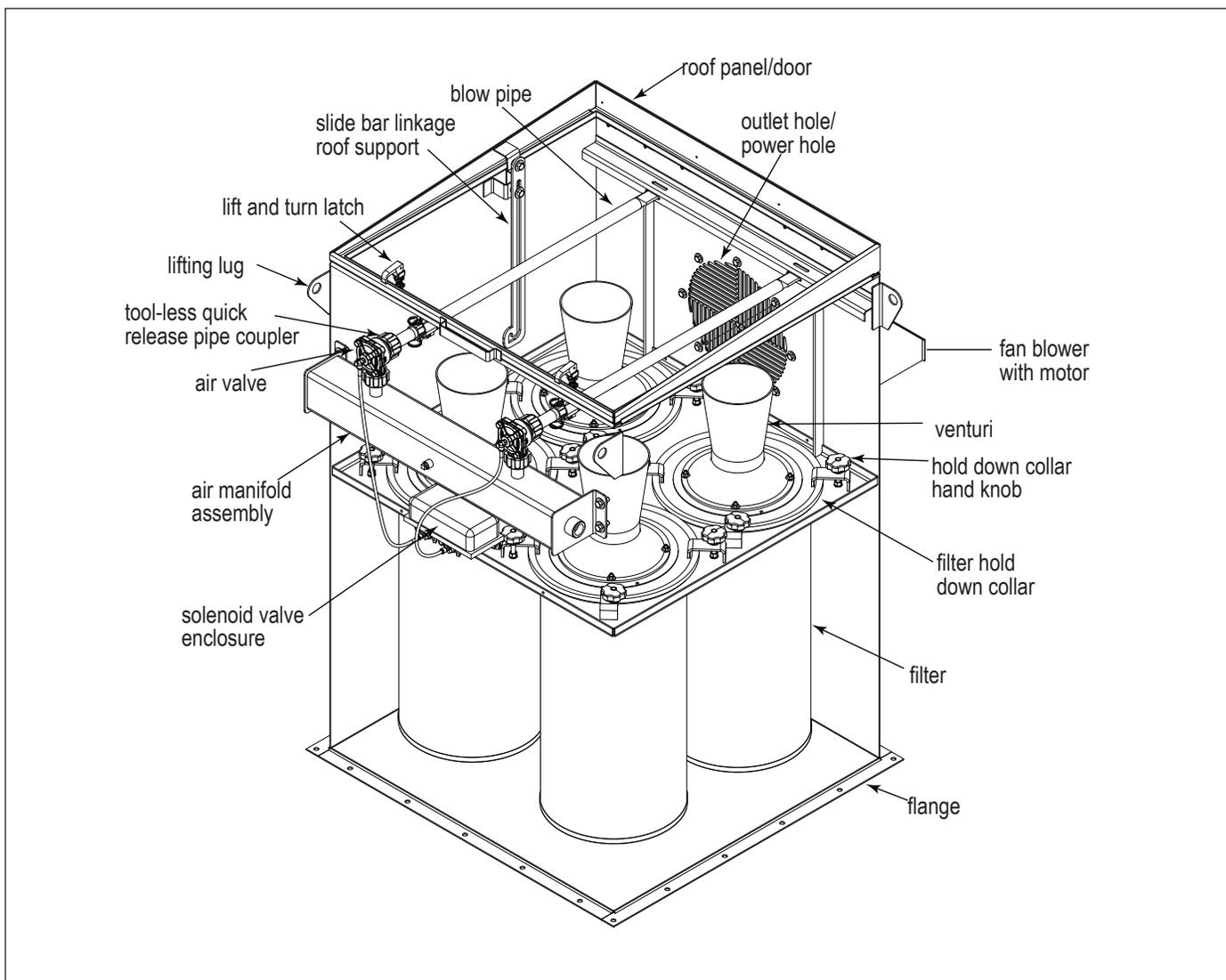
Delta P Control

The Delta P Controller monitors the differential pressure between the clean-air and dirty-air plenums, providing a visual display of the filter condition. When combined with a pulse timer, it manages the pressure drop by turning the cleaning mechanism On and Off at the chosen limits. There are three (3) set points: HIGH (On), LOW (Off) and ALARM. The first two, HIGH (On) and LOW (Off) control the filter cleaning system. The third, ALARM, provides a relay output to activate an external alarm supplied by others.

Delta P Plus Control

The Delta P Plus Controller monitors the differential pressure between the clean-air and dirty-air plenums, providing a visual display of the filter condition. When combined with a pulse timer, it manages the pressure drop by turning the cleaning mechanism On and Off at the chosen limits. There are three (3) set points: HIGH (On), LOW (Off) and ALARM. The first two, HIGH (On) and LOW (Off), control the filter cleaning system. The third, ALARM, provides a relay output to activate an external alarm supplied by others.

The user can program the Delta P Plus Controller to pulse while the collector is running, to maintain a relatively constant pressure drop across the filters, pulse only after the collector is shut down (after-shift cleaning), or a combination of both, cleaning while running as well as end of the shift.



Bin Vent Internal View

3

Operation

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

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

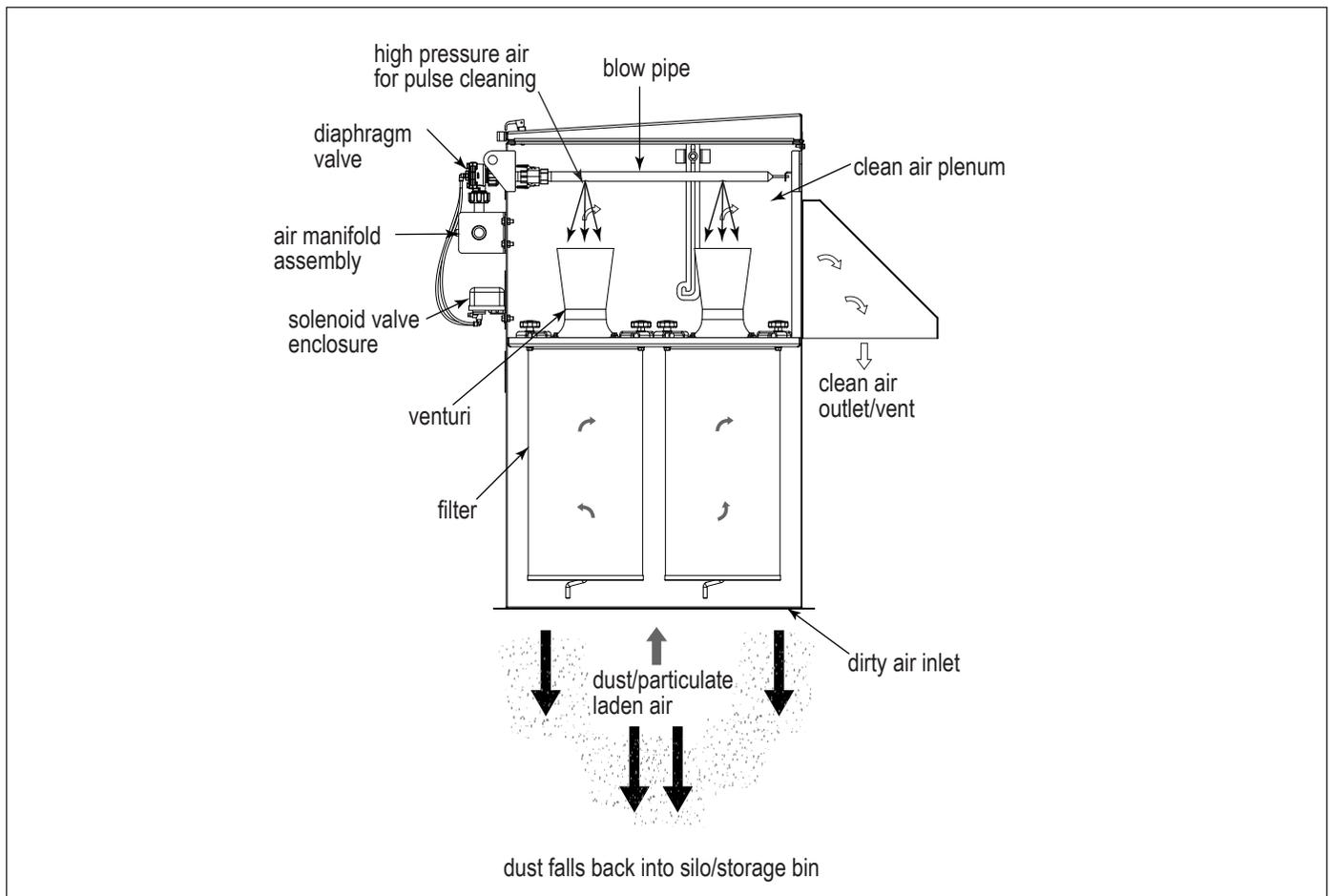
Turn compressed air supply off, bleed and lock out lines before performing service or maintenance work.

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 or dust-laden air enters the Bin Vent through the cabinet opening at the bottom of the collector, which is fastened to the silo or storage container. The dust-laden incoming air is collected on the outside surface of the filters. As the dust cake collects on the outside filter surface, gravity and air pulse-jet cleaning force the dust to drop back into the storage bin. The clean, filtered air flows up through the center of the filter elements and passes through the venturi into the clean air plenum, where it finally exits through the clean air outlet. The clean air outlet can be configured with a blower fan or a weather hood side-mounted to the rear of the collector. Another option, depending on the customer product being stored, is to recirculate the clean air back into the work area via duct work.

Filters are cleaned automatically and continuously during operation. Only a few filters are off-line for pulse-jet cleaning at any given time. A solid state timer controls the cycle of pulse-jet cleaning. Solenoid-operated diaphragm valves open in sequence, introducing jets of high pressure air into venturis located above the filter element cartridges. The resulting reverse airflow initiates the cleaning cycle, which dislodges the dust accumulated on the outside of the filter media, while the remaining filters in the collector continue the filtration process.



Collector Operation (Model TBV-4 shown)

4 Product Service



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

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

NOTICE

Do not set compressed-air pressure above 100-psig as component damage can occur.

All compressed air components must be sized to meet the system requirements of supply pressure.

The compressed-air supply must be oil and moisture free. Contamination in the compressed air used to clean filters will result in poor cleaning, cleaning valve failure, or poor collector performance.

Purge compressed air lines to remove debris before connecting to the collector's compressed air manifold.

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. Periodically check the compressed air components and replace compressed air filters.

Drain moisture following the manufacturer's instructions. With the compressed air supply ON, check the cleaning valves, solenoid valves, and tubing for leaks. Replace as necessary.

3. Monitor pressure drop across filters.

Abnormal changes in pressure drop may indicate a change in operating conditions and possibly a fault to be corrected. For example, prolonged lack of compressed air will cause an excess build-up of dust on the filters resulting in increased pressure drop. Cleaning off-line with no airflow usually restores the filters to normal pressure drop.

4. Monitor exhaust.
5. Monitor dust disposal.

Dust Disposal

1. Shut the collector OFF prior to emptying the dust container (bin, drawer, pail, or drum).
2. Transfer dust from the dust container to a suitable disposal site and dispose of dust in accordance with local requirements for the materials being collected.
3. Empty when dust container is no more than 2/3 full. Check integrity of gasket under container cover. Replace gasket if worn or damaged.
4. Replace or reinstall dust container, reclamp to the collector.

NOTICE

The collector should not be operated without the dust container in place and should not be serviced while collector is running. Do not service the dust container without turning the collector OFF.

5. The collector can now be returned to service.

Filter Replacement



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

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

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

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

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

Do not operate with missing or damaged filters.

1. Turn all power to the collector OFF.
2. Open the roof access door of the Bin Vent to its fully open position. Make sure that the small notch on the roof support slide bar drops down and locks into position, securing the roof access panel.



Failure to open the door properly could result in personal injury and/or property damage. Ensure the door is in the correct open position.

3. Reach inside the clean air plenum of the collector and disconnect the blowpipes by pulling back the levers of the quick-disconnect pipe couplers. Stow the blowpipes in the upright position by inserting them into the slots provided at the rear of the collector.
4. Reach down inside the clean air plenum of the collector and halfway unscrew all the black hold-down knobs.
5. Reach down inside the venturi and grasp the collar bracket; twist it to the right (clockwise) until the filter hold-down collar clears all four screw studs. Pull up and out to remove the filter assembly from the collector.
6. Carefully turn the filter assembly upside down (venturi-side down). Turn the filter crank counterclockwise until completely unscrewed from the quick-nut assembly located in the center of the collar bracket. Once loosened, pull the filter crank out through the filter end cap until clear of the filter assembly.
7. Turn the filter assembly venturi-side up again and grasp the filter hold-down collar. Pull the filter hold-down collar up to break the gasket seal between the filter and collar. Dispose of the filter in accordance with local requirements for the materials being collected.
8. Repeat steps 5-7 for all remaining filters.

9. Inspect and clean the sealing surface if necessary.

NOTICE

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

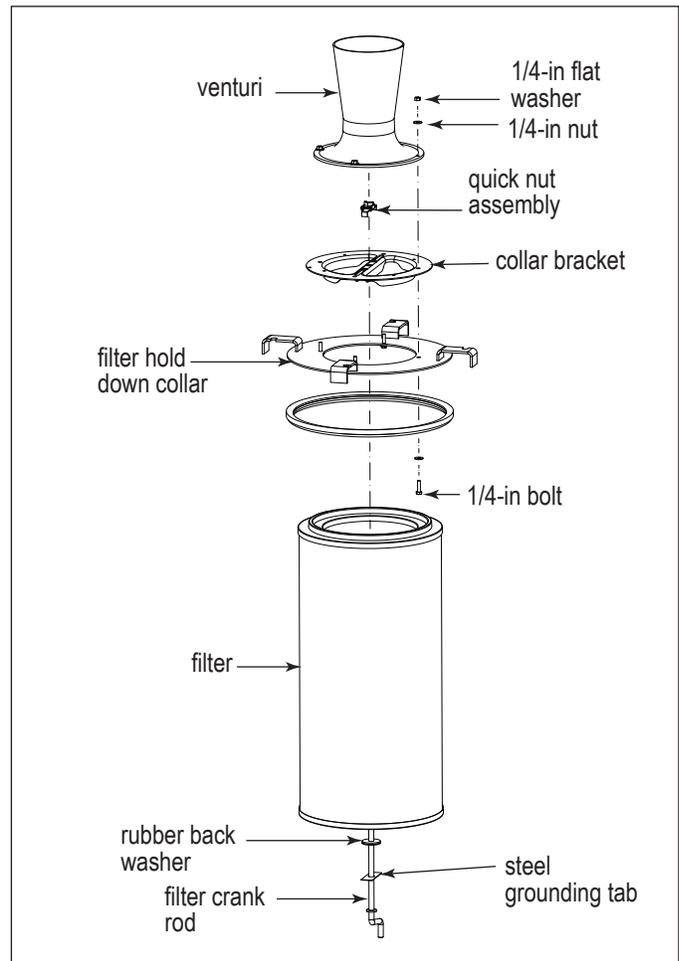
10. Check for any accumulation of dust in the clean air plenum and remove as necessary.
11. Place the new filter endcap down (gasket-side up).
12. Slide the filter hold-down collar inside the open of the filter until it stops.
13. Slide the steel grounding tab through the filter crank rod, followed by the rubber-backed washer, rubber side up and away from the crank handle.
14. Slide the filter crank rod through the hole in the filter endcap and up through the filter cartridge. Align the filter crank rod end with the quick-nut assembly located in the center of the hold-down collar bracket and screw together until the filter forms an air-tight seal against the filter hold-down collar.
15. Insert the complete filter/venturi assembly back into the clean air plenum until the hold-down collar is flush with bottom of the clean air plenum (tubesheet). Rotate the assembly to the left (counterclockwise) until all four (4) screw studs are engaged.
16. Tighten all black hold-down knobs until secure. Reconnect the blowpipes using the quick release pipe couplers.
17. Grasp the roof access door with one hand and pull up on the bottom of the roof support slide bar with the other to disengage the locked position. Lower the roof access door until closed and secure by twisting the latches on the top of the roof.



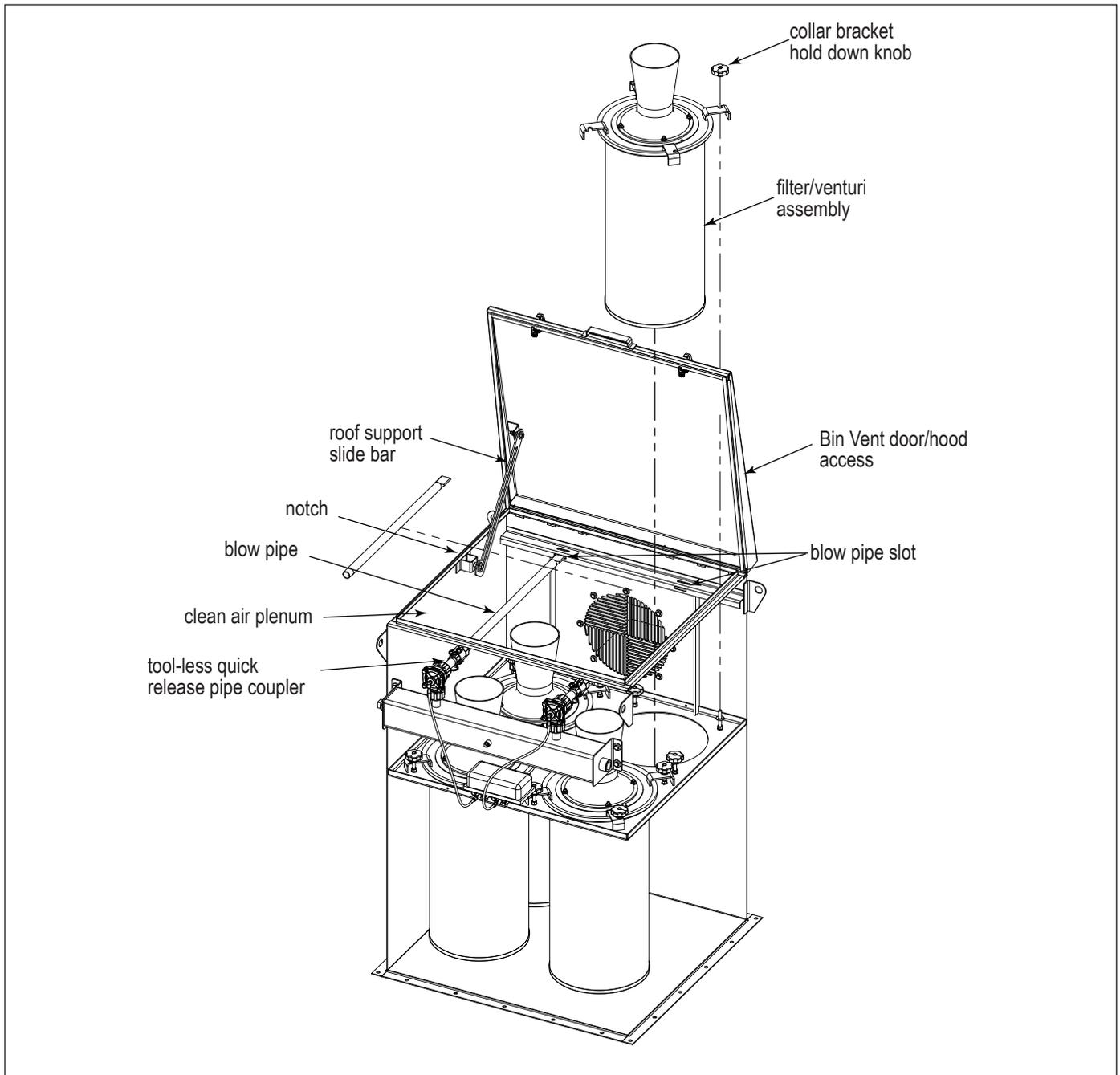
Failure to open the door properly could result in personal injury and/or property damage. Ensure the door is in the correct open position.

Do not drop filter.

18. The collector can now be returned to service.



Filter / Venturi Assembly



Filter Replacement

Compressed Air Components

1. Periodically check the compressed air components and replace damaged or worn components as necessary.
2. Drain moisture following the manufacturer's instructions.
3. With the compressed-air supply ON, check the cleaning valves, solenoid valves, and tubing for leaks. Repair or replace as necessary.

Troubleshooting

Problem	Probable Cause	Remedy
Fan blower and motor do not start	Improper motor wire size	Rewire using the correct wire gauge as specified by national and local codes.
	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	Collector not wired for available voltage	Correct wiring for proper supply voltage.
	Input circuit down	Check power supply to motor circuit on all leads.
	Electrical supply circuit down	Check power supply circuit for proper voltage. Check for fuse or circuit breaker fault. Replace as necessary.
	Damaged motor	Replace damaged motor.
Fan blower and motor start, but do not stay running	Incorrect motor starter installed	Check for proper motor starter and replace if necessary.
	Access doors are open or not closed tight	Close and tighten access doors. See Filter Replacement.
	Electrical circuit overload	Check that the power supply circuit has sufficient power to run all equipment.
Clean-air outlet discharging dust	Filters not installed correctly	See Filter Replacement.
	Filter(s) damaged or worn	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Replacement.
Insufficient airflow	Fan rotation backwards	Proper fan rotation is clockwise when viewed from the motor side or counterclockwise when viewed through the inlet cone. See Start-Up/Commissioning.
	Access doors open or not closed tight	Check that all access doors are in place and secured.
	Fan exhaust area restricted	Check fan exhaust area for obstructions. Remove material or debris. Adjust damper flow control.
	Filters need replacement	Remove and replace using genuine Donaldson replacement filters. See Filter Replacement.

Troubleshooting

Problem	Probable Cause	Remedy
Insufficient airflow continued	Lack of compressed air	See the Specification Control Drawing shipped with the collector for compressed air supply requirements.
	Pulse cleaning not energized	Use a voltmeter to check the solenoid valves in the control panel. Check pneumatic lines for kinks or obstructions.
	Dust storage area overfilled or plugged	Clean out dust storage area. See Dust Disposal.
	Pulse valves leaking compressed air	Lock out all electrical power to the collector and bleed the compressed air supply. Check for debris, valve wear, pneumatic tubing fault, or diaphragm failure by removing the diaphragm cover on the pulse valves. Check for solenoid leaks or damage. If pulse valves or solenoid valves and tubing are damaged, replace.
	Solid-State timer failure	Using a voltmeter, check supply voltage to the timer board. Check and replace the fuse on the timer board if necessary. If the fuse is good and input power is present but output voltage to the solenoid is not, replace the timer board. See Solid-State Timer Installation.
	Solid-State timer out of adjustment	See Solid-State Timer and Solid-State Timer Typical Wiring Diagram.
No display on the Delta P Controller	No power to the controller	Use a voltmeter to check for supply voltage.
	Fuse blown	Check the fuse in the control panel. See wiring diagram inside the control panel. Replace if necessary.
Display on Delta P Controller does not read zero when at rest	Out of calibration	Recalibrate as described in Delta P Maintenance Manual.
	With collector discharging outside, differential pressure is present from indoor to outdoor	Recalibrate with the pressure tubing attached as described in the Delta P Maintenance Manual.
Delta P Controller ON, but cleaning system does not start	Pressure tubing disconnected, ruptured, or plugged	Check tubing for kinks, breaks, contamination, or loose connections.
	Not wired to the timing board correctly	Connect the pressure switch on the timer board to Terminals 7 and 8 on TB3.
	Faulty relay	Using a multimeter, test relay for proper closure. Replace 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.

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

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

Location and Site Selection



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

Equipment location must conform to all codes and standards, should be suitable for the type of dust being handled and should ensure easy access for service and utility connections. Site selection must account for applicable load conditions such as wind, seismic and snow.

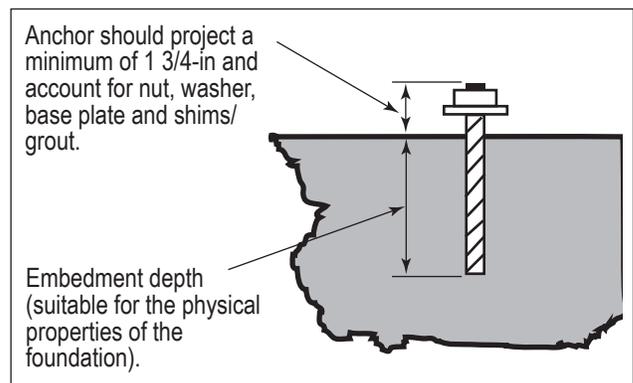
The equipment must be anchored once in final position. Anchors must comply with local code requirements. Anchors, foundation or support framing must be capable of supporting all applicable loads. Consult a qualified engineer for final selection of foundation or support framing.

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. Use industrial duct design best practices for optimal dust collector performance.

Follow industry practice relative to clean air velocity into a fan.

Provisional Anchor Bolt Recommendations

The quantity of anchor bolts should match the number of holes provided in the base plates of the collector. Anchor diameter is typically 1/8-inch less than the baseplate hole diameter. Anchors should project a minimum of 1 3/4 -inch and account for nut, washer, baseplate, and shims/grout.



Typical Foundation Anchor

Delivery and Inspection

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

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

Unloading and Positioning



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

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

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

Lifting Information



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

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

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

Support Installation



Anchors must comply with local code requirements and be capable of supporting all applicable loads.

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

Consult a qualified engineer for final selection of suitable anchors.

Reference Typical Foundation Anchor and leg assembly drawing shipped with the collector prior to starting assembly.

Prepare the foundation or support framing in the selected location. Locate and install anchors.

Standard Equipment

Pre-Installation

The Bin Vent is not designed as a “stand alone” collector. Rather, it is designed to be a filtration/ventilation component of a larger system, such as a silo or bin container. The open bottom of the bin vent is intended for roof mounting applications. Some preparation work is required before installing the collector. A hole must be cut into the silo or storage bin to the correct dimensions.

Ensure the silo or storage bin is reinforced to properly support the weight of the Bin Vent. Failure to do so may result in a collapse causing personal injury and/or property damage.

Compressed Air Installation



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

A safety exhaust valve should be used to isolate the compressed air supply. The safety exhaust valve should completely exhaust pressure in the collector manifolds when closed, should be capable of being interlocked with fire or explosion mitigation equipment and should include provisions to allow closed-position locking.

NOTICE

Do not set compressed-air pressure above 100-psig as component damage can occur.

All compressed air components must be sized to meet the system requirements of supply pressure.

The compressed-air supply must be oil and moisture free. Contamination in the compressed air used to clean filters will result in poor cleaning, cleaning valve failure, or poor collector performance.

Purge compressed-air lines to remove debris before connecting to the collector's compressed-air manifold.

1. Remove the pipe plug from the collector's air manifold and connect the compressed-air supply lines. Use thread-sealing tape or pipe sealant on all compressed-air connections.
2. Install a shut-off valve, bleed-type regulator with gauge, filter, and automatic condensate valve in the compressed-air supply line.
3. Set compressed-air supply pressure to a level suitable for the filters (90-psig).
4. The pulse-cleaning controls are factory set to clean one or more filters every 10-seconds during a cleaning cycle.

Electrical Wiring



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

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

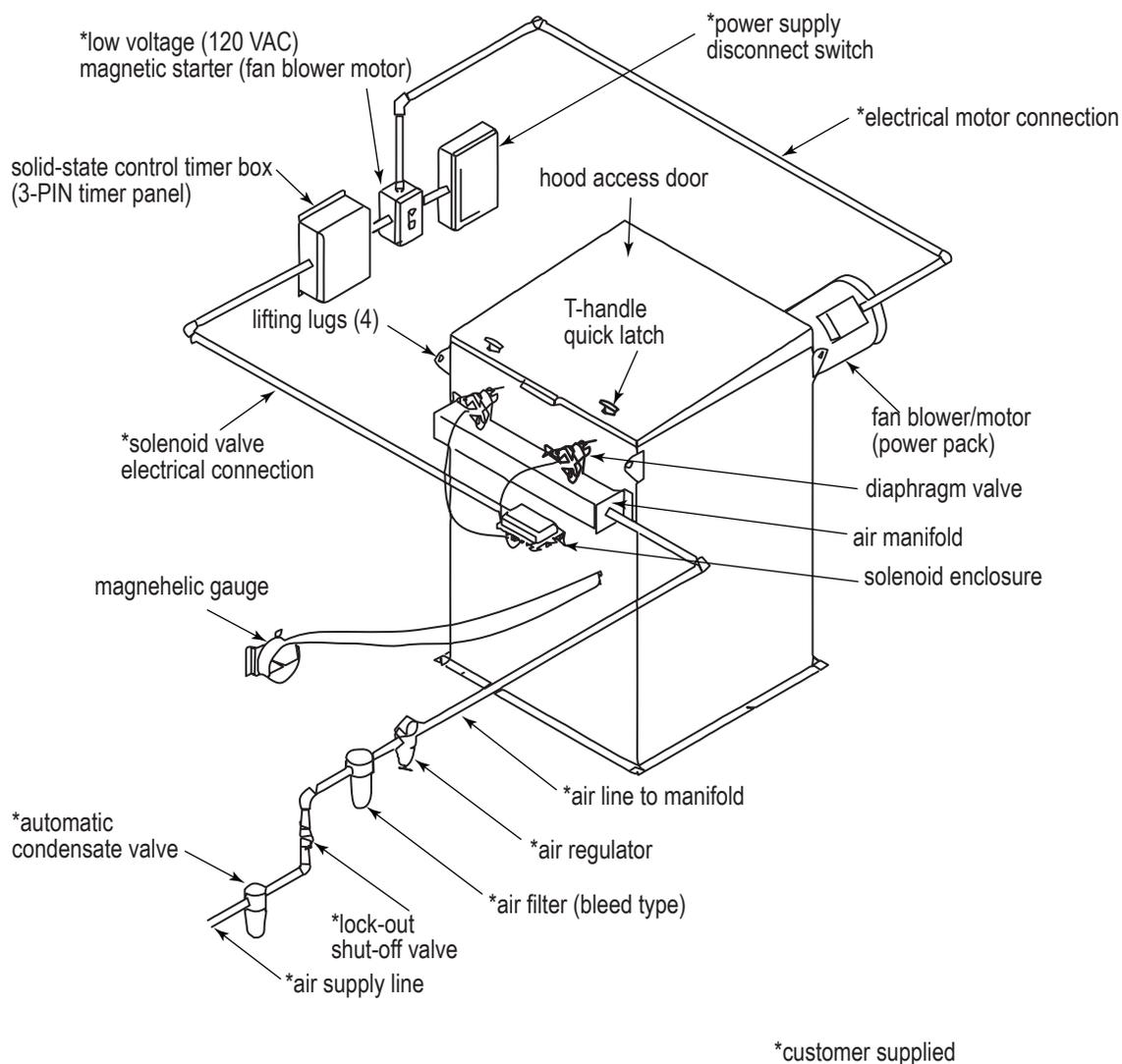
The appropriate wiring schematic and electrical rating must be used. See collector's rating plate for required voltage.

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



Turn all power off and lock out all electrical power sources.

Turn compressed-air supply OFF and bleed lines before performing service or maintenance work.



Compressed Air and Component Installation

Solid-State Timer Installation



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

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

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

A solid-state 3-pin timer is used to control the filter cleaning system.

1. Using the wiring diagram supplied with the timer assembly, wire the fan motor, fan-motor starter, solid-state timer, and solenoid valves. Use appropriate wire gauge for rated amp load as specified by local codes.
2. Plug the program lug into the pin that corresponds with the number of solenoid valves controlled for 3 PIN.
3. With power supply ON, check the operation of the timer and valves. The valves should open and close sequentially at factory set 10-second intervals.
4. If a gauge or similar device is used to control the solid-state timer, the jumper on the pressure switch portion of the timer should be removed. The solenoid valves pulse only when the differential pressure reaches the high-pressure setpoint. The valves will continue to pulse until the low-pressure setpoint is reached.

NOTICE

The solid-state timer voltage must match the voltage of the rating of the timer provided (typically 120VAC).

Do not mount the solid-state timer directly to the collector as mechanical vibration can damage the timer.

Solenoid Connection

The collector is equipped with electric solenoid valves (typically 120V) that control the pulse-cleaning valves, which in turn release compressed air from the manifold to clean the filters.

Solenoid enclosures are mounted near or on the collector's compressed-air manifold.

Wire the solenoids to the solid-state timer following the wiring diagram supplied with the collector. Filter life and cleaning operation will be affected if not wired correctly.

Timer and Solenoid Specifications

Power to the solid-state timer is supplied to Terminals L1 and L2, which are intended to operate in parallel with the fan starter's low-voltage coil. On fan start-up, power is supplied to the timer and the preset OFF time is initiated. At the end of the OFF time, the timer energizes the corresponding solenoid valve to provide the ON time cleaning pulse for one diaphragm valve and then steps to the next until all filters have been cleaned.

To pulse when the fan is OFF, install a toggle switch as shown on the Solid-State Timer Wiring Diagram. When the toggle switch is ON, the timer receives power and energizes the solenoid valve pulse-cleaning operation even though the fan is turned OFF.

Input
105-135V/50-60Hz/1Ph

Output Solenoids
The load is carried and turned ON and OFF by the 200 watt maximum-load-per-output solid-state switch.

Pulse ON Time
Factory set at 100-milliseconds, or 1/10-second.

NOTICE Do not adjust pulse ON time unless the proper test equipment is available. Too much or too little ON time can cause shortened filter life.

Pulse OFF Time
Factory set at 10-seconds, adjustable from 1 to 1.5-second minimum to maximum 60 to 66-seconds.

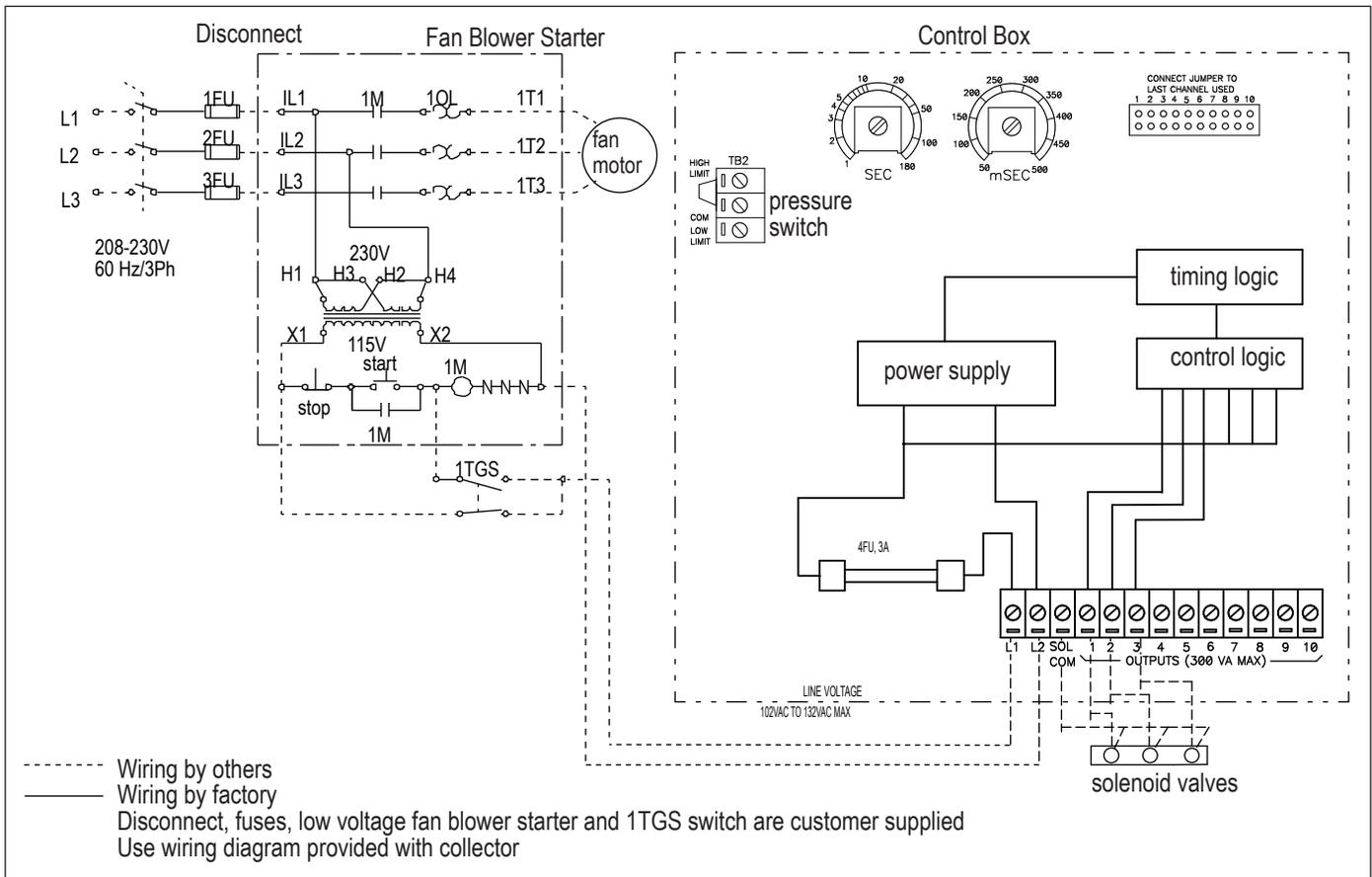
Operating Temperature Range
-20° F to 130° F

Transient Voltage Protection
50 kW transient volts for 20-millisecond duration once every 20 seconds, 1% duty cycle.

Solenoid Valves
115-Volt at 19.7 watts each

Compressed-Air
Set compressed-air supply pressure to a level suitable for the filters (90-psig). The pulse-cleaning controls are factory set to clean one or more filters every 10-seconds during a cleaning cycle.

NOTICE Do not increase supply pressure above 90-psig as component damage can occur.



Typical Wiring Diagram

Filter Installation (For Insertable Cabinet Models Only)

1. Unpack the filters from each box, which contains a filter, a filter crank rod, a rubber-backed washer and a steel grounding tab.

NOTICE

The Bin Vent insertable cabinet collector must be installed in a permanent location before the filters can be installed in the collector.

2. Open the roof access door of the Bin Vent to its fully open position. Make sure that the small notch on the roof support slide bar drops down and locks into position, securing the roof access panel.
3. Place the new filter endcap down (gasket-side up).
4. Slide the filter hold-down collar inside the open end of the filter until it stops.
5. Slide the steel grounding tab through the filter crank rod, followed by the rubber-backed washer, rubber side up and away from the crank handle.
6. Slide the filter crank rod through the hole in the filter endcap and up through the filter cartridge. Align the filter crank rod end with the quick-nut assembly located in the center of the hold-down collar bracket and screw together until the filter forms an air-tight seal against the filter hold-down collar.
7. Insert the complete filter/venturi assembly back into the clean air plenum until the hold-down collar is flush with bottom of the clean air plenum (tubesheet). Rotate the assembly to the left (counterclockwise) until all four (4) screw studs are engaged.
8. Tighten all black hold-down knobs until secure. Reconnect the blowpipes using the quick release pipe couplers.
9. Grasp the roof access door with one hand and pull up on the bottom of the roof support slide bar with the other to disengage the locked position. Lower the roof access door until closed and secure by twisting the latches on the top of the roof.



Failure to open the door properly could result in personal injury and/or property damage. Ensure the door is in the correct open position.

Options and Accessories

Fan Controls



Failure to lift the fan 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 fan.

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

To avoid personal injury and/or damage to equipment, ensure fan blowers are properly attached to equipment.

NOTICE

The use of a damper or variable frequency drive (VFD) is required to control airflow through the collector. Lack of a control damper or VFD will shorten filter life.

The Torit Radial Blade (TRB) fan can be mounted to the side of the collector.

The fan blower can be installed at any time during installation of the Bin Vent. If the Bin Vent needs to be moved or lifted after the fan blower has been installed, special precautions and careful handling need to be observed to prevent overturning.

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

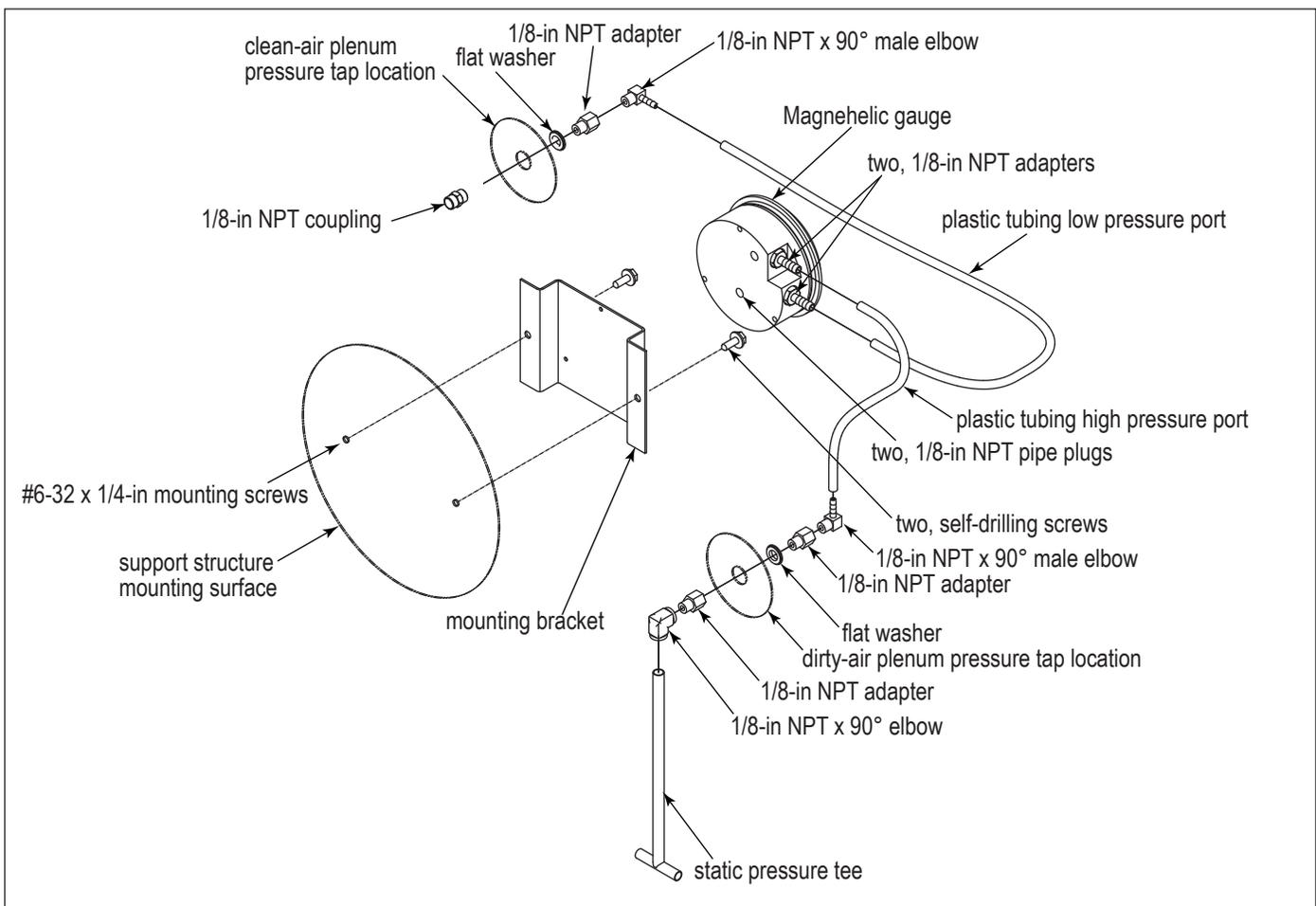
Side Mount TRB Fan Blower

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

Cleaning Controls and Sensors

Magnehelic® Gauge

1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.
2. 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 gauges.
3. Attach the mounting bracket using three, #6-32 x 1/4-in screws supplied.
4. Mount the gauge and bracket assembly in an accessible location using two, self-drilling screws.
5. 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.
6. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.



Magnehelic Gauge Installation

Photohelic® Gauge

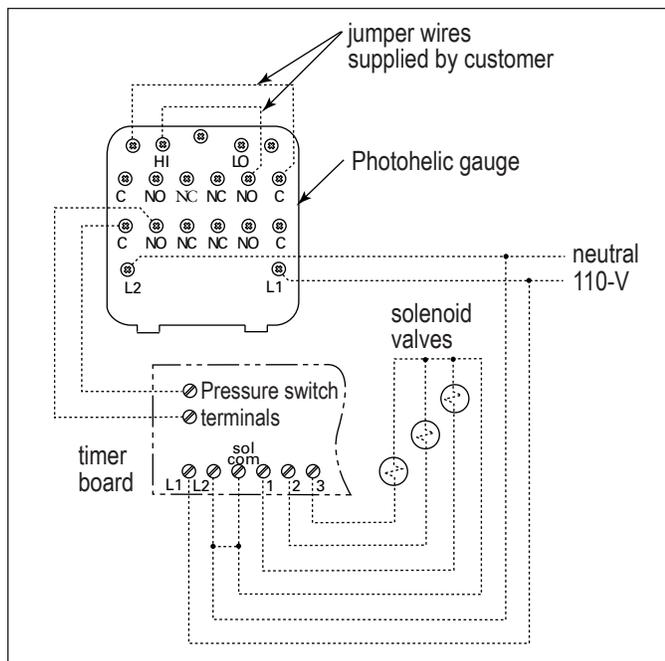


Electrical installation, service, or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

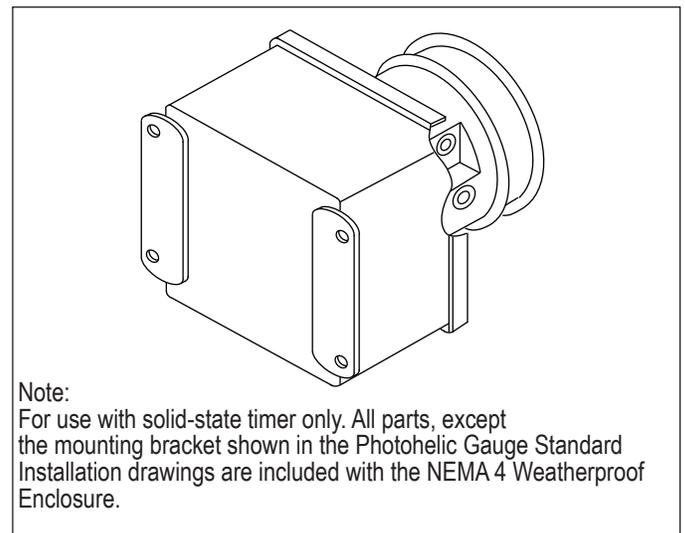
Turn all power off and lock out all power before performing service or maintenance work.

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

1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.
2. Mount the gauge to the remote panel or door using the mounting ring, retaining ring, and four #6-32 x 1 1/4-in screws. Do not tighten screws. Connect two, 1/8-in NPT x 1/4-in OD male adapters to the gauge's high- and low-pressure ports. Tighten screws.
3. On the back of the gauge, remove four #6-32 x 5/16-in screws and plastic enclosure. Set aside. Add two jumper wires supplied by customer. Remove the jumper from the pressure switch located on the timer board, if equipped. Using the 3/4-in conduit opening, wire the gauge as shown. Reassemble and fasten enclosure securely.
4. 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.
5. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.
6. To install the Photohelic Gauge mounted in a NEMA 4, Weatherproof Enclosure, follow Steps 4 and 5.

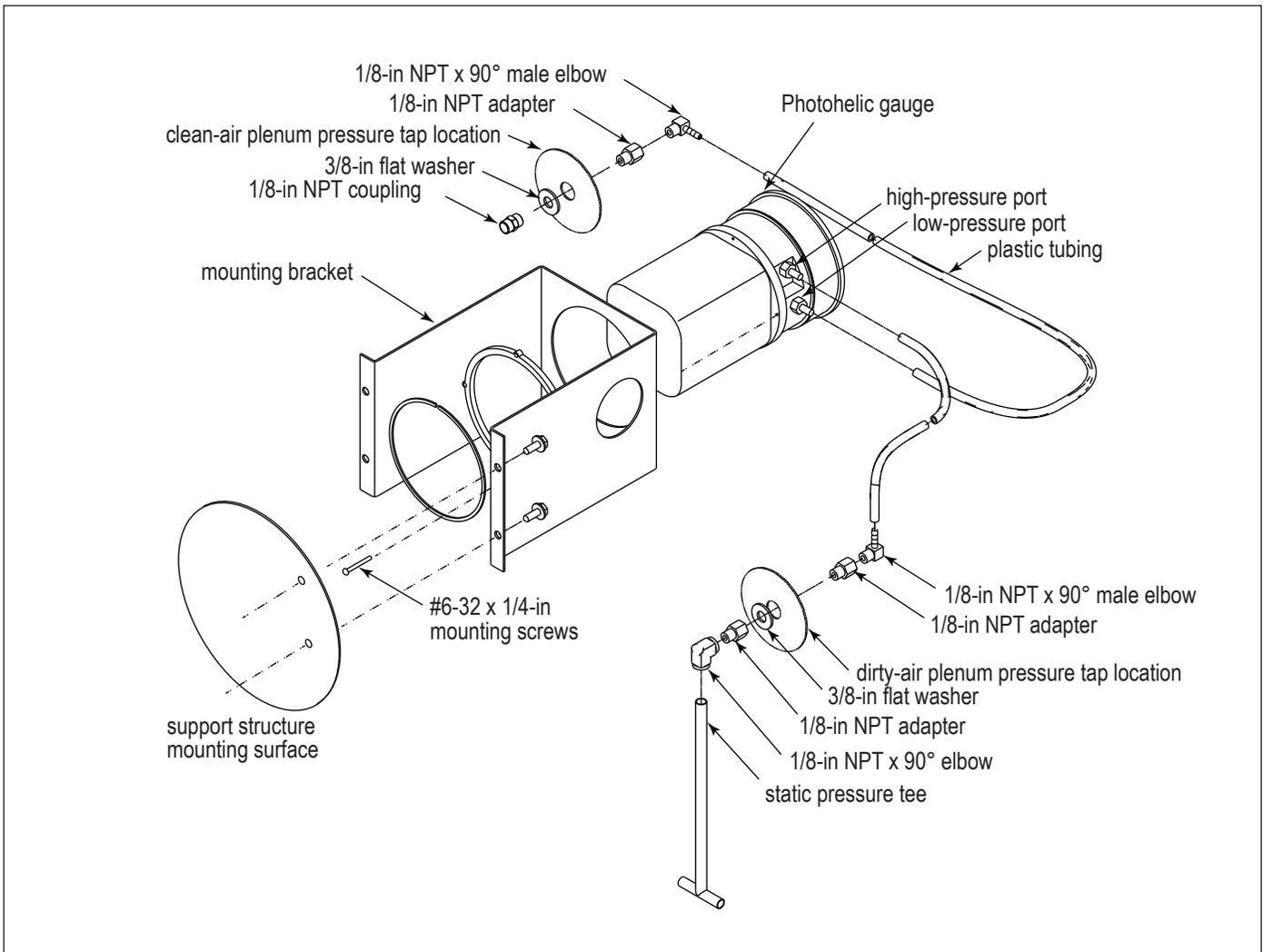


Photohelic Gauge Wiring Diagram



Note:
For use with solid-state timer only. All parts, except the mounting bracket shown in the Photohelic Gauge Standard Installation drawings are included with the NEMA 4 Weatherproof Enclosure.

Photohelic Gauge in Optional NEMA 4 Weatherproof Enclosure



Photohelic Gauge Installation

Delta P and Delta P Plus Control

For complete information, see the most current version of the Delta P or Delta P Plus Installation, Operation, and Maintenance manual.



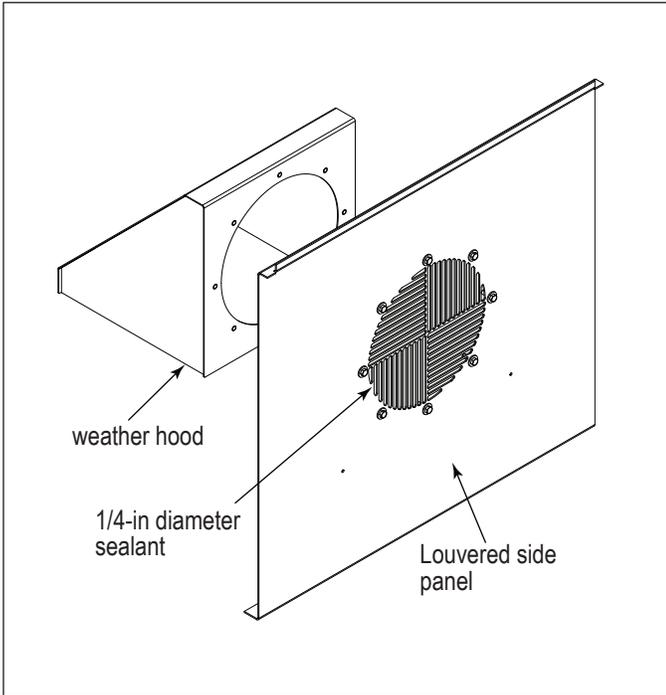
Delta P Control Display



Delta P Plus Control Display

Weather Hood

The weather hood keeps rain and snow from entering the collector, which can cause the Bin Vent to function improperly. It is strongly recommended for collectors that are not powered or ducted. To install the weather hood, place 1/4-in diameter sealer between the cabinet side and the weather hood. Position the weather hood over the outlet hole and attach to the cabinet using the eight (8) 5/16-in bolts provided. The bolts must be inserted from inside the clean air plenum to thread into the weld nuts inside the weather hood.

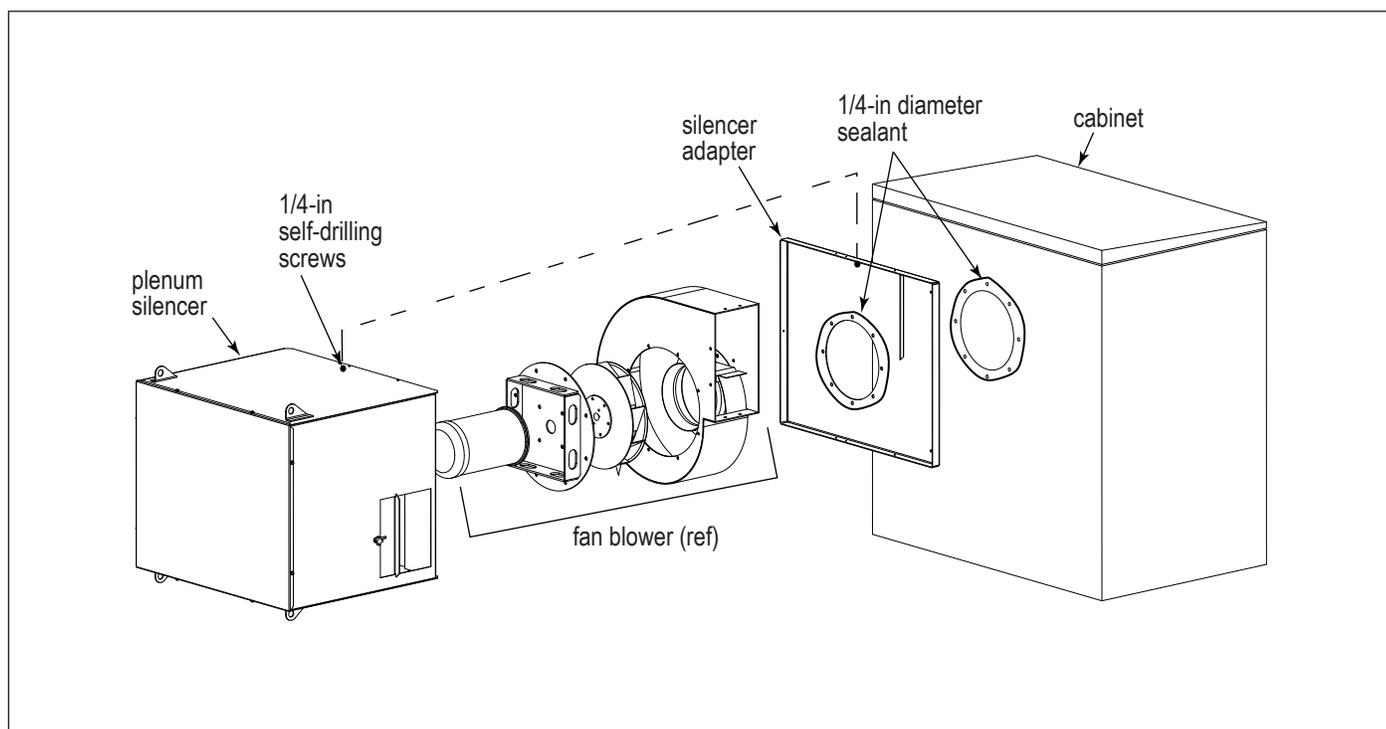


Weather Hood Installation

Plenum Silencer

Plenum silencers are available for the blower/motor assemblies. The plenum silencers are designed to be mounted on the side of the Bin Vent in line with the selected blower/motor assembly. The plenum silencers are equipped with an exhaust damper for flow control, making it unnecessary to select a separate damper assembly for the selected blower/motor assembly. It is important to note that for the Bin Vent plenum models, only TWO (2) plenum silencer mounting configurations will work without interfering with roof opening procedures. For the Bin Vent insertable models, only ONE (1) possible plenum silencer mounting configuration will work.

Although the plenum silencer primarily reduces noise levels, it is also equipped with a built-in exhaust damper. The plenum silencer mounting configuration varies between the Bin Vent plenum and insertable models. For the Bin Vent plenum model, there are two possible mounting configurations. For the Bin Vent insertable model, there is only ONE possible mounting configuration. The blower/motor plenum silencers are shipped loose and must be assembled and installed concurrently with the blower/motor assembly. Mount the plenum silencer to the side of the cabinet by drilling holes into the cabinet using the existing holes in the silencer adapter mounting plate as a guide. Fasten down using the 1/4-in thread cutting screws provided. Refer to the below illustration and the installation drawing shipped with the plenum silencer instructions.



Plenum Silencer Installation

Start-up / 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 all 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 operate in classified hazardous atmospheres without an enclosure rated for the application.

Optional fans over 600 lbs must be independently supported.

1. Check all electrical connections for tightness and contact.
2. Check for proper rotation on all motors as described below.



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

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

Stand clear of exhaust to avoid personal injury.

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

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

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

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

- a. Turn power to the collector OFF 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 that the dust container or dust discharge device is properly attached to the collector (if supplied).
6. Check that fan exhaust damper is set to the fully-closed position (if supplied).
7. Check and remove all loose items in or near the inlet and outlet of the collector.
8. Check that all remote controls and solenoid enclosures (if applicable) are properly wired and all service switches are in the OFF position.
9. Check that all optional accessories are installed properly and secured.
10. Turn power ON at source.
11. Turn the compressed-air supply ON. Set compressed-air supply pressure to a level suitable for the filters (90-psig).
12. Turn fan motor ON.
13. Adjust airflow with the exhaust damper.

NOTICE

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

14. Turn powered hopper discharge material handling system components ON.
15. Turn ON remaining optional accessories.
16. Ensure any and all fire and explosion mitigation systems are engaged and armed.

Decommissioning

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



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

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

Electrical service must be performed by a qualified electrician.

1. Lock-out all energy sources to the collector, material handling system and other associated equipment.
2. Remove all filters from the collector and dispose of in a suitable fashion for the dust in the collector. (See Filter Replacement for removal instructions).
3. Disconnect electrical power from the collector and material handling system components and remove any associated conduit or from the exterior of the collector.
4. Clear residual dust accumulation from surfaces inside the collector and associated components in a fashion suitable for the dust, prior to further disassembly.
5. Disconnect all ducts from the collector.
6. Remove anchor bolts.
7. Once all cross-bracing has been taken down, remove anchor bolts and lower leg pack columns.
8. Secure all collector components to a suitable transport carrier and transport to a disposal site suitable for the dust in the collector.

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.

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