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.
Process owners/operators have important responsibilities relating to combustible hazards. Process owners/operators must determine whether their process creates combustible dust, fume, or mist. If combustible dust, fume, or mist is generated, process owners/operators should at a minimum:

- Comply with all applicable codes and standards. Among other considerations, current NFPA standards require owners/operators whose processes involve potentially combustible materials to have a current Hazard Analysis, which can serve as the foundation for their process hazard mitigation strategies.
- Prevent all ignition sources from entering any dust collection equipment.
- Design, select, and implement fire and explosion mitigation, suppression, and isolation strategies that are appropriate for the risks associated with their application.
- Develop and implement maintenance work practices to maintain a safe operating environment, ensuring that combustible dust, fume, or mist does not accumulate within the plant.

Donaldson recommends process owners/operators consult with experts to insure each of these responsibilities are met.

As a manufacturer and supplier of Industrial Filtration Products, Donaldson can assist process owners/operators in the selection of filtration technologies. However, process owners/operators retain all responsibility for the suitability of fire and explosion hazard mitigation, suppression, and isolation strategies. Donaldson assumes no responsibility or liability for the suitability of any fire and/or explosion mitigation strategy, or any items incorporated into a collector as part of an owner/operators hazard mitigation strategy.

Improper operation of a dust control system may contribute to conditions in the work area or facility that could result in severe personal injury and product or property damage. Check that all collection equipment is properly selected and sized for the intended use.

DO NOT operate this equipment until you have read and understand the instruction warnings in the Installation and Operations Manual. For a replacement manual, contact Donaldson Torit.

This manual contains specific precautionary statements relative to worker safety. Read thoroughly and comply as directed. Discuss the use and application of this equipment with a Donaldson Torit representative. Instruct all personnel on safe use and maintenance procedures.
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**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

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

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

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

The Torit PowerCore CPV collector is a continuous duty dust collector that uses obround style filter packs with the proprietary axial flow PowerCore filter media. The system is designed to provide optimum performance for high efficiency, low operating pressure drop (energy usage) within a small size collector. The filters can be pulse-cleaned on- or off-line. Standard sizes range from 1 to 12 obround filter packs.

The Torit PowerCore CPV is not designed as a "stand alone" collector. Rather, it is designed to be a filtration/ventilation component of another component, such as a silo or bin container. The open bottom of the Torit PowerCore CPV is intended for roof mounting applications. Some preparation work may be required before installing the collector. An opening in the silo or storage bin must have the correct dimensions and be properly reinforced to support the weight of the Torit PowerCore CPV. Reference the Rating and Specification Information.

⚠️ WARNING ⚠️

Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials may be present in order to protect workers and property from serious injury or damage due to a fire and/or explosion.

Consult and comply with all National and Local Codes related to fire and/or explosion properties of combustible materials when determining the location and operation of all dust, fume, or mist collection equipment.

Standard Donaldson Torit equipment is not equipped with fire extinguishing or explosion protection systems.
Purpose and Intended Use

Misuse or modification of this equipment may result in personal injury.

Do not misuse or modify.

Discuss the use and application of this equipment with a Donaldson Torit representative.

In pneumatic conveying systems, Torit PowerCore CPV can be mounted on the top of silos or storage vessels to separate the product conveying from displaced air to prevent product loss and nuisance dust. In mechanical conveying systems, the dust generated by product loading, transfer, and discharge can be controlled using Torit PowerCore CPV on an enclosure. The collected dust returns directly to the product conveyed making expensive ductwork systems unnecessary, saving space, and eliminating dust disposal issues.

Torit PowerCore CPV collectors can be integrated with process machinery requiring dust control such as fluid bed reactors, mixers, blenders, mills, and crushers. They can also be used in bulk materials handling applications and for bin venting. The CPV model is commonly used in the grain, chemical, mineral, plastic, wood, composites, paper, packaging, and textile industries.

Rating and Specification Information

General rating and specification information can be found in the product literature provided with the collector or available on the Donaldson website. For specific load values for a collector, see the Specification Control Drawing shipped with the collector.
**Operation**

During normal operation, dust-laden air enters the collector through the cabinet opening at the bottom of the collector, which is fastened to the silo or storage container. Airflow is directed upwards through the collector. The CPV filter packs remove fine particulate and clean, filtered air passes through the CPV filter pack to the clean-air plenum and discharges through the clean-air outlet.

Filter pack cleaning is completed using pulse-jet technology. Air diaphragm valves provide the pulse cleaning. An electronic solenoid valve actuates the pulse cleaning. Filter packs are easily removed without tools when they need to be changed.
Typical Collector Operation
Inspection on Arrival

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

Installation Codes and Procedures

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

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

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

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

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

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

**WARNING**
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 all power before performing service or maintenance work.

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

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

**CAUTION**
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 dust 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.

**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 90-100-psig 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.
The collector is suitable for either indoor or outdoor installations. Reference the Rating and Specification Information.

**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**

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

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

**CAUTION** Dust 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 and compressed air connections, to simplify solids collection container handling and routine maintenance, and to ensure the straightest inlet and outlet ducts.

Provide clearance from heat sources and avoid any interference with utilities when selecting the location. Portable collectors may require special installation accommodations.

Note: Collectors with explosion vents are not available in portable configurations.

**Site Selection**

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

**Rigging Instructions**

**Suggested Tools & Equipment**

- Clevis Pins and Clamps
- Crane or Forklift
- Drift Pins
- Drill and Drill Bits
- End Wrenches
- Adjustable Wrench
- Torque Wrench (inch/lbs, 9/16-in Socket)

**Pipe Sealant**

**Pipe Wrenches**

**Screwdrivers**

**Socket Wrenches**

**Spreader Bars**

**Hoisting Information**

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

Do not lift collector by the door handle or air manifold. Follow IOM guidelines and illustrations.

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**

Standard installation consists of base collector, electrical, and compressed air connections.
**Typical Installation**

- **CPV-1**
  - Latches and manifold are not lifting points
  - Angle not to exceed 30° from vertical
  - Do not lift with this orientation

- **CPV-2 through CPV-4**
  - Latches and manifold are not lifting points

- **CPV-6 through CPV-12**
  - Latches and manifold are not lifting points

**CAUTION**

Take center of gravity into consideration when lifting collector.

Do not install blower before lifting collector (except CPV-1).
Compressed Air Installation

**WARNING**
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 90-100-psig 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 plastic 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 customer-supplied 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). The pulse-cleaning controls are factory set to clean one or more filters every 10-seconds during a cleaning cycle.

![Compressed Air Installation Diagram](image-url)

*customer supplied
## Electrical Wiring

**WARNING**  
Electrical installation, service, or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.  
Turn power off and lock out all power 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.

## Solid-State Timer Installation

**WARNING**  
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 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.

The solid-state timer is used to control the filter cleaning system. Available options include 3, 6, 10, 20, or 32-pin solenoid valve controls.

1. Using the wiring diagram supplied, wire the 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.
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 will then 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.

## Antistatic Grounding Installation

If the collector is equipped with antistatic filters and bonded construction, then the collector will need to be grounded by a qualified electrician.

1. Follow the instructions provided by the antistatic grounding drawing provided.
2. Ground the collector using the grounding lug at the rear of the collector.
3. Take resistance readings from the filter media to ground to ensure conductivity. Records results as indicated on the drawing.
Solenoid Connection

The collector is equipped with electric solenoid valves (typically 120V) that controls the pulse-cleaning valves, which in turn 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 valves’ pulse-cleaning operation even though the fan is turned OFF.

Input
105-135V/50 -60Hz/1Ph (others, including 220VAC are available)

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.

**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-second.

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-V 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 100-psig as component damage can occur.
Preliminary Start-Up Check

Instruct all personnel on safe use and maintenance procedures.

**WARNING**

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

Turn power off and lock out 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.

Optional fans over 600 lbs must be independently supported.

1. Check all electrical connections for tightness and contact.
2. Check for proper rotation as noted on the fan and/or hopper discharge device housing.
   
   To reverse rotation, single-phase power supply:
   Follow manufacturer’s instructions on the motor’s nameplate.
   
   To reverse rotation, three-phase power supply:
   Switch any two leads on the motor junction box.

**WARNING**

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

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

Stand clear of exhaust to avoid personal injury.

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

3. Check that filter retention brackets are properly tightened to achieve proper filter seal.
4. All access panels should be sealed and secure.
5. Check that fan exhaust damper is set to the fully-closed position.
6. Check and remove all loose items in or near the inlet and outlet of the collector.
7. Check that all remote controls and solenoid enclosures (if applicable) are properly wired and all service switches are in the OFF position.
8. Check that all optional accessories are installed properly and secured.
9. Turn power ON at source.
10. Turn the compressed-air supply ON. Adjust pressure regulator for 90-100 psig.
11. Turn blower fan motor ON.
12. Adjust airflow with the exhaust damper, if equipped.

**NOTICE**

Excess airflow can shorten filter life, cause electrical system failure, and blower motor failure.
Maintenance Information

Instruct all personnel on safe use and maintenance procedures.

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

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

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

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

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

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 90-100 psig 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.

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.


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.


5. Monitor dust disposal.

Filter Removal and Installation

⚠️ WARNING ⚠️ 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 all power before performing service or maintenance work.

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

⚠️ CAUTION ⚠️ Do not operate with missing or damaged filters.

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.
Filter Removal (CPV-1 Only)

**WARNING** When inserting the filter pack, start at the back edge of the pack first to ensure alignment tabs do not damage the filter packs.

1. Turn off power to the collector.
2. Loosen wing nuts and slide filter retainer left to release from hold down.
3. Lift left side of retainer up while moving the right side towards the back wall.
4. Pull the raised left side of the retainer through upper left of opening.
5. Remove pack vertically until clear of tubesheet.

Filter Installation (CPV-1 Only)

1. Insert the filter pack, starting with the back edge first, to ensure alignment tabs do not damage filter pack.
2. Slide the right side of the retainer through lower right of opening.
3. Lower the right side of retainer while moving the left side toward the back wall.
4. Slide filter retainer right and under the hold down lip.
5. Position wing nuts over studs and tighten until stops are in contact with tubesheet.

Filter Retainer Removal (hinged access panel removed for clarity)

Filter Removal and Installation (hinged access panel removed for clarity)

Filter Removal and Installation for CPV-1 Collector
Filter Removal (except CPV-1)

1. Turn off power to the collector.
2. Open access door by releasing locking mechanism. Swing door fully open. Prevent door from closing by engaging door locking mechanism (except CPV-1).
3. Turn filter pack retention wing nuts counterclockwise and remove filter pack retainer. Removal of back row of filter packs first is recommended.
4. Remove filter pack by lifting straight up.
5. Repeat steps 1-4 to remove remaining filter packs.

Filter Installation

1. Clean the surface around the filter opening where the gasket is seated to ensure a good seal.
2. Insert first filter pack into the tubesheet. Installing front row of filter packs first is recommended.
3. Insert filter pack retainer by engaging both rear tabs of the retainer into the slots located just behind the filter pack opening, or on opposite side of the threaded studs, then align the filter pack retention wing nuts over the posts.
4. Turn filter pack retention wing nuts clockwise until filter pack gasket is fully seated.
5. Repeat steps 2 through 4 for remaining filter packs.
6. Disengage door locking mechanism (except CPV-1). Use caution when closing door to avoid personal injury.
7. Turn access door latch to lock.
8. Reset exhaust damper to required setting if so equipped.
9. Turn electrical power and compressed air supply ON before starting collector.

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.

Filter Removal and Installation
**Electrical Connection (CPV-1 Only)**

**NOTICE**

Electrical 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.

1. Using the wiring diagram supplied, wire the customer-supplied disconnect switch and fan starter. Make the connections to the fan motor.

   Use appropriate wire gauge for rated amp load as specified by local codes.

2. Turn the fan motor On then OFF to check for proper rotation by referencing the rotation arrow located on the motor’s mounting plate.

**WARNING**

Do not look into fan outlet to determine rotation. View the fan rotation from 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.

To reverse rotation, three-phase power supply: Turn electrical power OFF at source and switch any two leads on the output-side of the fan motor starter.

**WARNING**

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

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**Optional Equipment**

**Fan Blower (Except CPV-1)**

**WARNING**

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.

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

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

**CAUTION**

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

The collector can accept direct mounted fan blowers, Torit Backward Inclined (TBI) or Torit Radial Blade (TRB), to the top or side of the collector.

For complete information, see the most current version of the TBI or TRB Fan Installation, Operation and Maintenance manuals.
Side Mount TBI or TRB Fan Blower

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

CPV-2, -3, or -4 Side Mount Power Pack

CPV-6, -8, or -12 Side Mount Power Pack
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 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.

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 to the supporting structure 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.
Photohelic® Gauge

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

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

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

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.

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.

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Photohelic Gauge in Optional NEMA 4 Weatherproof Enclosure

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

Photohelic Gauge, Remote Panel or Door Installation
Delta P Control

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

Description

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 Pressure On, Low Pressure Off, and Alarm. The first two, High Pressure On and Low Pressure Off, control the filter cleaning system. The third, Alarm, provides a relay output to activate an external alarm supplied by others.

Operation

Normal

The Delta P Controller monitors the pressure in the clean-air and dirty-air plenums while the collector is running. The blower draws air through the filters, creating a pressure drop. The Delta P Controller measures the pressure drop and provides a visual display in inches water gauge or metric (SI) units of daPa.

Filter Cleaning

When the pressure drop across the filters reaches the High Pressure On setpoint, the controller closes an output relay allowing a timer to trigger the cleaning valves sequentially. When the controller senses that the pressure drop has decreased to the Low Pressure Off setpoint, the relay opens and the cleaning cycle stops. This sequence continues as long as the collector is in use, maintaining the pressure drop within a narrow range.

Alarm

The Alarm setpoint is set to a higher setting than the High Pressure On setpoint used to start the filter cleaning cycle. It indicates situations when the cleaning system cannot reduce the pressure drop due to cleaning system failure, lack of compressed air, or the end of the filter’s useful life. There is a time delay prior to setting the Alarm to prevent nuisance trips. The Delta P Controller also provides an input connection for a remote alarm reset.
Delta P Plus Control

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

Description

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 Pressure On, Low Pressure Off, and Alarm. The first two, High Pressure On and Low Pressure 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.

Operation

Normal

The Delta P Plus Controller monitors the pressure on both sides of the tubesheet while the collector is running. As air flows through the filters, the resistance of the media and collected dust creates a pressure difference or “drop” between the dirty and clean air plenums. The Delta P Plus Controller measures the pressure drop and provides a visual display in inches water gauge or metric (SI) units of daPa.

Filter Cleaning

The Delta P Plus Controller offers three filter cleaning options.

1. Differential Pressure Cleaning (DFF) - When the pressure drop across the filters reaches the Controller’s High Pressure On setpoint, the Controller closes an output relay allowing a sequential timer to trigger the cleaning valves. When the Controller senses that the pressure drop has decreased to the Low Pressure Off setpoint, the relay opens and the cleaning cycle stops. This sequence continues as long as the collector is in use, maintaining the pressure drop within a narrow range.

2. Downtime Cleaning (DTC) - The Delta P Plus Controller monitors the collection system. When the pressure drop exceeds the Low Pressure Off set point and then approaches zero again, the Delta P Plus Controller runs a delay timer to allow the blower to come to a stop and then engages the cleaning mechanism for a preselected time.

3. Combined Differential and Downtime Cleaning (ALL) - The Delta P Plus Controller combines the two functions described above; maintaining the pressure drop in a narrow band and downtime cleaning the filters when the collector is shut down. The downtime cleaning function can be toggled On or Off from the keyboard.

Alarm

The Alarm setpoint is set to a higher setting than the High Pressure On used to start the filter cleaning cycle. It indicates situations when the cleaning system cannot reduce the pressure drop due to cleaning system failure, lack of compressed air, or the end of the filter’s useful life. There is a time delay prior to setting the Alarm to prevent nuisance trips. The Delta P Plus Controller also provides an input connection for a remote Alarm reset.
Damper Only (CPV-1)

Side Mount
1. Attach the damper to the fan exhaust outlet using the hardware supplied.
2. Loosen the wing nut on the damper and adjust from 30 to 50% closed.
Cold Climate Kit

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

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

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

A cold climate kit provides heat to the pulse valves to prevent cold weather freeze up. The basic kit, for use in applications that have a moderate amount of moisture in the compressed-air supply, consists of a small heating element and thermostat installed in the solenoid enclosure. The basic kit is factory-installed and supplied with the appropriate solenoid wiring instructions.

A heavy-duty kit is available for applications that have moderate-to-high amounts of moisture in the compressed-air supply and consists of the basic kit plus a heat cable to deliver heat to the large pulse valves. This kit is customer-installed and detailed installation instructions are provided.

1. Install the power connection kit on the heat cable following the manufacturer’s instructions.
2. Start with the upper right-hand valve, wrap heat cable around the valve as shown in Detail A. Pull heat cable tight.
3. Position a 3-in hose clamp around the double wrapped heat cable and tighten securely.
4. Wrap remaining valves using the same technique in the order shown in Detail B.
5. Drill a 1-in diameter hole in the back of the junction box. See Detail C. Assemble the power connection kit following the manufacturer’s instructions.
6. Secure junction box to manifold using two, 8-in hose clamps wrapped around the standoff.
7. Wrap 6-ft of pipe insulation tape around each heat-cable wrapped valve. Wrap the entire valve, double wrapping the hose-clamped heat cable. Secure with cable ties.
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fan blower and motor do not start</strong></td>
<td>Improper motor wire size</td>
<td>Rewire using the correct wire gauge as specified by national and local codes.</td>
</tr>
<tr>
<td></td>
<td>Not wired correctly</td>
<td>Check and correct motor wiring for supply voltage. See motor manufacturer’s wiring diagram. Follow wiring diagram and the National Electric Code.</td>
</tr>
<tr>
<td></td>
<td>Collector not wired for available voltage</td>
<td>Correct wiring for proper supply voltage.</td>
</tr>
<tr>
<td></td>
<td>Input circuit down</td>
<td>Check power supply to motor circuit on all leads.</td>
</tr>
<tr>
<td></td>
<td>Electrical supply circuit down</td>
<td>Check power supply circuit for proper voltage. Check for fuse or circuit breaker fault. Replace as necessary.</td>
</tr>
<tr>
<td></td>
<td>Damaged motor</td>
<td>Replace damaged motor.</td>
</tr>
<tr>
<td><strong>Fan blower and motor start, but do not stay running</strong></td>
<td>Incorrect motor starter installed</td>
<td>Check for proper motor starter and replace if necessary.</td>
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<tr>
<td></td>
<td>Access doors are open or not closed tight</td>
<td>Close and tighten access doors. See Filter Installation.</td>
</tr>
<tr>
<td></td>
<td>Damper control not adjusted properly</td>
<td>Check airflow in duct. Adjust damper control until proper airflow is achieved and the blower motor’s amp draw is within the manufacturer’s rated amps.</td>
</tr>
<tr>
<td></td>
<td>Electrical circuit overload</td>
<td>Check that the power supply circuit has sufficient power to run all equipment.</td>
</tr>
<tr>
<td><strong>Clean-air outlet discharging dust</strong></td>
<td>Filters not installed correctly</td>
<td>See Filter Installation.</td>
</tr>
<tr>
<td></td>
<td>Filter damage, dents in the end caps, gasket damage, or holes in media</td>
<td>Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Installation.</td>
</tr>
<tr>
<td><strong>Insufficient airflow</strong></td>
<td>Fan rotation backwards</td>
<td>Proper fan rotation is clockwise when viewed from the motor side or counterclockwise when viewed through the inlet cone. See Preliminary Start-Up Check.</td>
</tr>
<tr>
<td></td>
<td>Access doors open or not closed tight</td>
<td>Check that all access doors are in place and secured. Check that the hopper discharge opening is sealed and that dust container is installed correctly.</td>
</tr>
<tr>
<td></td>
<td>Fan exhaust area restricted</td>
<td>Check fan exhaust area for obstructions. Remove material or debris. Adjust damper flow control.</td>
</tr>
<tr>
<td></td>
<td>Filters need replacement</td>
<td>Remove and replace using genuine Donaldson replacement filters. See Filter Removal and Installation.</td>
</tr>
</tbody>
</table>
## Troubleshooting

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<tr>
<th>Problem</th>
<th>Probable Cause</th>
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<tr>
<td>Insufficient airflow continued</td>
<td>Lack of compressed air</td>
<td>See Rating and Specification Information for compressed air supply requirements.</td>
</tr>
<tr>
<td></td>
<td>Pulse cleaning not energized</td>
<td>Use a voltmeter to check the solenoid valves in the control panel. Check pneumatic lines for kinks or obstructions.</td>
</tr>
<tr>
<td></td>
<td>Dust storage area overfilled or plugged</td>
<td>Clean out dust storage area. See Dust Disposal.</td>
</tr>
<tr>
<td></td>
<td>Pulse valves leaking compressed air</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Solid-State timer failure</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Solid-State timer out of adjustment</td>
<td>See Solid-State Timer and Solid-State Timer Wiring Diagram.</td>
</tr>
<tr>
<td>No display on the Delta P Controller</td>
<td>No power to the controller</td>
<td>Use a voltmeter to check for supply voltage.</td>
</tr>
<tr>
<td></td>
<td>Fuse blown</td>
<td>Check the fuse in the control panel. See wiring diagram inside the control panel. Replace if necessary.</td>
</tr>
<tr>
<td>Display on Delta P Controller does not read zero when at rest</td>
<td>Out of calibration</td>
<td>Recalibrate as described in Delta P Maintenance Manual.</td>
</tr>
<tr>
<td></td>
<td>With collector discharging outside, differential pressure is present from indoor to outdoor</td>
<td>Recalibrate with the pressure tubing attached as described in the Delta P Maintenance Manual.</td>
</tr>
<tr>
<td>Delta P Controller ON, but cleaning system does not start</td>
<td>Pressure tubing disconnected, ruptured, or plugged</td>
<td>Check tubing for kinks, breaks, contamination, or loose connections.</td>
</tr>
<tr>
<td></td>
<td>Not wired to the timing board correctly</td>
<td>Connect the pressure switch on the timer board to Terminals 7 and 8 on TB3.</td>
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<tr>
<td></td>
<td>Faulty relay</td>
<td>Using a multimeter, test relay for proper closure. Replace if necessary.</td>
</tr>
<tr>
<td>Problem</td>
<td>Probable Cause</td>
<td>Remedy</td>
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<tr>
<td>----------------------------------------------</td>
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<td>--------------------------------------------------------------------------------------------------</td>
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<tr>
<td>Pulse cleaning never stops</td>
<td>Pressure switch not wired to the timer board correctly</td>
<td>Connect the pressure switch on the timer board to Terminals 7 and 8 on TB3.</td>
</tr>
<tr>
<td></td>
<td>Pressure switch terminals on the timer board jumpered</td>
<td>Remove jumper wire on Solid-State Timer board before wiring to the Delta P Control.</td>
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<tr>
<td></td>
<td>High Pressure On or Low Pressure Off setpoint not</td>
<td>Adjust setpoints to current conditions.</td>
</tr>
<tr>
<td></td>
<td>adjusted for system conditions</td>
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<td></td>
<td>Pressure tubing disconnected, ruptured, plugged, or</td>
<td>Check tubing for kinks, breaks, contamination, or loose connections.</td>
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<tr>
<td></td>
<td>kinked</td>
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<tr>
<td>Alarm light is ON</td>
<td>Alarm setpoint too low</td>
<td>Adjust to a higher value.</td>
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<tr>
<td></td>
<td>Excess pressure drop</td>
<td>Check cleaning system and compressed air supply. Replace filters if filters do not clean down.</td>
</tr>
<tr>
<td></td>
<td>Pressure tubing disconnected, ruptured, plugged, or</td>
<td>Check tubing for kinks, breaks, contamination, or loose connections.</td>
</tr>
<tr>
<td></td>
<td>kinked</td>
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<tr>
<td>Delta P arrow keys do not work</td>
<td>Improper operation</td>
<td>Press and hold one of the three setpoint keys to use arrow keys.</td>
</tr>
<tr>
<td></td>
<td>Programming keys disabled</td>
<td>Remove the Program Disable jumper from Terminals 3 and 4 on TB2.</td>
</tr>
<tr>
<td>Cleaning light is ON, but cleaning system not</td>
<td>Improper wiring</td>
<td>Check wiring between the Delta P Control and the timer board, and between the timer board and</td>
</tr>
<tr>
<td>functioning</td>
<td></td>
<td>solenoid valve coils.</td>
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<tr>
<td></td>
<td>Defective solenoids</td>
<td>Check all solenoid coils for proper operation.</td>
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<td></td>
<td>Timer board not powered</td>
<td>Check power ON light on timer board’s LED display. If not illuminated, check the supply voltage</td>
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<td></td>
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<td>to the timer board. Check the fuse on the timer board. Replace if necessary.</td>
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<td></td>
<td>Timer board defective</td>
<td>If LED is illuminated, observe the output display. Install a temporary jumper across the pressure</td>
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<td>switch terminals. Output levels should flash in sequence. Check output using a multimeter set to</td>
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<td>150-Volt AC range. Measure from SOL COM to a solenoid output. The needle will deflect when LED</td>
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<td>flashes for that output if voltage is present. If LED’s do not flash, or if no voltage is present</td>
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<td>at output terminals during flash, replace the board.</td>
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## Collector Information

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
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<tbody>
<tr>
<td>Model Number</td>
<td></td>
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<tr>
<td>Serial Number</td>
<td></td>
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<tr>
<td>Ship Date</td>
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<td>Installation Date</td>
<td></td>
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<tr>
<td>Filter Type</td>
<td></td>
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<tr>
<td>Collected Dust</td>
<td></td>
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<tr>
<td>Dust Properties:</td>
<td>Kst:______ Pmax:______ MIE:______ MEC:______</td>
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<tr>
<td>Accessories</td>
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<tr>
<td>Other</td>
<td></td>
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<tr>
<td>Date</td>
<td>Service Performed</td>
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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.

This product is provided subject to Donaldson’s Terms and Conditions of Sale, a copy of which is available on our website or by calling our customer service line at 1-800-365-1331.

Parts and Service

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

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donaldsontorit.com

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.