

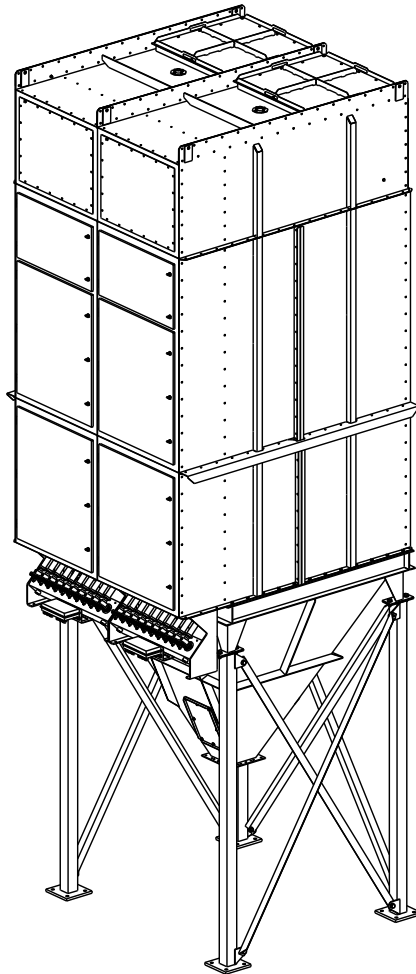


## Dalamatic® Cased

DLMC 1/2/15, 1/3/15, 1/4/15, 1/5/15, 1/7/15, 2/2/15, 2/3/15, 2/4/15,  
2/5/15, 2/6/15, 2/8/15, 3/3/15, 3/5/15, 3/6/15, 3/7/15, 3/8/15, 4/5/15 and  
4/8/15 - Units Built After July 2006

## Installation and Operation Manual

Installation, Operation, and Service Information



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

Illustrations are for reference only as actual product may vary.



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



**WARNING**

Process owners/operators have important responsibilities relating to combustible dust hazards. Process owners/operators must determine whether their process creates combustible dust. If combustible dust 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, insuring that combustible dust 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.

**Data Sheet**

Model Number _____	Serial Number _____
Ship Date _____	Installation Date _____
Customer Name _____	
Address _____	
_____	
Filter Type _____	
Accessories _____	
Other _____	



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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**

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

## Description

The Dalamatric Cased, Model DLMC, dust collectors are continuous-duty collectors with bag-style filters designed to handle product recovery applications and operations generating nuisance dust. The DLMC provides continuous filtration and high collection efficiency while maintaining a relatively constant system resistance. Standard sizes range from 323 to 5164 sq ft (30 to 480 sq meters) of filter area. A solid-state timer provides the interface for filter cleaning control.

Options include a pyramid hopper for use with a 55-gallon drum or rotary airlock, a trough hopper for use with a screw conveyor, or hoppers for use with bin-style, dust disposal pails.

## Purpose and Intended Use



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

Do not misuse or modify.

The DLMC separates solid particulate from an airstream as part of a manufacturing process.

The DLMC is commonly used in the chemical, mineral, food, plastic, metal compound, and pharmaceutical industries. High temperature applications are possible with attention to gaskets, caulking, and filter media choices. Extreme conditions may require special paint and structural modifications.

Although primarily designed for negative pressure systems, the DLMC can be used under positive pressure. Contact Donaldson Torit for information on positive pressure systems.

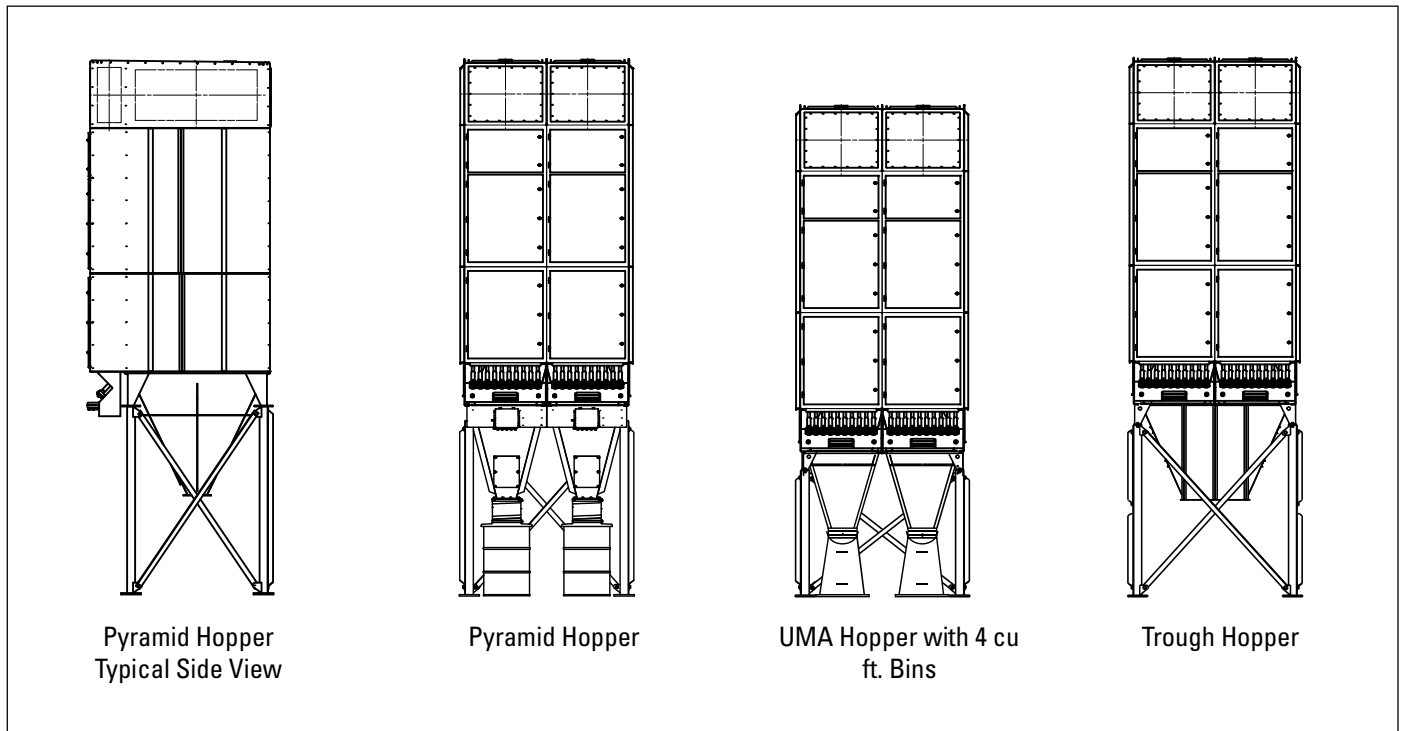


Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials 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.

## Rating and Specification Information



All Units (are rated for the following loads as calculated per relevant sections of the IBC 2006 code\*):

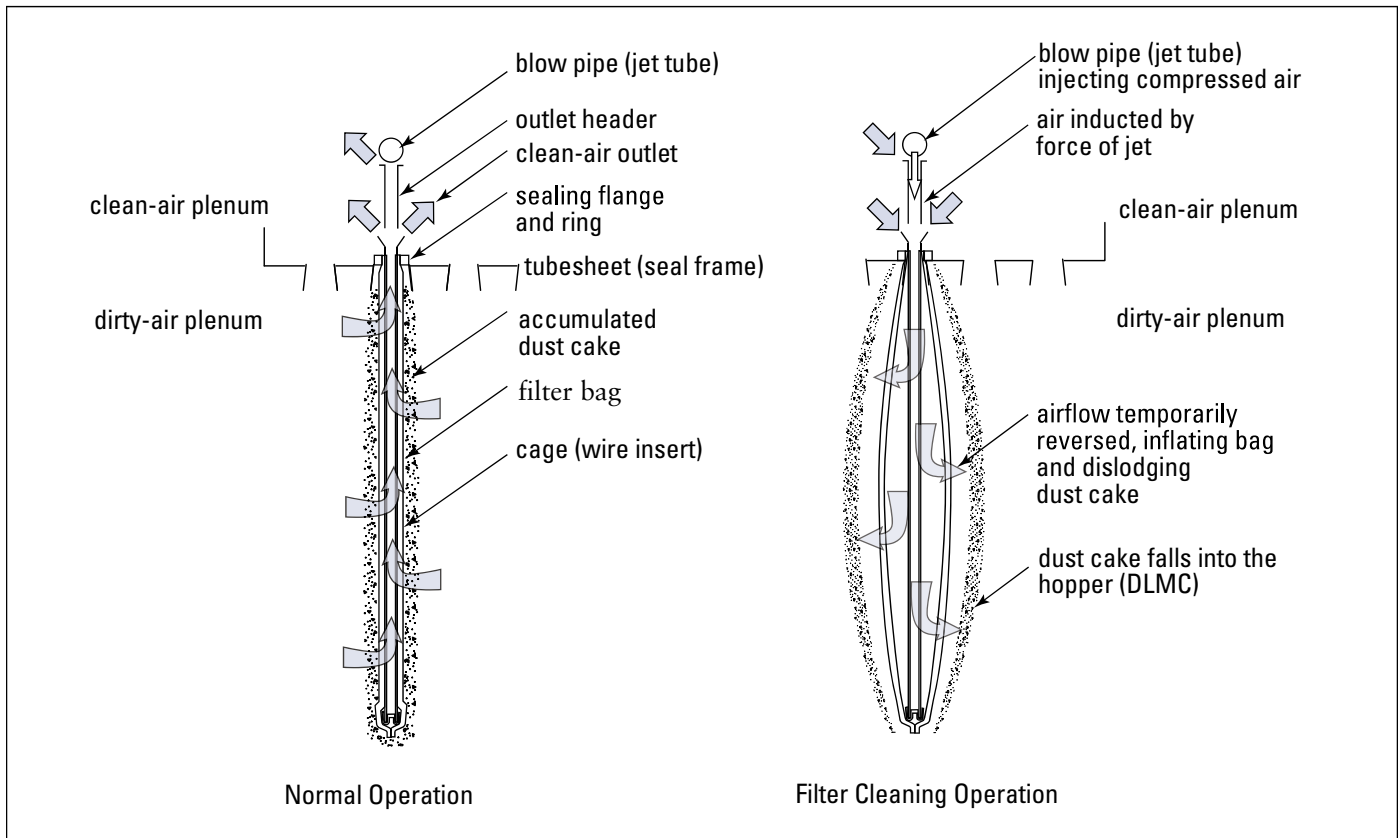
Seismic Spectral Acceleration,  $S$  ..... 1.5 g  
 Seismic Spectral Acceleration,  $S_1^s$  ..... 0.6 g  
 Installed Unit Base Elevation ..... Grade  
 Occupancy Category ..... II  
 Compressed air, maximum psig ..... 90-100  
 Housing rating, inches water gauge ..... +/- 20  
 Power and controls ..... 120-Volt 50/60 Hz

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

## Operation

During normal operation, dust-laden air is drawn to the filter bags. The velocity is reduced and natural pre-separation, caused by the effects of gravity, takes place with larger particulate falling directly to hoppers and fine particles collecting on the outside surface of the filter bag. Clean, filtered air passes to the center of the bag and discharges through the clean-air outlet.

Filter cleaning is completed using pulse-jet technology. A blow pipe (jet tube) positioned over each filter bag distributes a pulse of compressed air through the filter. As the compressed air enters the filter bag, airflow is temporarily reversed, and the bag inflates dislodging the dust cake formed on the outside surface of the bag. The bag deflates, the dust cake falls into the hopper, and exits through the hopper outlet.



Unit Operation

## Inspection on Arrival

1. Inspect unit on 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 unit 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 unit 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 unit 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 unit 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 unit prior to, or during unit installation.

### NOTICE

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

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

## Installation



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

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.

The unit is suitable for either indoors or outdoors. 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, deflagration and other applicable loads. Consult a qualified engineer for final selection of foundation or support framing.

### Anchorage

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

Anchor sizes shown are provisional, as final anchor sizing will depend on jobsite load conditions, collector location, foundation/framing design variables and local codes. Consult a qualified engineer for final selection of anchors.

## Site Selection, Outdoor

### **NOTICE**

When outdoor locations are selected, always mount motors with drain holes pointed down for proper drainage of moisture.

Locate the collector to minimize directional changes in ducts, avoiding elbows immediately in front of the inlet. Ensure easy access to electrical supply and compressed-air connections, solids collection containers, and routine maintenance.

Consider the effects of condensation caused by the temperature difference between the process airstream and outdoor temperatures.

Building codes or zoning requirements may restrict overall height, require screening, or regulate the distance from lot lines.

## Site Selection, Indoor

Locate the collector to ensure easy access to electrical and compressed-air connections, solid collection containers, and routine maintenance.

Consider forklift access for solid-collection container removal.

Locate the collector to minimize directional changes in ducts. Avoid elbows immediately in front of the inlet.

Provide appropriate clearance from heat sources and avoid interference with utilities.

## Unit Location

### **WARNING**

Donaldson Torit equipment is not designed to support site-installed ducts, interconnecting piping, or electrical services. All ducts, piping, or electrical services supplied by others 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**

If combustible materials will be processed through this collector, local codes may require the collector be located either outside or adjacent to an exterior wall to accommodate devices related to a fire or explosion mitigation strategy. Consult local codes prior to installation.

Locate the collector to ensure easy access to electrical and compressed-air connections and routine maintenance.

## Rigging Instructions

### Suggested Tools & Equipment

Clevis Pins and Clamps	Lifting Slings
Crane or Forklift	Pipe Sealant
Drift Pins	Pipe Wrenches
Drill and Drill Bits	Screwdrivers
End Wrenches	Socket Wrenches
Adjustable Wrench	Spreader Bars
Torque Wrench (inch/lbs, 9/16-in Socket)	

## Hoisting Information

### **WARNING**

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

Do not lift unit by the door handles.

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.

The lifting lugs provided have been designed to support the individual sections of the collector as shipped to the site. Carefully follow the assembly sequence to avoid exceeding the load capacity of the lifting lugs.

Use all lifting points provided.

Use clevis connectors, not hooks, on lifting slings.

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

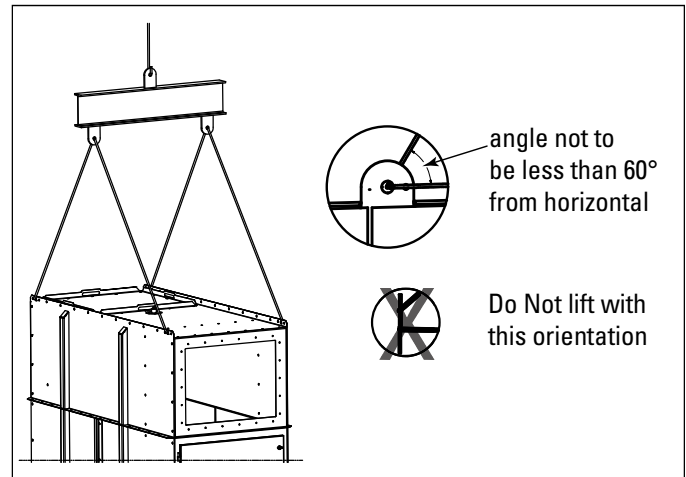
Check the Specification Control drawing for weight and dimensions of the unit, subassemblies, and components to ensure adequate crane capacity.

Allow only qualified crane operators to lift the equipment.

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

Lift unit, filter section, and accessories separately, and assemble after unit is in place. Do not attempt to lift a completely assembled unit.

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



Recommended Lifting

## Electrical Wiring

### **WARNING**

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

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

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

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 unit's rating plate for required voltage.

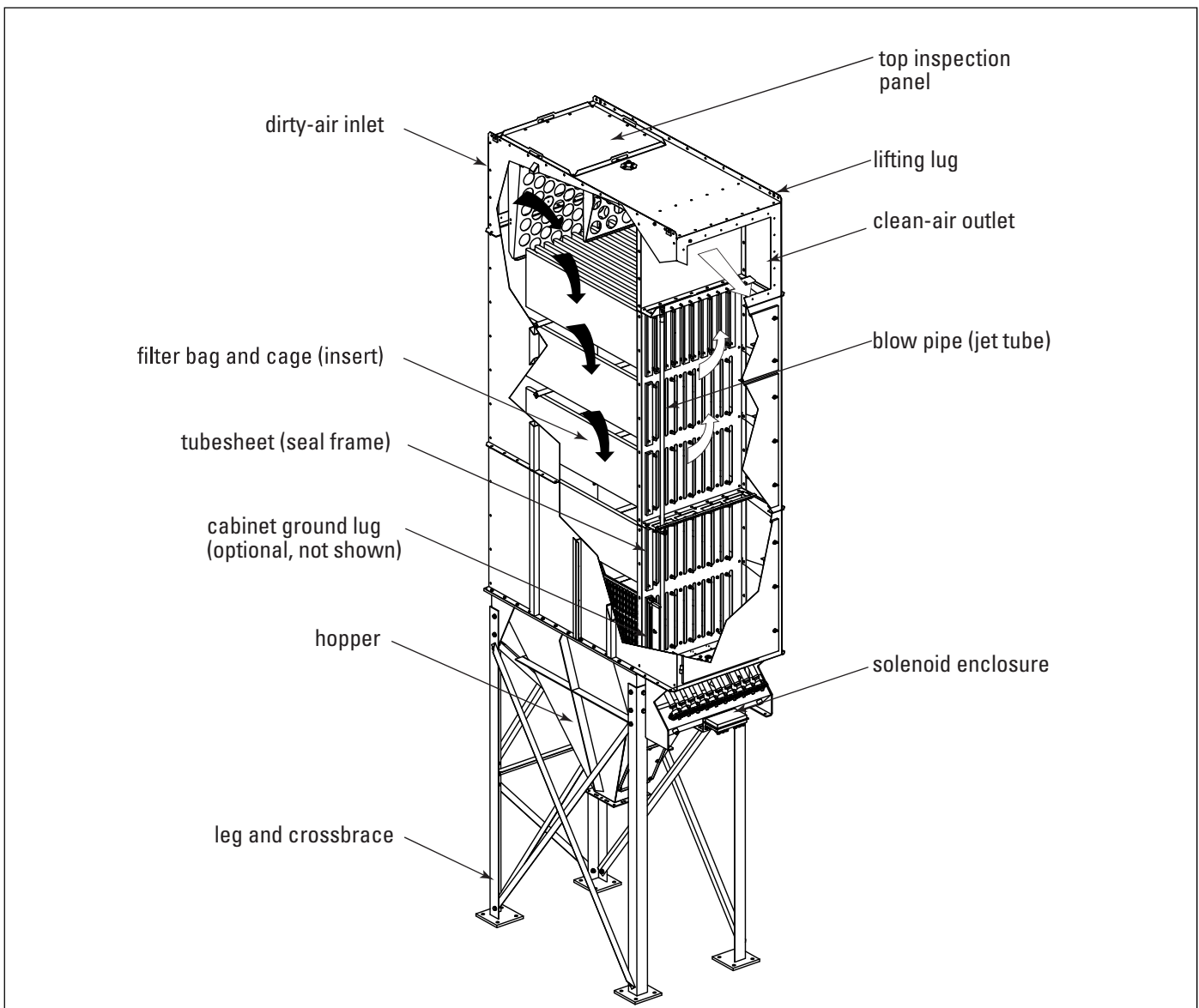
If the unit is not furnished with a factory-mounted disconnect, an electric disconnect switch having adequate amp capacity shall be installed in accordance with Part IX, Article 430 of the National Electrical Code (NFPA No. 70-latest edition). Check unit's rating plate for voltage and amperage ratings.

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

## Standard Equipment

Dalamatic Cased dust collectors are delivered partially assembled in sections compatible with truck capacity and load restrictions. All models require field assembly of the leg, hopper, filter section, compressed air manifold, and ducts.

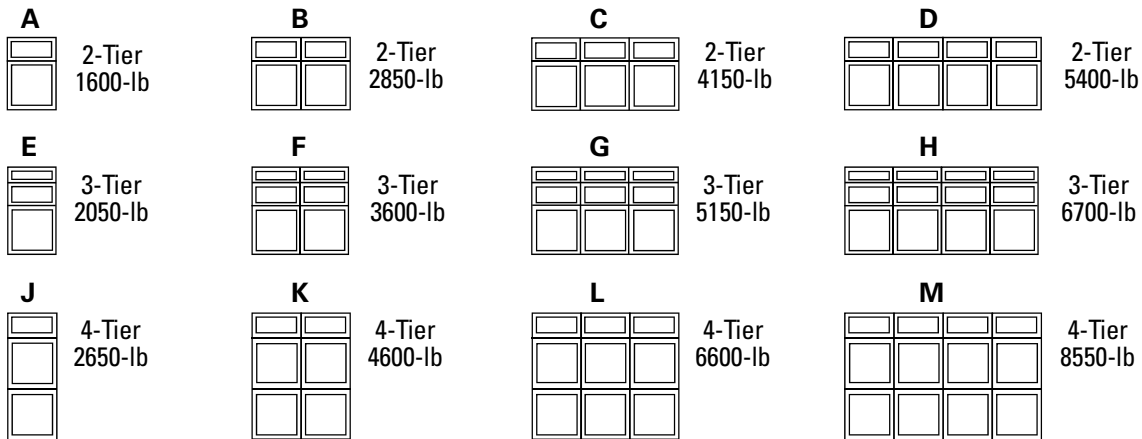
Typical systems include one of several hopper arrangements designed for compatibility with various solids-handling containers. A typical DLMC also has a steel structure to support the unit.



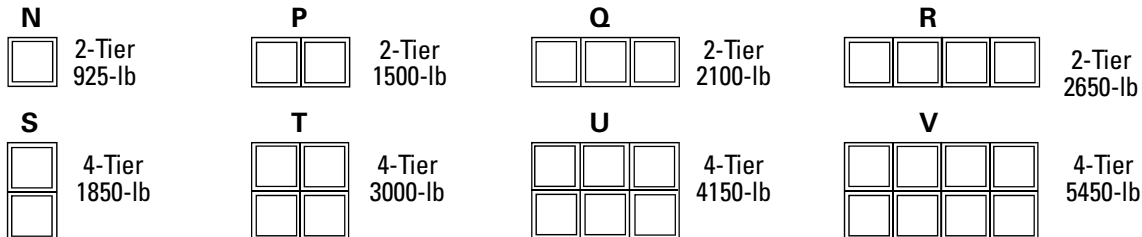
Typical Installation

## Shipping Information

### Upper Section



### Lower Section, tarp required with open top



All weights are approximate  
Front view is shown

Banks	2-Tier	3-Tier	4-Tier	5-Tier	6-Tier	7-Tier	8-Tier
1	(1) A	(1) E	(1) J	(1) E, (1) N	(1) A, (1) S	(1) E, (1) S	(1) J, (1) S
2	(1) B	(1) F	(1) K	(1) F, (1) P	(1) B, (1) T	(1) F, (1) T	(1) K, (1) T
3	(1) C	(1) G	(1) L	(1) G, (1) Q	(1) C, (1) U	(1) G, (1) U	(1) L, (1) U
4	(1) D	(1) H	(1) M	(1) H, (1) R	(1) D, (1) V	(1) H, (1) V	(1) M, (1) V
5	(1) B, (1) C	(1) F, (1) G	(1) K, (1) L	(1) F, (1) P, (1) G, (1) Q	(1) B, (1) T, (1) C, (1) U	(1) F, (1) T, (1) G, (1) U	(1) K, (1) T, (1) L, (1) U
6	(2) C	(2) G	(2) L	(2) G, (2) Q	(2) C, (2) U	(2) G, (2) U	(2) L, (2) U
7	(1) C, (1) D	(1) G, (1) H	(1) L, (1) M	(1) G, (1) Q, (1) H, (1) R	(1) C, (1) U, (1) D, (1) V	(1) G, (1) U, (1) H, (1) V	(1) L, (1) U, (1) M, (1) V
8	(2) D	(2) H	(2) M	(2) H, (2) R	(2) D, (2) V	(2) H, (2) V	(2) M, (2) V
9	(3) C	(3) G	(3) L	(3) G, (3) Q	(3) C, (3) U	(3) G, (3) U	(3) L, (3) U
10	(2) B, (2) C	(2) F, (2) G	(2) K, (2) L	(2) F, (2) P, (2) G, (2) Q	(2) B, (2) T, (2) C, (2) U	(2) F, (2) T, (2) G, (2) U	(2) K, (2) T, (2) L, (2) U

#### Example:

Model DLM 6/4/15 = 6 banks wide x 4-tiers high

- Find the number of banks in the first column and follow the row to the 4-Tier column.
- This units ships with two upper sections (L).
- Hopper and legs ship separate.

	Pyramid Hopper and Legs	Single Outlet Pyramid Hopper and Legs	Trough Hopper and Legs	Manifold** Assembly
1-Bank	1250-lb*	NA	NA	2/5-Tier
2-Bank	1650-lb*	1400-lb*	1300-lb*	200-lb/Bank
3-Bank	2050-lb*	1850-lb*	1600-lb*	6/8-Tier
4-Bank	2800-lb*	NA	1850-lb*	225-lb/Bank

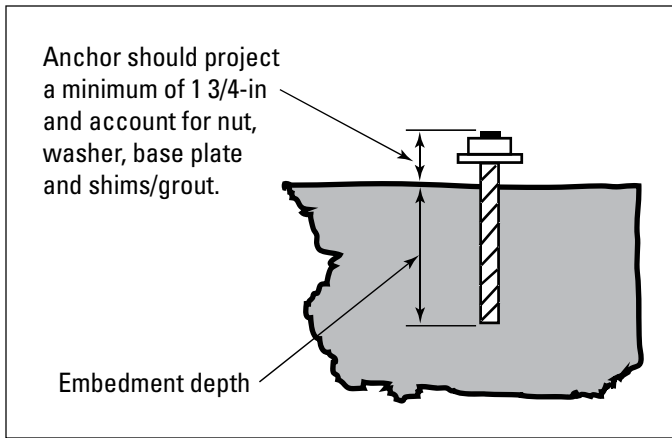
\*Add 150-lb for 72-in legs

\*\*Includes electrical, valves, tubing, and manifold

## Unit Installation

Note: Locate the DLMC Assembly Drawing and the Hopper Leg Pack Drawing supplied with the unit.

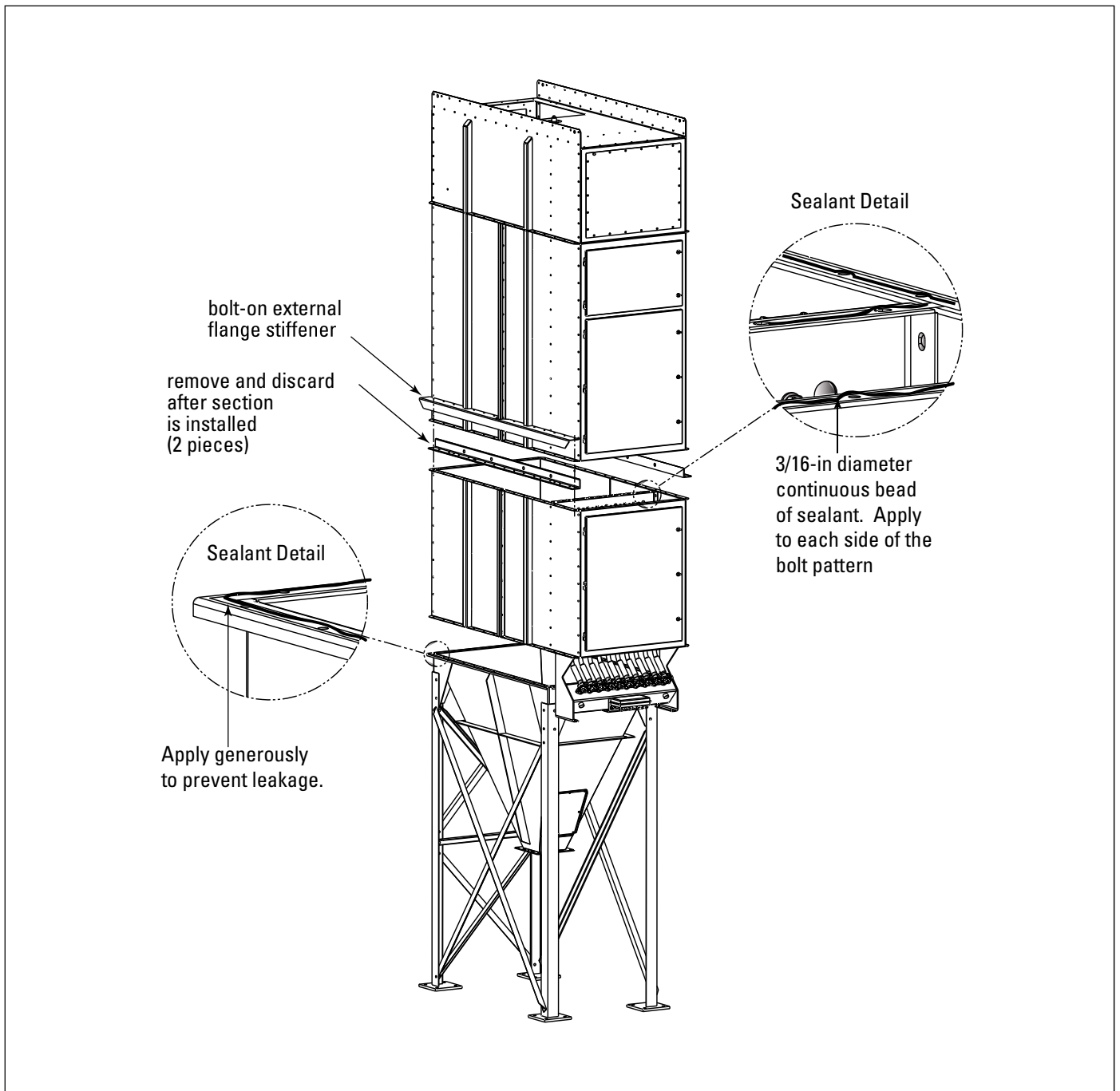
1. Carefully follow the caulking and sealing recommendations during the assembly process.
2. Prepare the foundation or support framing in the selected location. Locate and install anchors.



Typical Foundation Anchor

Provisional Anchor (per Rating and Specification Information)			
Model	Anchor	Embedment in 3000psi Concrete	Anchoring System or Equivalent
All	1-in diameter 304 SS threaded rod	9-in	Hilti HIT-RE 500 Epoxy Adhesive Anchoring System or equivalent
Notes:			
1. Final anchor design should account for site conditions, local codes and design code considerations such as concrete edge distances and concrete strength.			
2. Quantity of anchor bolts should match the number of holes provided in the base plates.			

3. Assemble the legs and cross bracing.
  4. Level all horizontal and vertical members. Use shims under legs if necessary.
  5. Lift hopper into position over the leg structure and lower slowly.
  6. Use drift pins to align holes.
  7. Secure joints with bolts, washers, and hex nuts supplied.
  8. Tighten all hardware on legs and cross braces before removing crane.
  10. Apply sealant to the hopper flange. See Sealant Detail.
  11. Lift the filter section into position over the hopper and lower slowly.
  12. Use drift pins to align holes. Install bolts loosely until all bolts are in place. If the collector has vertical site joints, apply sealant as shown before bolting together.
  13. Install the bolts at the clean-air plenum base to hopper flange first.
  14. Access the tubesheet (seal plate) joining bolts through the front access doors. Take special care with sealant at the tubesheet joint between the clean- and dirty-air plenums. See Tubesheet Joining Bolts. Tighten bolts to distribute sealant.
  15. Secure all bolts, washers, and hex nuts. Tighten uniformly to form an airtight seal.
  16. Install upper filter sections and bolt on external flange stiffeners the same way if shipped separately.
- NOTICE**
- Models with horizontal site joints have lifting lugs that must be removed before installing the upper filter sections.
17. Ducts must be independently supported.



Sealant Detail

## Manifold Installation

### CAUTION

The maximum allowable pressure for the compressed air supply is noted below. Air supply above a maximum may result in personal injury and/or property damage. Use the recommended compressed air pressure setting referenced in Rating and Specification Information.

#### Maximum Allowable Air Pressure

2 Tier Units	55-psi
3 Tier Units	65-psi
4-8 Tier Units	90-100 psi

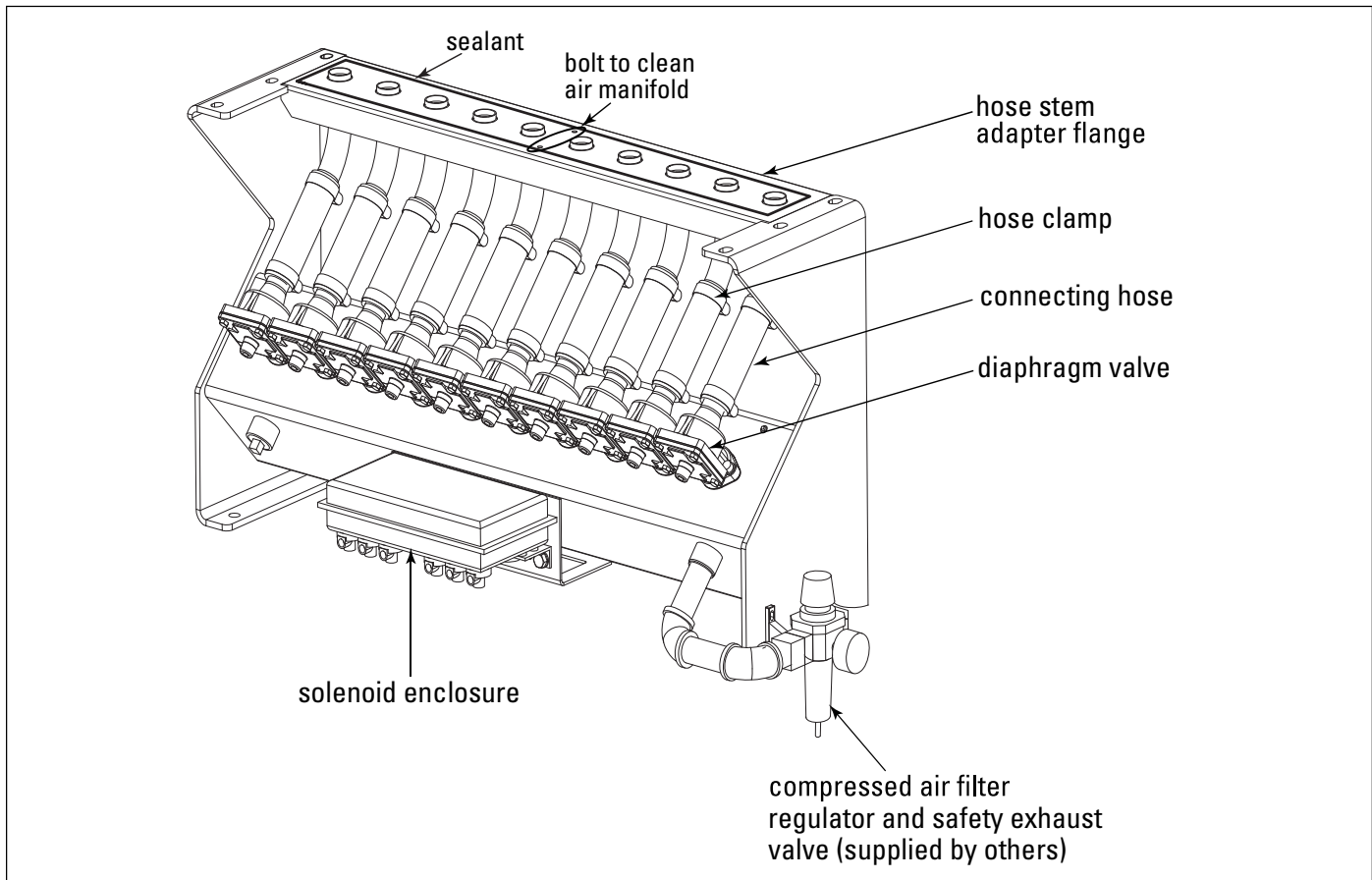
1. Apply a suitable sealant, based on temperature and application, to the hose stem adapter flange and completely circle flange shown in manifold illustration.

2. Lift the assembly up to fit against the bottom of the clean-air plenum and bolt into position.

### NOTICE

For ease of installation, mount manifold assembly to a pallet and lift into place.

3. Remove plastic plug. If necessary, install steel plug from the opposite tap to the plug.
4. Carefully tighten the blow pipes.
5. Remove all plastic plugs.
6. Bolt center of manifold assembly (two bolts) to the collector clean air manifold.



Manifold

## Compressed Air Installation

### **WARNING**

Turn compressed-air supply OFF and bleed 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 downstream pressure when closed and include provisions to allow closed-position locking.

### **NOTICE**

Do not set compressed-air pressure above the maximum allowable pressure. Component damage can occur.

All compressed air components must be sized to meet the maximum system requirements of the 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 unit's compressed-air manifold.

### Using Existing Compressed-Air Supply

Install a customer-supplied shut-off valve, bleed-type regulator with gauge, filter, and automatic condensate valve in the compressed-air supply line to the unit.

### Using Compressor-Supplied Compressed Air

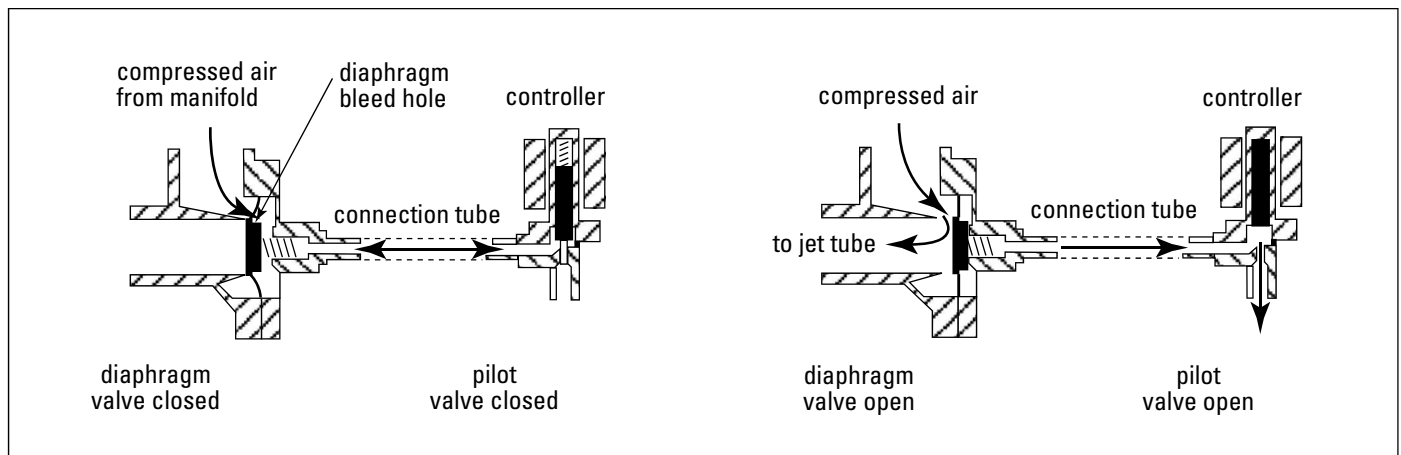
1. Use a compressor of adequate capacity. An overloaded compressor will produce contaminated, moisture-laden air.
2. Avoid locating the air intake in an excessively polluted area and install an air intake filter.
3. The piping between the compressor and the unit should act as a cooling device for the compressed air. A typical requirement for a smaller installation would be 30-ft of 3/4 to 1 1/4-in diameter pipe. See Compressed Air Requirements. Install pipe to provide a fall in the direction of airflow.
4. Install a customer-supplied shut-off valve, bleed-type regulator with gauge, filter, and automatic condensate valve in the compressed-air supply line.

### **NOTICE**

The use of a moisture separator is strongly recommended.

If the collector is installed outdoors, the compressed-air dew point must be less than the lowest temperature expected.

If a moisture separator needs to be purchased, please contact the Parts Express Line – 800-365-1331.



Compressed Air Pulse Cleaning Control System

## Solid-State Timer Installation

### **WARNING**

Electrical service or maintenance work must be performed by

a qualified electrician and comply with all applicable national and local codes.

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

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

The solid-state timer is an electronic timer used to control the filter cleaning system.

1. Using the wiring diagram supplied, 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. Ensure the program jumper is located on the proper number pin corresponding with the number of solenoid valve outputs being used.
3. With power supply ON, check the operation of the solenoid valves. The valves should open and close sequentially at factory set 12-second intervals.
4. If a Delta P, Delta P Plus, Photohelic gauge or similar device is used to control the solid-state timer and the jumper on the pressure switch portion of the timer is removed, the solenoid valves pulse only when the differential pressure reaches the high-pressure setpoint. The valves 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 115VAC).

Do not mount the solid-state timer on the unit. Mechanical vibration can damage the control.

## Solenoid Connection

The unit is equipped with 115-Volt solenoid valves that control the pulse-cleaning valves, which clean the filters.

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

**Note:** Wire the solenoids to the solid-state timer following the wiring diagram supplied with the unit. 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.

If a Delta P Plus Control is supplied, OFF-line cleaning is incorporated as a standard function.

**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 110-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 12-seconds, adjustable from 1.5-sec minimum to maximum 30-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**

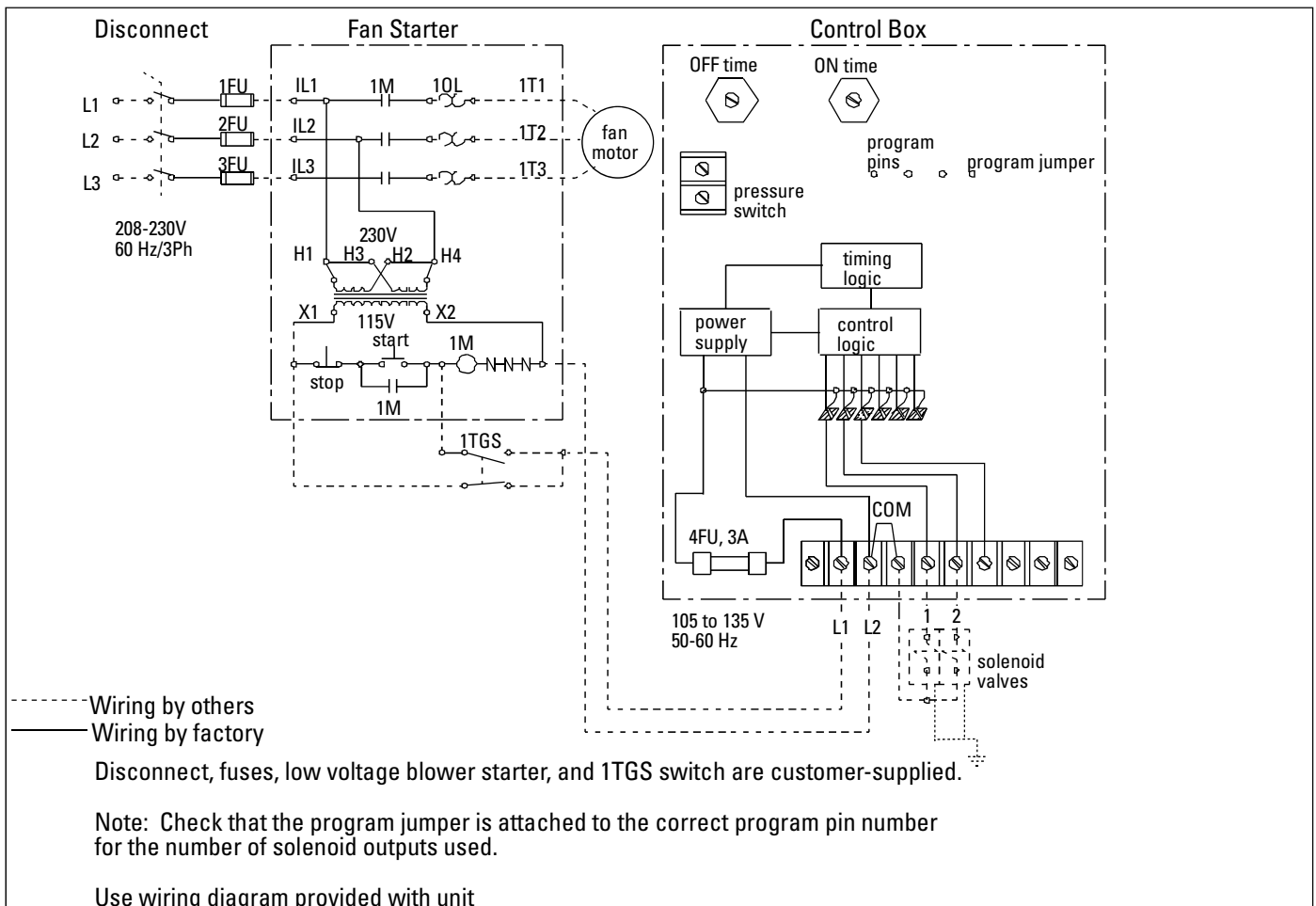
115-Volt at 19.7 watts each

**Compressed-Air**

See compressed air requirements in this manual.

**NOTICE**

Do not increase supply pressure above 100-psig. Component damage can occur.



Solid-State Timer Typical Wiring Diagram

## Preliminary Start-Up

Instruct all personnel on safe use and maintenance procedures.

**WARNING** Electrical work during installation and start-up 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.

Turn compressed air supply OFF and bleed 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 that the unit is securely bolted to the floor or mounting pad.
2. Check that all duct installation is complete and all removable panels are in place.
3. Check that all hopper outlets are fitted with containers or closed to prevent airflow from entering the system through the hopper outlets.
4. Check all electrical connections for tightness and contact.
5. Motor and fan should typically be wired for clockwise rotation when viewed from the back of the motor. Check for proper rotation as noted on the fan housing.

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

To reverse rotation, three-phase power supply:  
Turn electrical power OFF at source and switch any two leads on the motor junction box.

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

6. Check for and remove all loose items in or near the inlet and outlet of the unit.

7. Check that all remote controls are wired into the control system 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. See Collector Design Specifications in this manual.
11. Turn the blower motor ON.

**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.

11. Turn the Solid-State Timer ON and check that valves operate in the proper sequence by monitoring the LEDs on the front panel.
12. Verify operation of interlocks and audible warning system, if equipped.

### Typical Start-Up Sequence

1. Turn powered discharge components, such as screw conveyor or rotary airlock, ON.
2. Turn the equipment being served ON.
3. Turn Solid-State Timer and compressed-air supply ON.
4. Turn main blower ON, if equipped.

### Typical Shut-Down Sequence

To clear residual deposits from the filter bags, filter body, and equipment served:

1. Turn main blowers OFF, leaving compressed-air supply ON to allow off-line filter cleaning.

**NOTICE** Contact your Donaldson representative for shutdown instructions for explosion vented units.

2. Wait 10 to 15 minutes and turn Solid-State Timer and compressor OFF.
3. Turn rotary valves, screw conveyors, or other discharge devices OFF after the dust dislodged by the aftershift cleaning is removed from the hopper.

## Maintenance Information

Instruct all personnel on safe use and maintenance procedures.

### **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 electrical power sources 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 and bleed lines before performing service or maintenance work.

### **NOTICE**

Do not set compressed-air pressure above maximum allowable pressure. Component damage can occur.

All compressed air components must be sized to meet the maximum system requirements of the 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 unit's compressed air manifold.

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.

2. Monitor pressure drop across filters to determine the status of the filters. Normal filter pressure drop is 3 to 5" wg depending on air-to-media-ratio and the type and volume of dust being collected.

Abnormal changes in pressure drop 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 flow usually restores the filters to normal pressure drop.

3. Monitor exhaust for visible emissions.
4. Monitor dust disposal.
5. Periodically inspect the integrity of the filter housing and the support structure.
6. Explosion relief vents should be inspected regularly to ensure the bursting panels are intact and clear of obstruction. During winter, take precautions to prevent build-up of snow or ice on vents.

## 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.

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

## Filter Removal and Installation



### WARNING

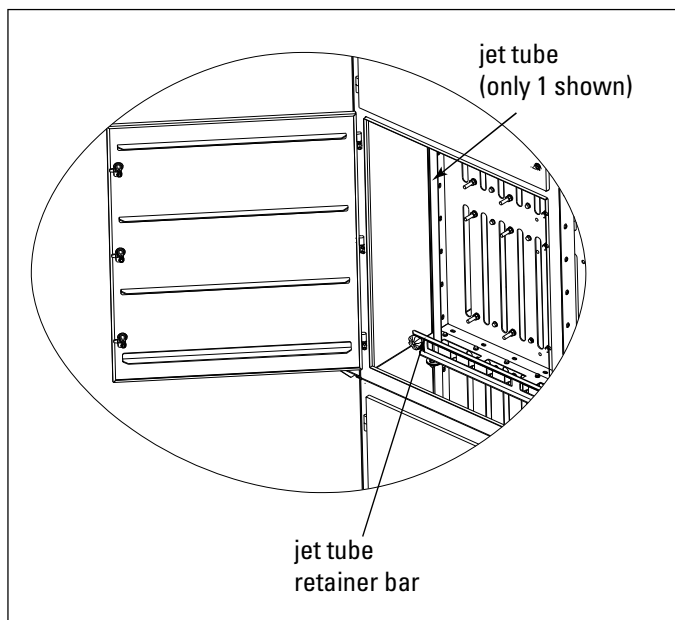
Use proper safety and protective equipment when removing contaminants and filters.

Dirty filters may be heavier than they appear.

Use care when removing filters to avoid personal injury.

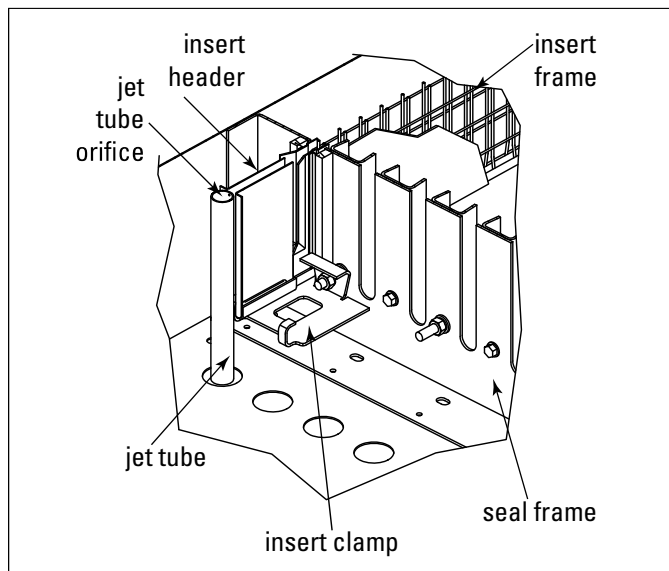
### Filter Removal

1. Activate the pulse cleaning for 10 to 15 minutes to remove excess dust from the filter bags.
2. Turn power off and lock out electrical power sources before performing service or maintenance work.
3. Open access doors and remove blow pipe (jet tube) retainer.



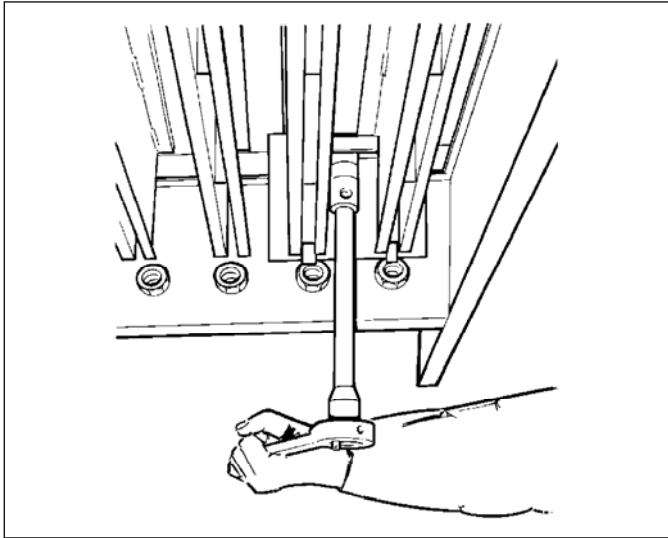
Jet Tube Retainer

4. Remove blow pipes (jet tubes) and set aside. Cover the openings to the diaphragm valves.



Filter Bag Detail

- Remove the hex nuts securing the wire cage (insert). Remove the clamps and withdraw the cage and filter bag. Remove bag and inspect cage for excess corrosion, broken mesh, or other damage and replace as necessary.



Clamp and Inserts

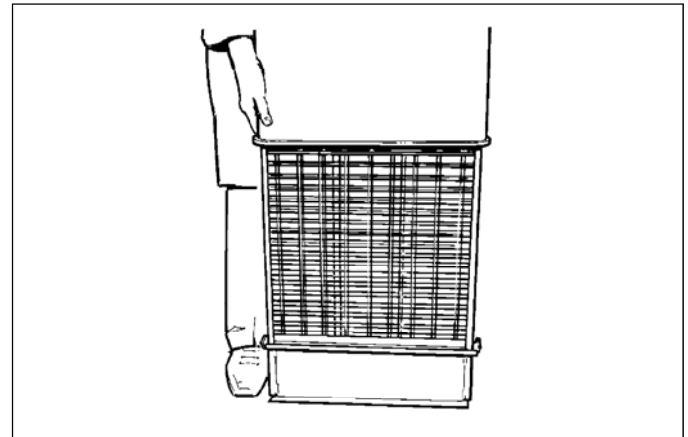
### Filter Installation

- Slide the new filter bag over the wire cage as shown. Slide bag carefully until top of bag is tight against the support frame flange.
- Place filter bag and cage assembly in tubesheet (seal frame) slots as shown. Hold insert up in the slot to prevent bag from dragging.
- Position clamps and tighten using a deep well socket and extension. Do not overtighten. Maximum recommended torque is 20 ft/lb.

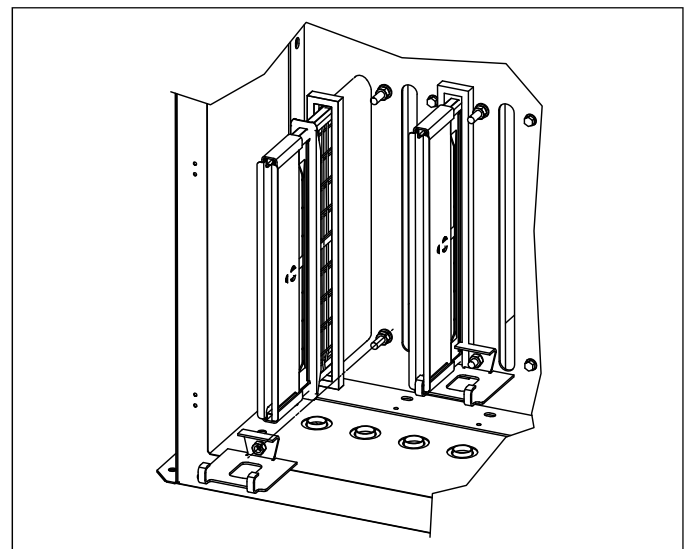
**NOTICE**

Tighten bottom clamp first.

- Repeat to install all bags.



Filter Bag Assembly



Filter Bag Installation

- Carefully replace blow pipes (jet tubes) with the orifices directed toward the filter bag. Make sure the jet tube is fully seated (tolerance fitted) into the hose stem adapter.

**NOTICE**

Check and clear any plugged orifices in the blow pipes (jet tubes) prior to placing them back in the collector.

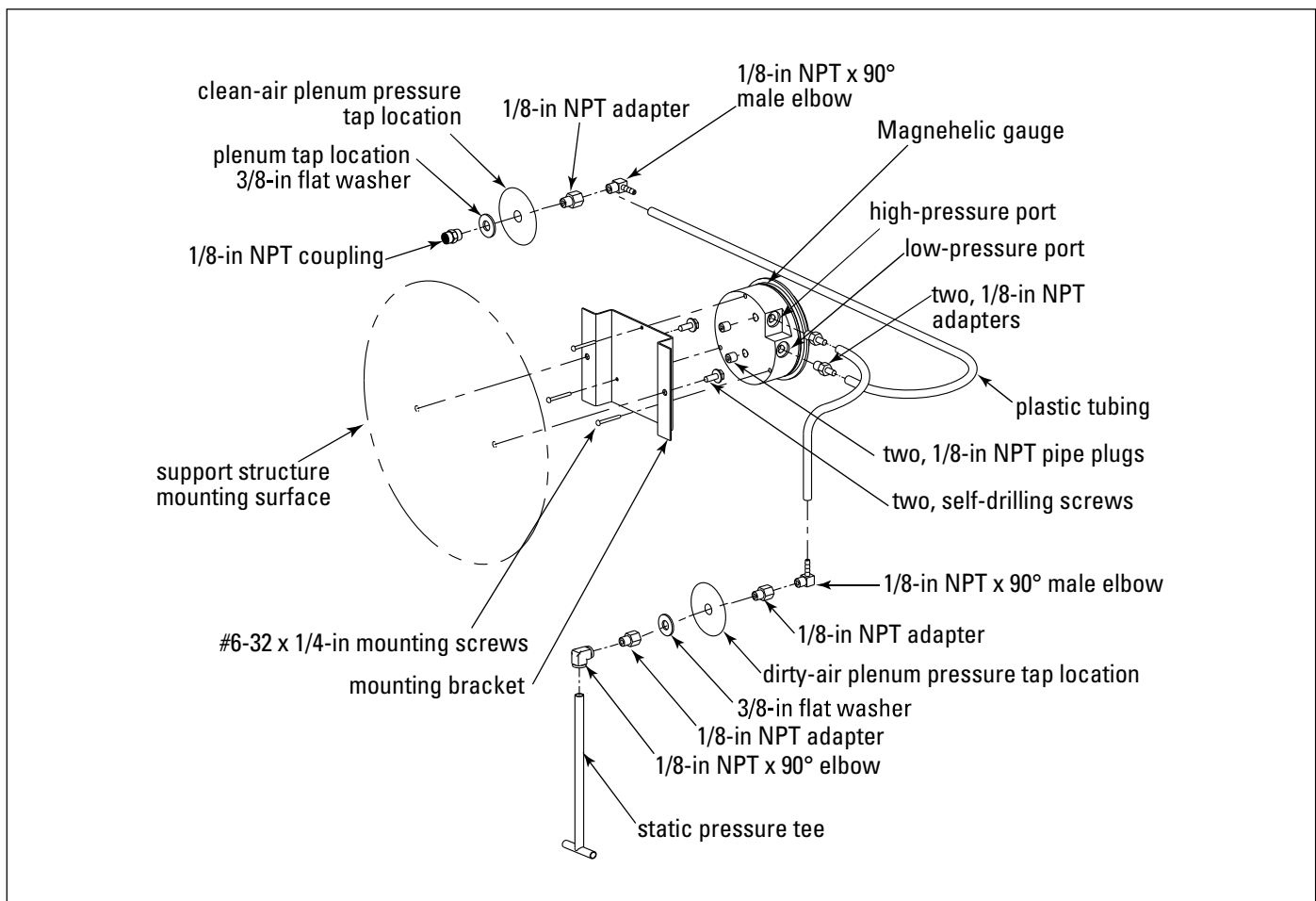
- Reinstall blow pipe (jet tube) retainer bars.

## Optional Equipment

### Magnehelic Gauge®

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



Magnehelic Gauge Installation

## Photohelic Gauge®



### WARNING

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

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

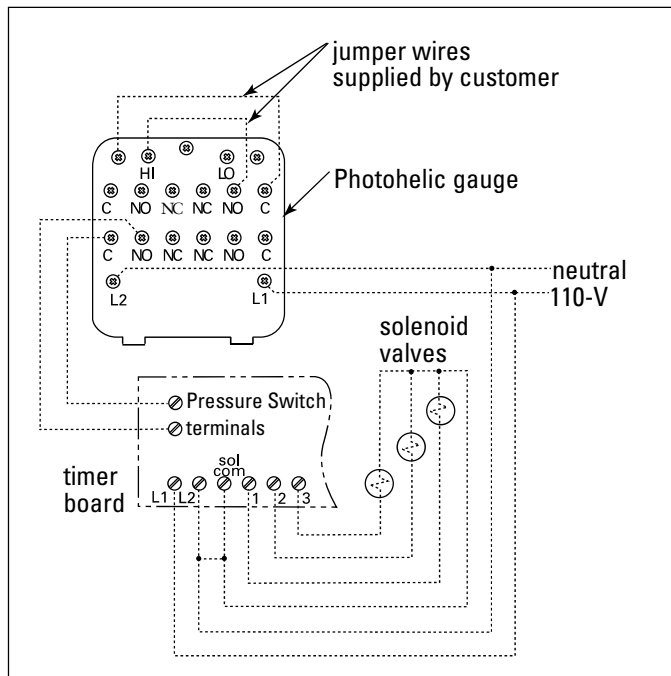
Do not install in classified hazardous atmospheres without an enclosure rated for the application.

The Photohelic combines the functions of a differential pressure gauge and a pressure-based switch. The gauge 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.

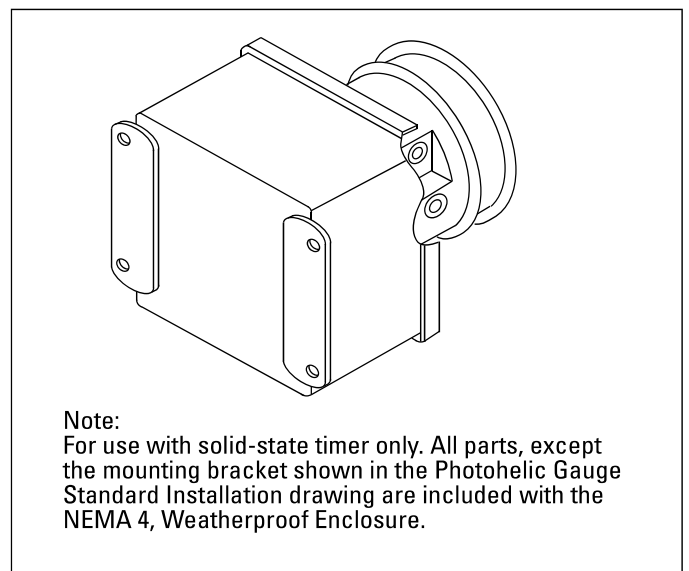
1. Choose a convenient, accessible location on or near the unit for mounting that provides the best visual advantage.
2. Mount the gauge to the remote panel or door using the mounting ring, retaining ring, and four #6-32 x 1

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.

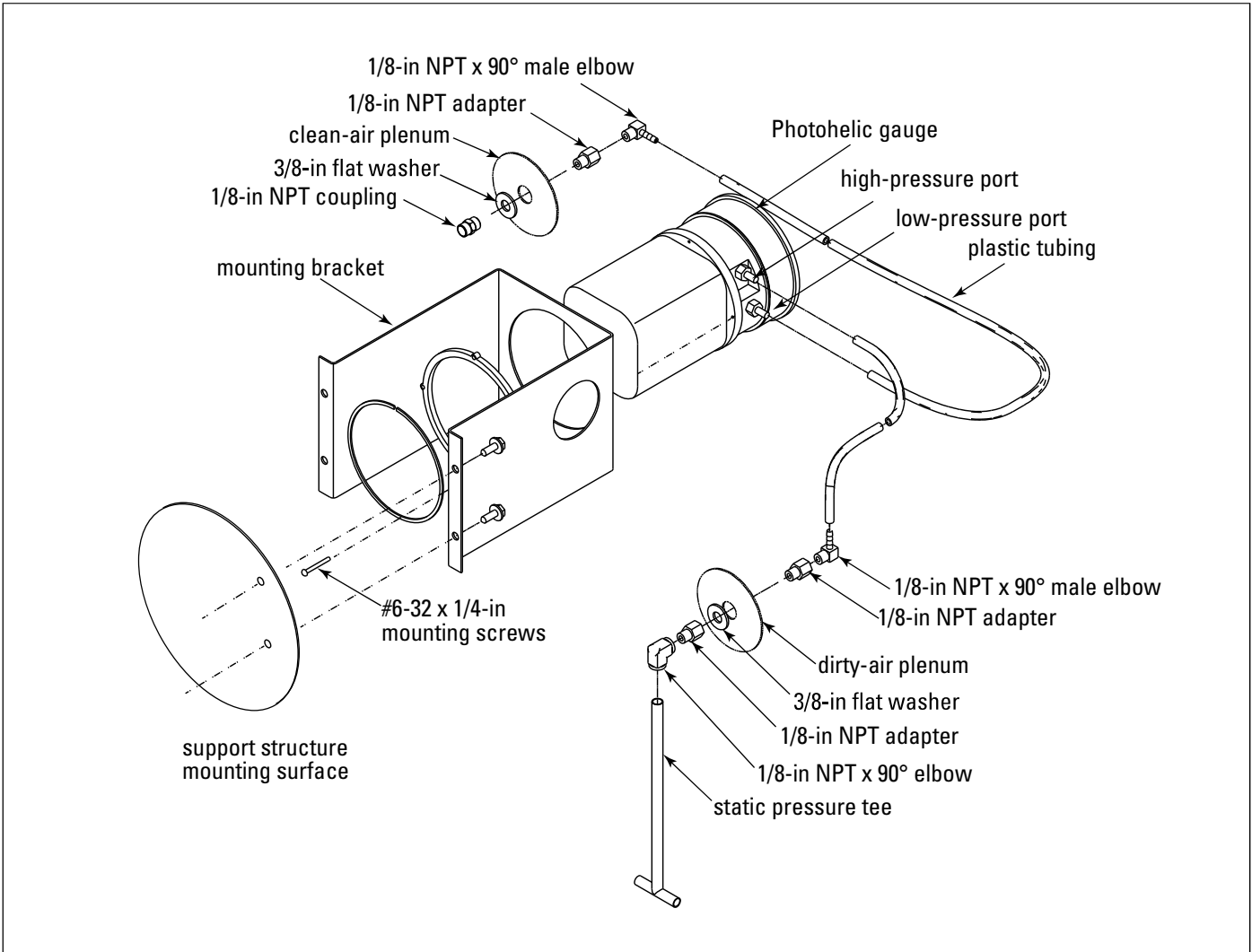


Photohelic Gauge Wiring Diagram



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

Photohelic Gauge in Optional NEMA 4 Weatherproof Enclosure



Photohelic Gauge Installation

## Delta P Control

### Description

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

#### Filter Cleaning

When the pressure drop across the filter bags reach the control's High setpoint, the control closes an output relay allowing a timer to trigger the cleaning valves sequentially. When the control senses that the pressure drop has decreased to the Low 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 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 Control also provides an input connection for a remote alarm reset.

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



Delta P Control Display

## Delta P Plus Control

### Description

The Delta P Plus Control 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 Control 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 Control monitors the pressure on both sides of the tubesheet while the unit is running. The Delta P Plus Control measures the pressure drop and provides a visual display in inches water gauge or metric (SI) units.

#### Filter Cleaning

The Delta P Plus Control offers three filter cleaning options.

1. **Differential Pressure Cleaning (DFF)** - When the pressure drop across the filters reaches the control's High setpoint, the control closes an output relay allowing a sequential timer to trigger the cleaning valves. When the control senses that the pressure drop has decreased to the Low 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. **Down Time Cleaning (DTC)** - The Delta P Plus Control

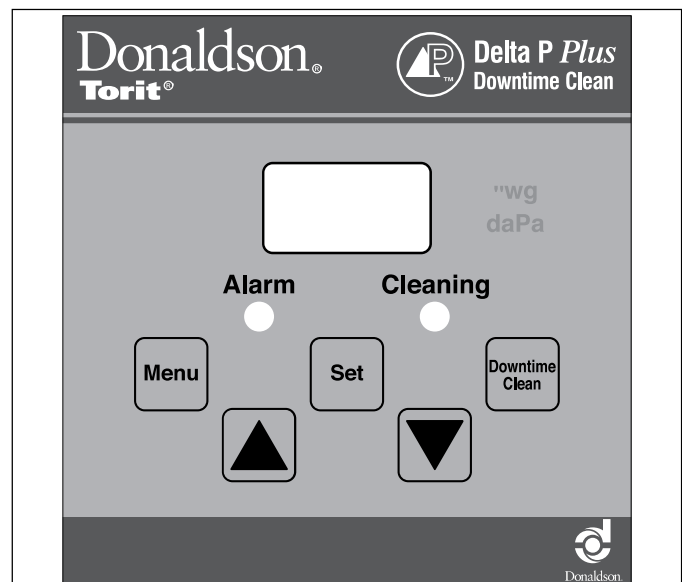
monitors the collection system. It watches for the blower to start, the pressure drop to exceed the Low setpoint, and then for the pressure drop to approach zero. After the blower has come to a stop, the Delta P Plus engages the cleaning mechanism for a pre-selected time.

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

#### Alarm

The alarm setpoint is set to a higher setting than 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 Control also provides an input connection for a remote alarm reset.

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



Delta P Plus Control Display

## Antistatic Option

Units using antistatic filter bags must be properly grounded.

1. If the collector is ordered with antistatic filter bags, the grounding lug and internal components are factory installed.
2. Connect a suitably grounded wire to the grounding lug located on the side of the collector housing.

## Interlocks and Alarms

All ancillary equipment should be interlocked to ensure correct starting and stopping sequence. See the Typical Start-Up and Typical Shut-Down procedures. Discharge equipment such as rotary airlocks or screw conveyors should be separately controlled, but interlocked with the Solid-State Timer and blower motor to prevent complete unit failure. For example, if the motor of a screw

conveyor that is not interlocked stops, the filter housing will gradually fill with dust until completely choked. Compressor failure could also cause similar blockage.

### **NOTICE**

If interlocking electrical components and possible flow interruption is not an option, installing an alarm system can help prevent sudden system failure. Use zero speed switches on rotating devices such as rotary airlocks and screw conveyors, high pressure drop alarms, low compressed-air pressure switches, or level alarms in hoppers. These devices, linked to an audible and visual alarm, provide early warning of system failure.

## Ladders and Platforms

It is recommended that the installation include suitable platforms and ladders for safe access to maintenance areas on the DLMC. If optional platforms and ladders are purchased, follow the drawings provided for proper installation.

## Explosion Vents

### **WARNING**

Personal injury, death, or property damage can result from material discharge during venting.

The material discharged during the venting of an explosion must be safely directed outdoors away from areas occupied by personnel to reduce risk of personal injury or property damage.

The risk of injury or damage can be minimized or avoided by locating vented equipment outside buildings and away from normally occupied areas.

Explosion vents should be inspected regularly to confirm physical and operational condition. Replace any damaged parts immediately.

Standard explosion vents are intended for outdoor installations only.

### **NOTICE**

Remove all shipping materials, including covers, from the explosion relief vents prior to installation. Failure to remove shipping covers will seriously compromise explosion vent operation.

Standard explosion venting calculations are based on formulas from NFPA-68 for outdoor applications only, with no duct or obstructions on the explosion vent panel.

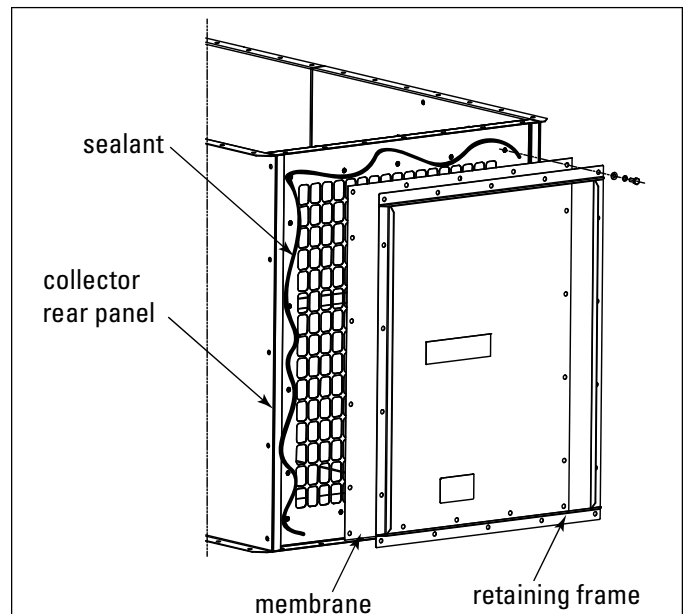
Contact Donaldson Torit for assistance in calculating specific venting requirements of equipment for other conditions..

## Explosion Vent Membrane Replacement

### **CAUTION**

Do not damage or pierce the membrane during installation. A damaged membrane will leak and fail.

1. Remove the bolts, flat washers, and hex nuts from the retaining frame and set aside.
2. Remove retaining frame and set aside.
3. Remove the Membrex™ vent panel and discard.
4. Clean old sealant and debris from the outside surface of the grid panel.
5. Apply sealant to rear panel around bolt pattern.
6. Install replacement membrane realigning the mounting holes carefully.
7. Reinstall the retaining frame using the hardware removed in Step 1. Tighten hardware equally to compress the sealant evenly.



Membrex Explosion Membrane Replacement

## Troubleshooting

Problem	Probable Cause	Remedy
<b>Blower fan and motor do not start</b>	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.
	Unit 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.
<b>Partial loss of suction</b>	Compressed air system	Check compressor for operation. Check interlocks, motor, power supply, and drive belts.
	Incorrect manifold pressure	Check pulse pressure at manifold. See Rating and Specifications in this manual.
	Excess moisture in the compressed air supply	Check that the compressed air supply is oil and moisture free.
	No pulse to diaphragm valves	Check the solenoid and diaphragm valves by feeling the rubber hose for pulse. Feel the vent opening on the solenoid valve for pulse. If all valves are affected, check that the LED on the controller is ON. If not illuminated, check power supply and printed circuit board fuse. If isolated solenoid or diaphragm valve is affected, repair or replace as necessary.
	Filters plugged	Check that the dust removal container is not full and that the equipment served is operating. Turn fan OFF and allow the controller to perform several complete cleaning cycles. Remove each filter bag, vacuum outside surfaces, and reinstall. Replace damaged or torn filters.
	Blower belt slipping	Adjust or replace the drive belts.
	Motor speed low	Check all supply voltage, phase, and motor connections.
	Fan rotation backward	Check and correct. See Preliminary Start-Up.

## Troubleshooting

Problem	Probable Cause	Remedy
<b>Total loss of suction</b>	Blower motor stopped	Check motor started overloads, fuses and interlocks. Check motor connections and windings.
	Filters plugged	Check that the dust removal container is not full and that the equipment served is operating. Turn fan OFF and allow the controller to perform several complete cleaning cycles. Remove each filter bag, vacuum outside surfaces, and reinstall. Replace damaged or torn filters.
	Obstructed ductwork	Check and remove obstructions.
<b>Clean-air outlet discharging dust</b>	Filter bags not installed correctly	See Filter Bag Replacement.
	Torn or damaged filters	Replace as necessary.



## 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. Failure to use genuine Donaldson replacement parts may void this warranty. 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.



**Donaldson.**  
FILTRATION SOLUTIONS

### Parts and Service

## Craig Equipment Company

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