

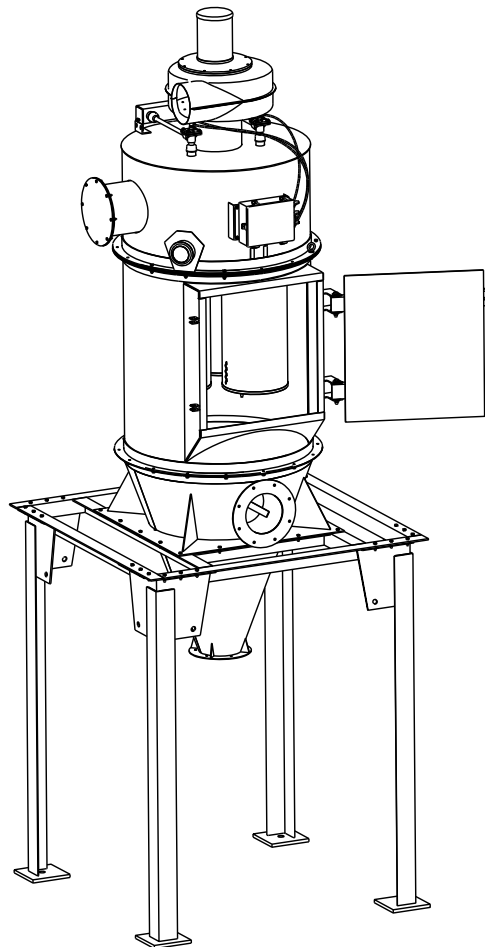


## TD Collector

TD-162 and TD-573

### Installation and Operation Manual

Installation, Operation, Service and Replacement Parts 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 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.

**Data Sheet**

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



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Magnehelic® and Photohelic® are registered trademarks of Dwyer Instruments, Inc.

### DANGER

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

### WARNING

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

### CAUTION

**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 TD dust collector is a self cleaning continuous duty collector with cartridge style filters. Continuous duty means no downtime during filter cleaning. The lower inlet allows heavier dust particles to fall directly into the hopper avoiding excessive wear on the filters. The filters hang vertically from the tubesheet and are pulse cleaned with compressed air (one at a time). The TD-162 and TD-573 are cylindrical units designed for higher vacuum operation and can be used as a pneumatic receiver. Various inlet options and explosion vents are available on this collector.

## Purpose and Intended Use



Misuse or modification of this equipment may result in personal

injury.

Do not misuse or modify.

These TD collectors may be used on nuisance dust collection where the dust concentration is light, but can also be used to handle higher grain loadings and even act as a pneumatic receiver. Some typical applications include abrasive blasting, grinding, pharmaceuticals, powder paint, sand handling and welding. Each application is different, and may require a special filter cartridge for proper dust collection. Consult with your local Torit sales representative for assistance with filter selection.

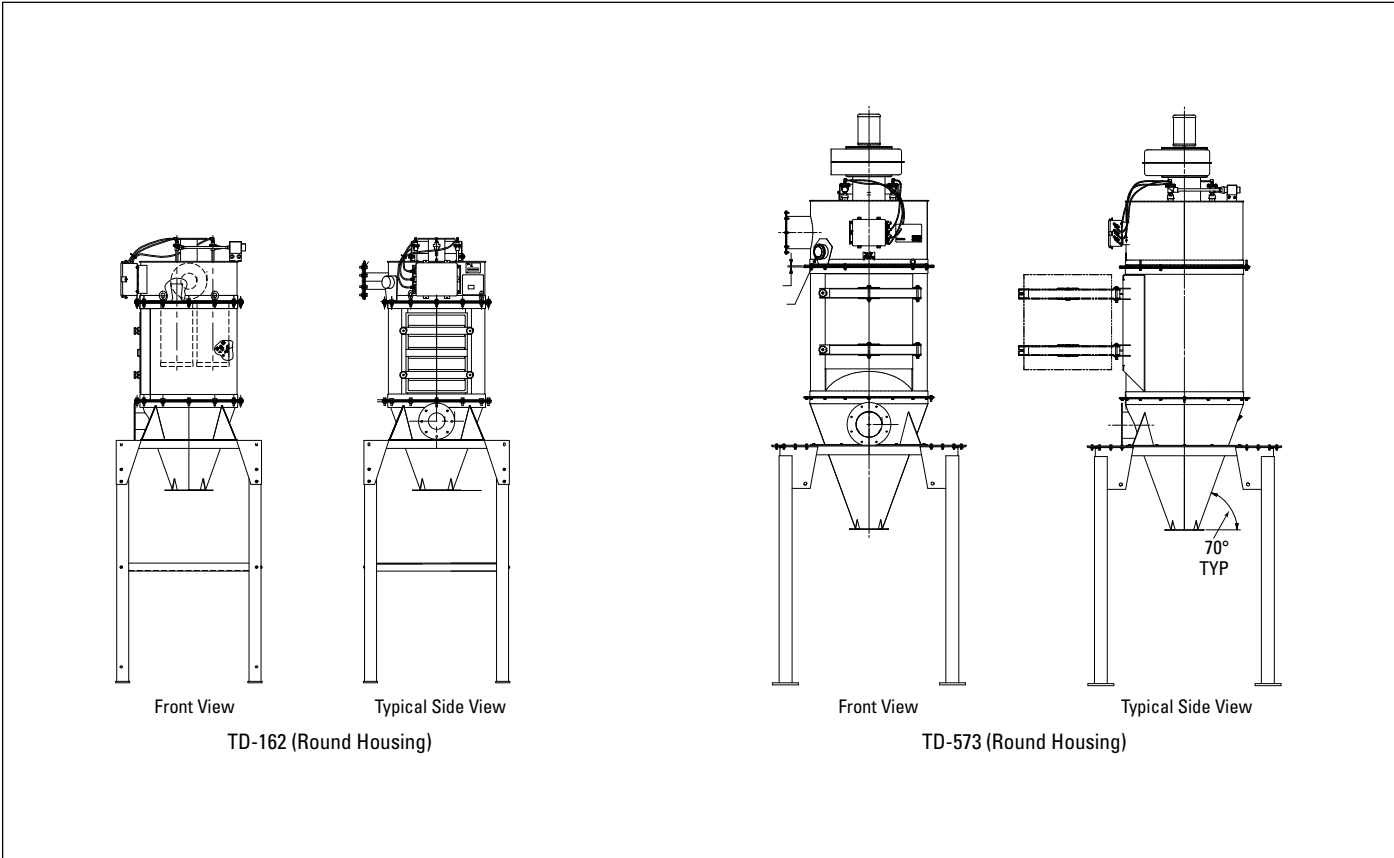


Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials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

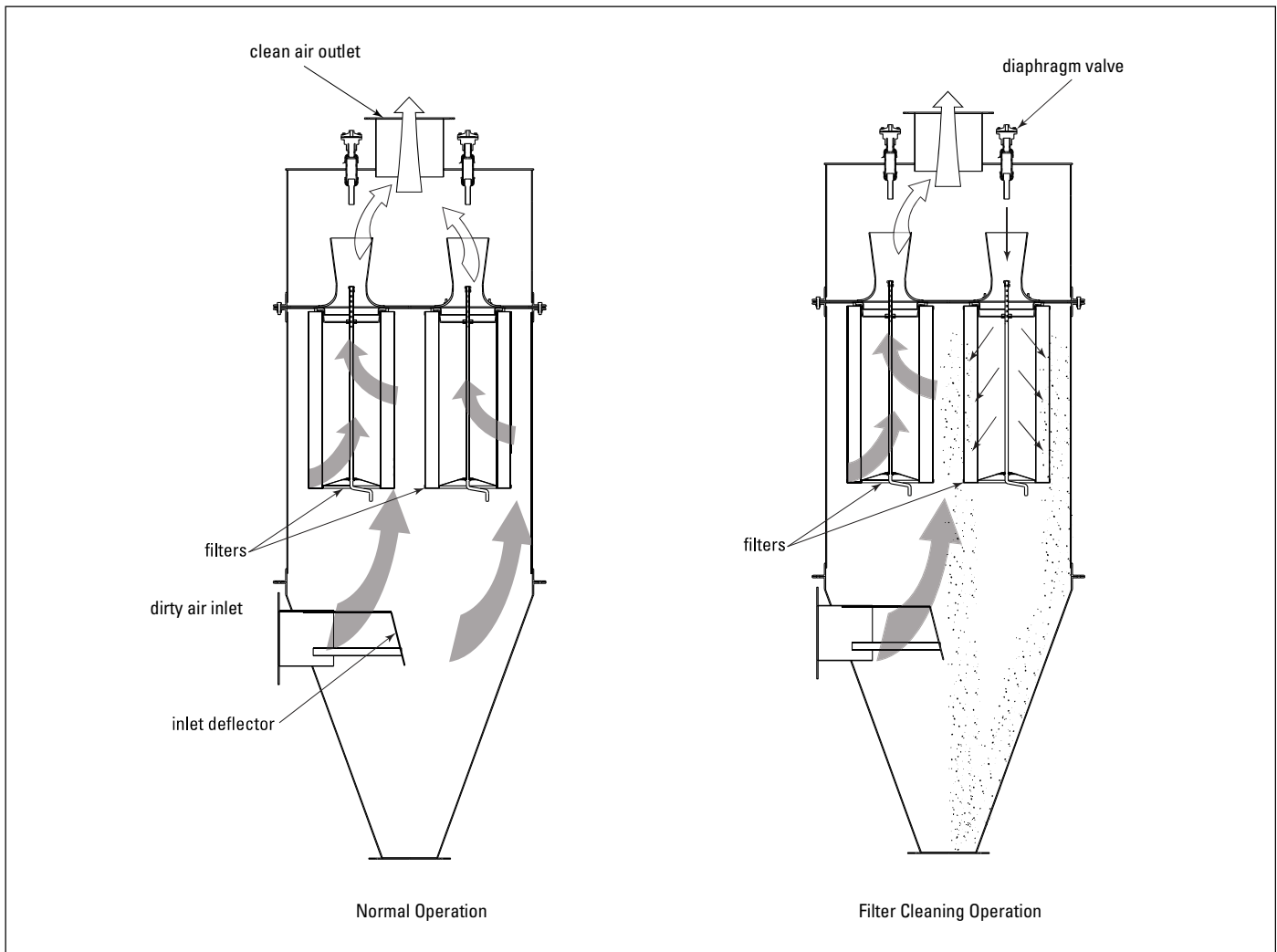
- Seismic Spectral Acceleration,  $S_s$  ..... 1.5 g
- Seismic Spectral Acceleration,  $S_1$  ..... 0.6 g
- Installed Unit Base Elevation ..... Grade
- Occupancy Category ..... II
- Compressed air, maximum psig ..... 90-100
- Housing rating, inches water gauge ..... +20/-220
- Control power ..... 120-Volt 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 enters the hopper and hits a target plate forcing the heavier dust particles into the hopper. (Optional tangential inlets can be used to provide additional cyclonic separation of heavier dust loads). The lighter dust particles travel upward and are collected on the outside of the filter cartridges. Filtered air passes through the cartridges and into the clean air plenum above the tubesheet discharging through the blower or CAP outlet.

Filter cleaning is accomplished using pulse-jet technology with compressed air. A solid state control timer sequentially selects each filter cartridge to be cleaned and activates a solenoid and diaphragm valve that releases compressed air from the cleaning manifold directing the air into the venturi located over each cartridge. The compressed air passes through the inside of the cartridge and dislodges dust particles on the outside of the cartridge. The dislodged dust falls into the hopper. At the end of the 100 millisecond pulse, the air valve closes and the cleaned filters are returned to normal operation. The filter cartridges are accessed and replaced through the filter housing access door.



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.

Collectors must be anchored in a manner consistent with local code requirements and anchors must be sufficient to support dead, live, seismic, and other anticipated loads. Consult a qualified engineer for final selection of anchorage.

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 and other applicable loads. Consult a qualified engineer for final selection of foundation or support framing.

## 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, to simplify solids collection container handling and routine maintenance, and to ensure the straightest inlet and outlet ducts.

## Site Selection

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

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

Portable units require special installation accommodations.

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

If unit is to be located outdoors, an appropriate exhaust and remote electrical controls may be necessary.

### **NOTICE**

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

## 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.

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 unit's casing.

Check the Specification Control drawing for weight and dimensions of the unit 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 and accessories separately and assemble after unit is in place.

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



## Standard Equipment

### Hopper and Leg Installation

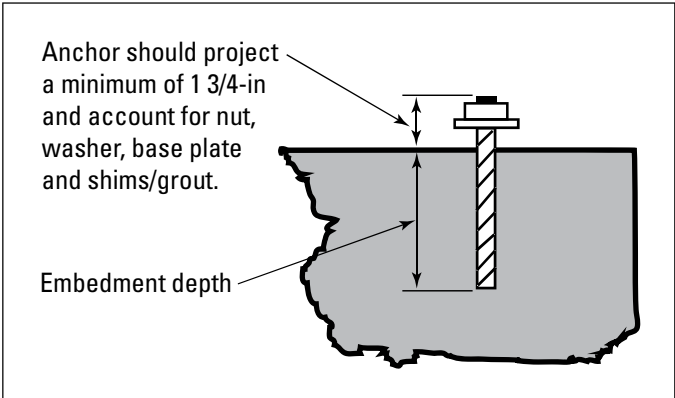
**⚠ WARNING**

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

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

1. Use drift pins as required for alignment.
2. Place hopper support frame upside down on blocks and install (4) support columns in each corner.
3. Assembly cross braces between columns as applicable (referring to specification control drawing).
4. Carefully rotate upright and locate on foundation or support steel.
5. Level unit and install anchors to secure support assembly.
6. Install hopper onto support top frame noting proper orientation per job drawing.
7. Apply sealant to hopper flange and install TD cabinet to hopper noting proper orientation per job drawing.

Leg sets are rated as shown in the Rating and Specification Information on customer specification control drawing. Reference the Leg Positioning and leg assembly drawing shipped with the unit.



Typical Foundation Anchor

Provisional Anchor (per Rating and Specification Information)			
Model	Anchor	Embedment in 3000psi Concrete	Anchoring System or Equivalent
162	1/2-in diameter 304 SS threaded rod	9-in	Hilti HIT-RE 500 Epoxy Adhesive Anchoring System or equivalent
573	1-in diameter 304 SS threaded rod	9-in	Hilti HIT-RE 500 Epoxy Adhesive Anchoring System or equivalent
Notes:			
1. Quantity of anchor bolts should match the number of holes provided in the base plates.			

## 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 100-psig.

Component damage can occur.

All compressed air components must be sized to meet the system requirements of 90-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 unit's compressed-air manifold.

1. Remove the plastic pipe plug from the unit's air manifold and connect the compressed-air supply line. 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 between 90-100 psig. The pulse-cleaning controls are factory set to clean one or more filters every 10-seconds during a cleaning cycle.

## 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 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.

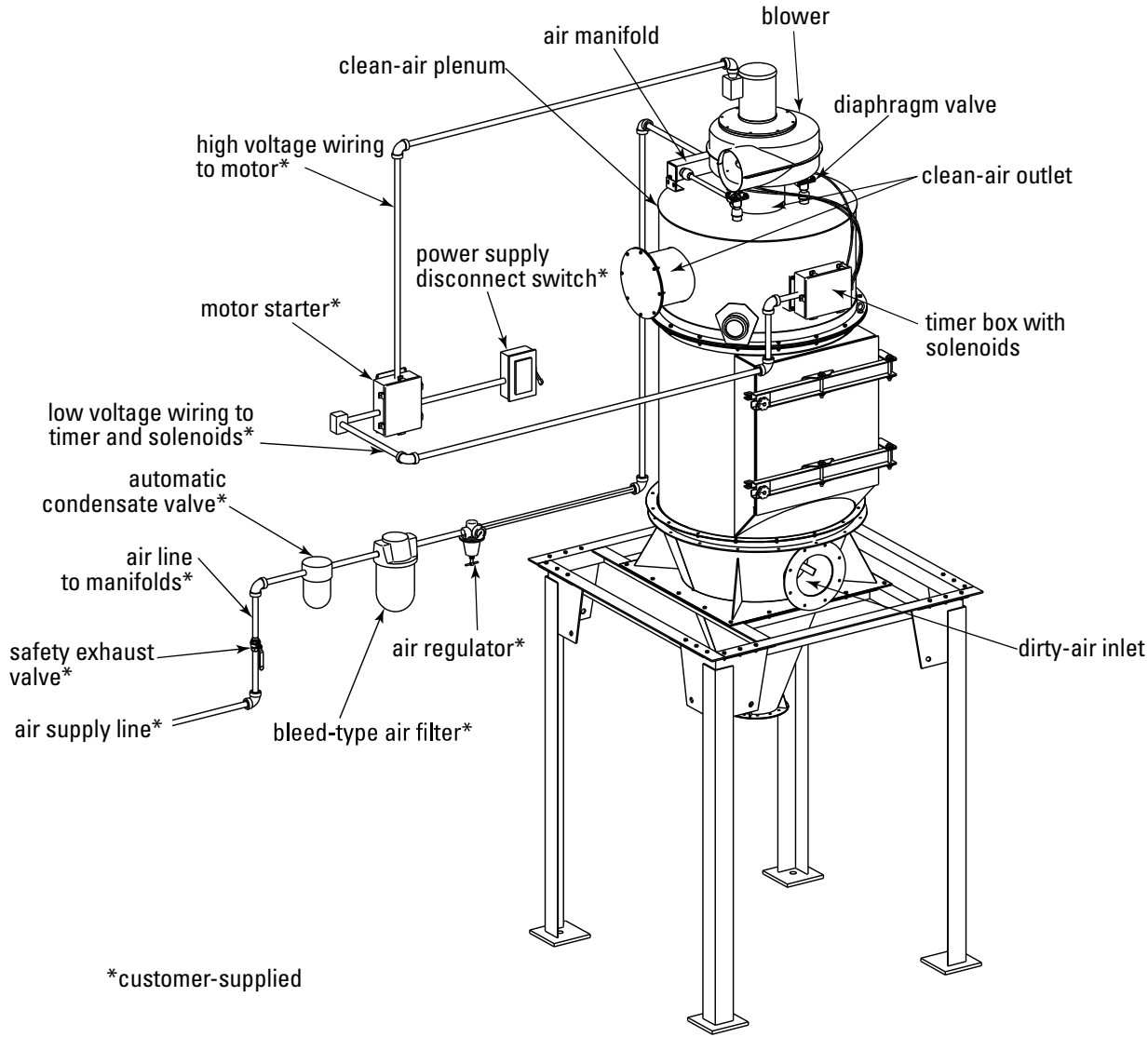
The appropriate wiring schematic and electrical rating must be used. See unit's rating plate for required voltage.

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.

**WARNING**

Turn power off and lock out electrical power sources.  
Turn compressed-air supply OFF and bleed lines before performing service or maintenance work.



Compressed Air and Component Installation

## Solid-State Timer Installation

### **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 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 3-pin timer is used to control the filter cleaning system.

1. Using the wiring diagram supplied, wire the 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 solenoid valves. The valves should open and close sequentially at factory set 10-second intervals.
4. If a gauge or similar device is used to control the solid-state timer, the jumper on the pressure switch portion of the timer should be removed. The solenoid valves pulse only when the differential pressure reaches the high-pressure setpoint. The valves will continue to pulse until the low-pressure setpoint is reached.

### **NOTICE**

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

## Solenoid Connection

The unit is equipped with a solenoid valve (typically 120V) that controls the pulse-cleaning valves, which clean the filters.

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

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.

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

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

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

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

Pulse OFF Time  
Factory set at 10-seconds, adjustable from 1.5-sec minimum to maximum 30-seconds.

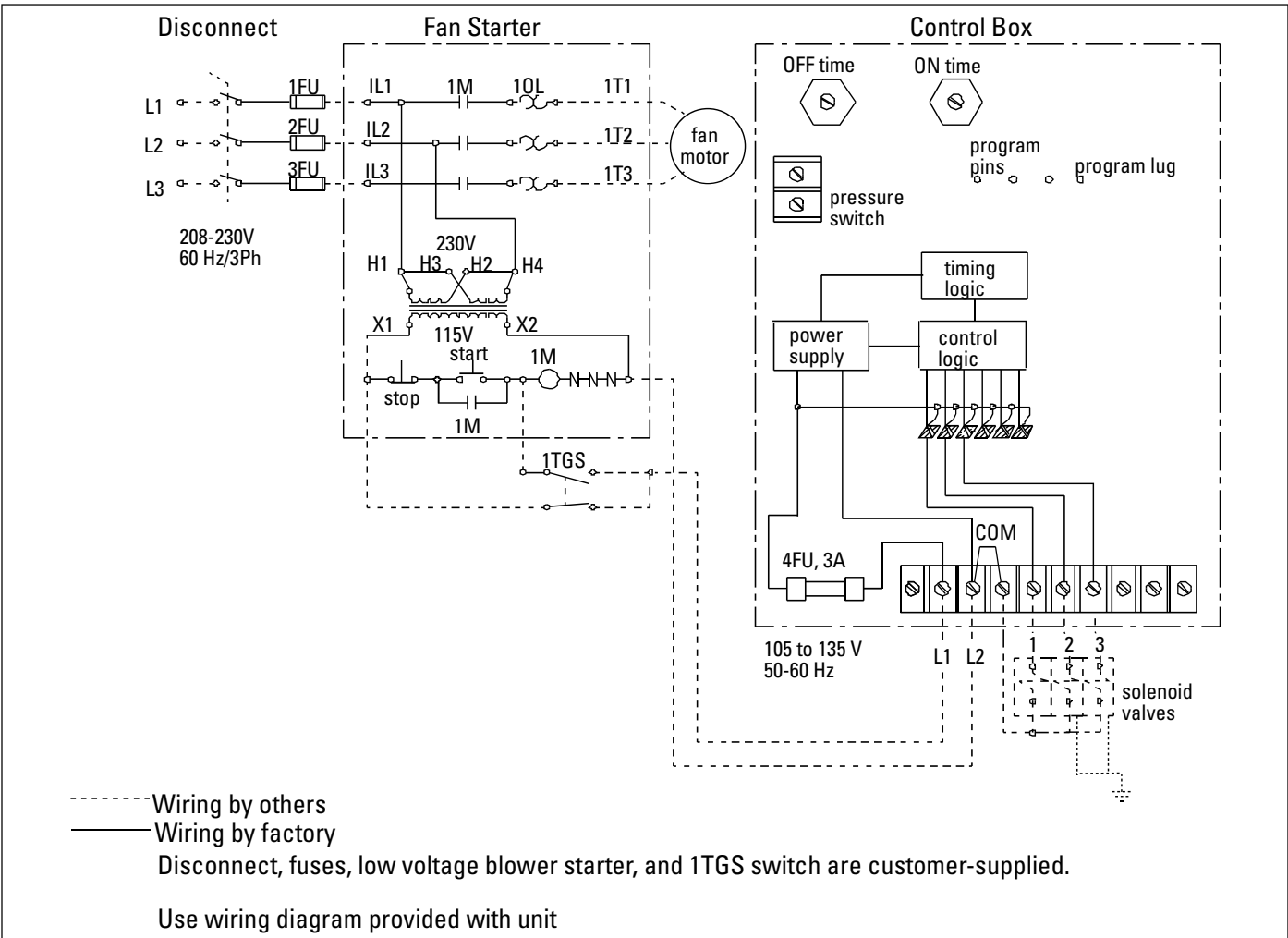
Operating Temperature Range  
-20° F to 130° F

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

Solenoid Valves  
120-Volt at 19.7 watts each

Compressed-Air  
Set compressed-air supply at 90-psig. The timer is factory set to clean one filter every 10-seconds.

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



Solid-State Timer Typical Wiring Diagram

## 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 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 all electrical connections for tightness and contact.
2. 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:  
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.

3. All access panels should be sealed and secure.
4. Check that the dust container is properly sealed and clamped.
5. Check that 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 unit.
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.

**⚠ 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.

12. Adjust airflow with the exhaust damper.

**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.

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 100-psig.

Component damage can occur.

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

## Operational Checklist

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

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

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

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

3. Monitor pressure drop across filters.

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

4. Monitor exhaust.
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.

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.

## Filter Removal

1. Remove filters starting with those nearest door by turning wing nut (Model 162) or crank (Model 573) counterclockwise until hanger is loose enough to remove filter from hanger bracket.
2. Disassemble hanger rods from elements.
3. Install new filters as shown in Filter Removal and Installation.

## Filter Installation

Note: Install filters at rear of cabinet and work towards door.

### Model 162

1. Hang filter assembly on venturi brackets.
2. Turn wing nut clockwise until the filter bottoms out on stops. Tighten by hand only, do not use wrenches.

### Model 573

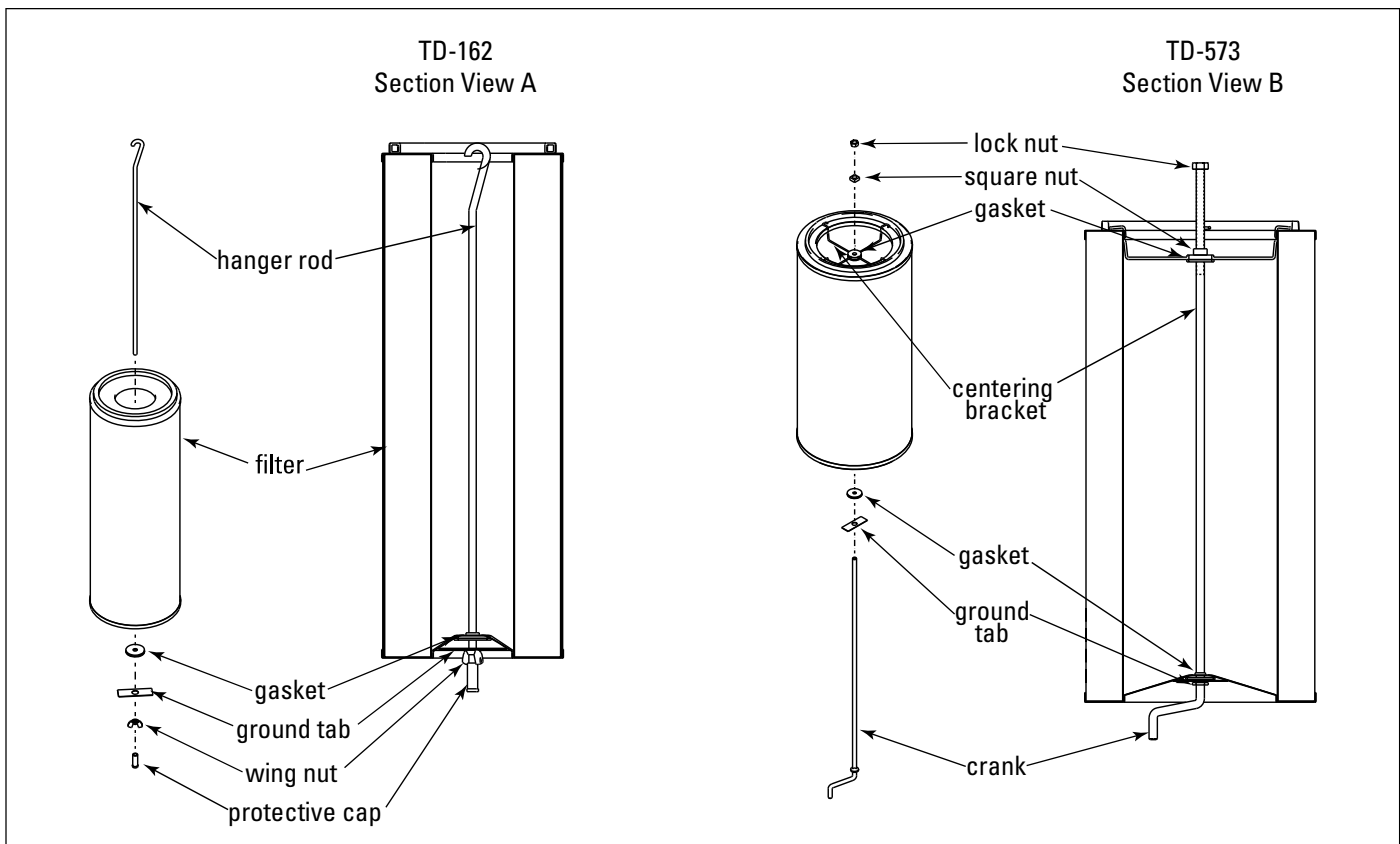
1. Unscrew square nut until it touches lock nut on the end of the mounting rod.
2. Hang filter assembly on hanger brackets.
3. Turn crank clockwise while holding filter until it bottoms out on stops. Tighten by hand only, do not use wrenches.

## Dust Disposal

1. If the optional 55-gallon drum attachment is used, empty when drum is 2/3 full.
2. If optional slide gate is used, close gate before servicing drum.
3. Reinstall drum and open gate (if applicable).

## 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



## Optional Equipment

### Magnehelic® Gauge

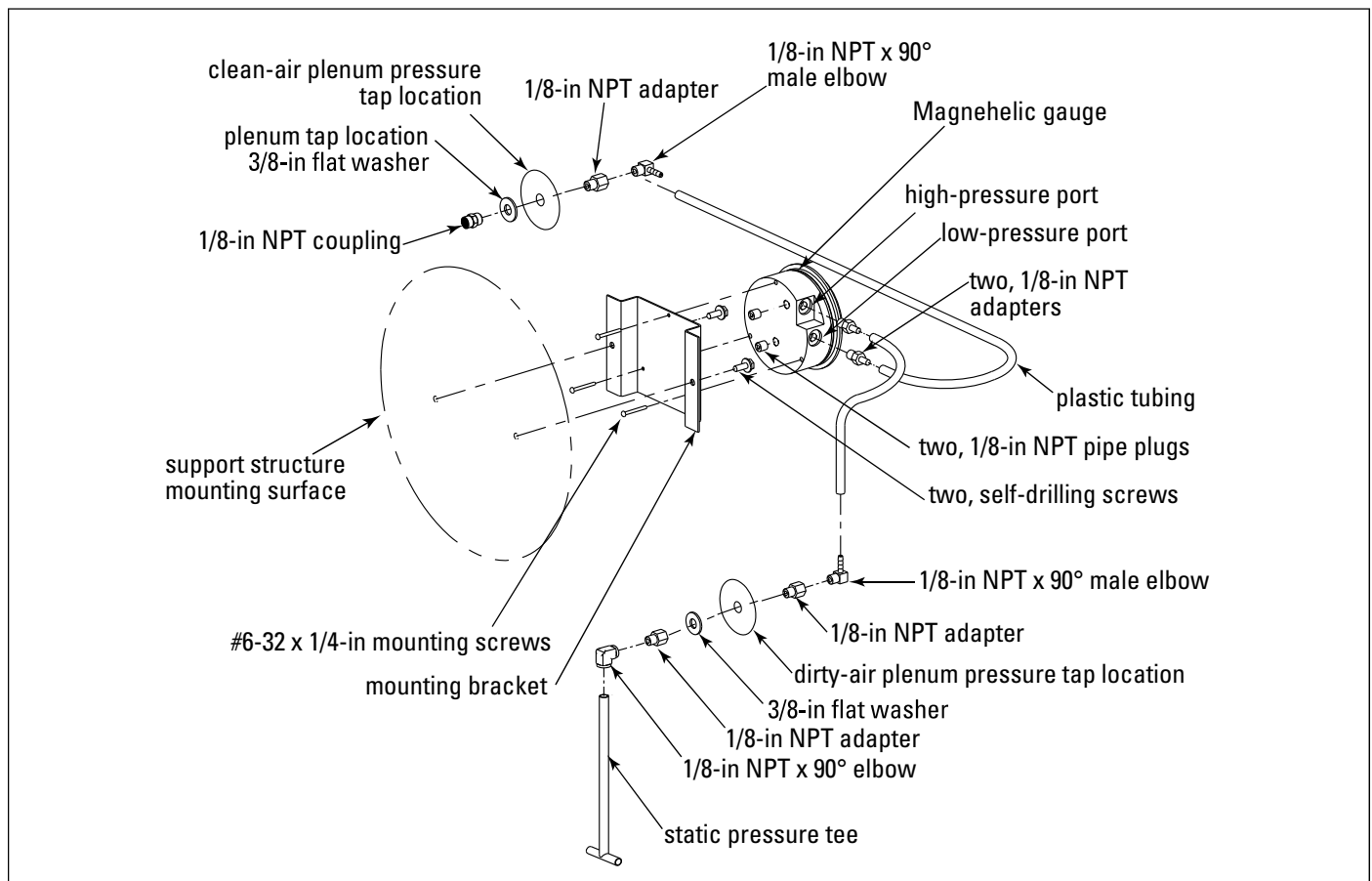
The Magnehelic is a differential pressure gauge used to measure the pressure difference between the clean- and dirty-air plenums and provides a visual display of filter change requirements. The high-pressure tap is located in the dirty-air plenum and the low-pressure tap is located in the clean-air plenum.

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

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

2. Before drilling, place a piece of non-combustible cloth over the filter opening in the clean-air plenum to protect them from drilling chips.
3. Place a piece of wood behind the drill location in the dirty-air plenum to protect the filters from damage by the drill bit.

4. Mount the pressure tap hardware on the clean-air plenum panel and the dirty-air plenum.
5. Plug the pressure ports on the back of the gauge using two, 1/8-in NPT pipe plugs supplied. Install two, 1/8-in NPT male adapters supplied with the gauge into the high- and low-pressure ports on the side of the gauge.
6. Attach the mounting bracket using three, #6-32 x 1/4-in screws supplied.
7. Mount the gauge and bracket assembly to the supporting structure using two, self-drilling screws.
8. Thirty-five feet of plastic tubing is supplied and must be cut in two sections. Connect one section of tubing from the gauge's high-pressure port to the pressure fitting located in the dirty-air plenum. Connect remaining tubing from the gauge's low-pressure port to the fitting in the clean-air plenum.



Magnehelic Gauge Installation

## Photohelic® Gauge

### **WARNING**

Electrical 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 electrical power sources before performing service or maintenance work.

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

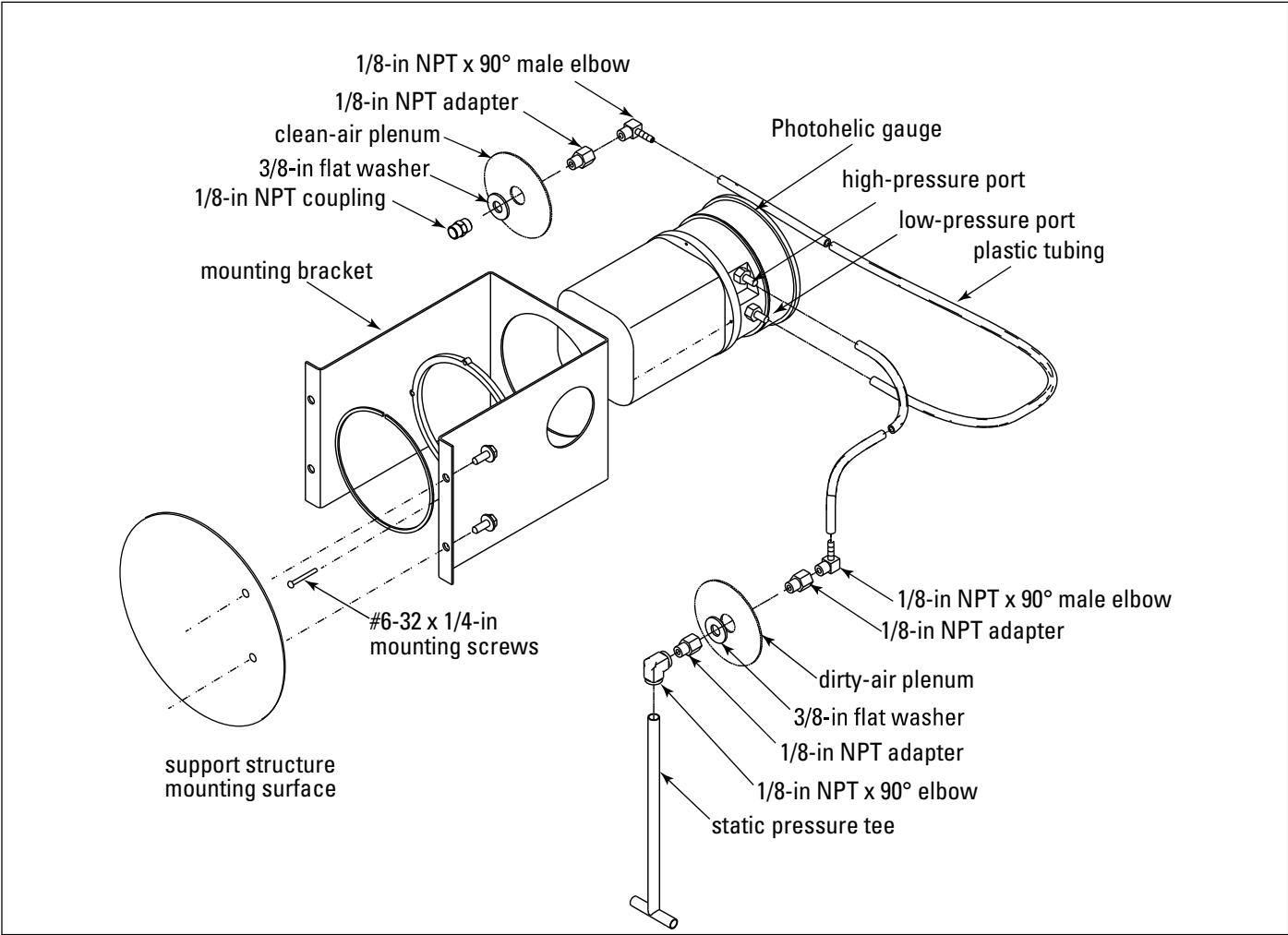
The Photohelic combines the functions of a differential pressure gauge and a pressure-based switch. The gauge function measures the pressure difference between the clean- and dirty-air plenums and provides a visual display of filter condition. The high-pressure tap is located in the dirty-air plenum 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 near the unit that provides the best visual advantage.

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

2. Before drilling, place a piece of non-combustible cloth over the filter opening in the clean-air plenum to protect the filters from drilling chips.
3. Place a piece of wood behind the drill location in the dirty-air plenum to protect the filters from damage by the drill bit.
4. Mount the pressure tap hardware on the clean-air plenum panel. Mount the pressure tap with the tee inside the dirty-air plenum.
5. 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. Align the adapters to the 2.375-in hole in the right-hand side of the mounting bracket. Tighten screws.

6. 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 the enclosure securely.
7. Thirty-five feet of plastic tubing is supplied and must be cut in two sections for vacuum systems. 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.



Photohelic Gauge 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 air plenums while the unit 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 Control Display

## 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 unit 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.



Delta P Plus Control Display

## Troubleshooting

Problem	Probable Cause	Remedy
<b>Fan 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>Fan blower fan and motor start, but do not stay running</b>	Incorrect motor starter installed	Check for proper motor starter and replace if necessary.
	Access doors are open or not closed tight	Close and tighten access doors. See Filter Installation.
	Hopper discharge open	Check that dust container is installed and properly sealed.
	Damper control not adjusted properly	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.
	Electrical circuit overload	Check that the power supply circuit has sufficient power to run all equipment.
<b>Clean-air outlet discharging dust</b>	Filters not installed correctly	See Filter Installation.
	Filter damage, dents in the end caps, gasket damage, or holes in media	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Installation.
	Access cover(s) loose	Tighten access doors securely. See Filter Installation.
<b>Insufficient airflow</b>	Fan rotation backwards	Proper fan rotation is clockwise from the top of the unit. The fan can be viewed through the back of the motor. See Preliminary Start-Up Check.
	Access doors open or not closed tight	Check that all access doors are in place and secured. Check that the hopper discharge opening is sealed and that dust container is installed correctly.
	Fan exhaust area restricted	Check fan exhaust area for obstructions. Remove material or debris. Adjust damper flow control.
	Filters need replacement	Remove and replace using genuine Donaldson replacement filters. See Filter Removal and Installation.

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

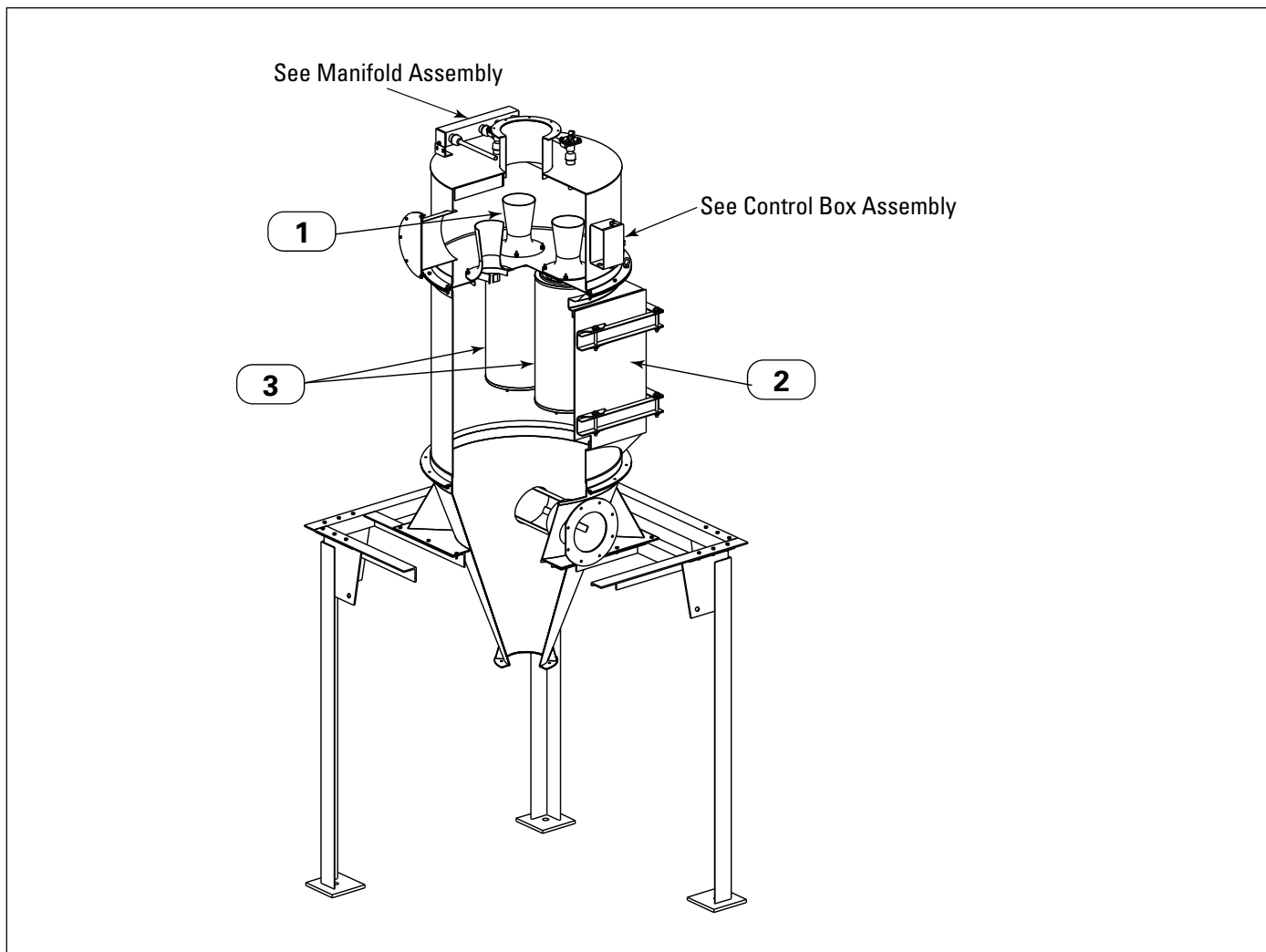
## Troubleshooting

Problem	Probable Cause	Remedy
<b>Pulse cleaning never stops</b>	Pressure switch not operating correctly	Check pressure switch inside the control panel.
	Pressure switch terminals on the timer board jumpered	Remove jumper wire on Solid-State Timer board before wiring to the Delta P Control.
	Pressure switch not wired to the timer board correctly	Connect the pressure switch on the timer board to Terminals 7 and 8 on TB3.
	Pressure switch terminals on the timer board jumpered	Remove jumper wire on Solid-State Timer board before wiring to the Delta P Control.
	High Pressure On or Low Pressure Off setpoint not adjusted for system conditions	Adjust setpoints to current conditions.
	Pressure tubing disconnected, ruptured, plugged, or kinked	Check tubing for kinks, breaks, contamination, or loose connections.
<b>Alarm light is ON</b>	Alarm setpoint too low	Adjust to a higher value.
	Excess pressure drop	Check cleaning system and compressed air supply. Replace filter packs if filter packs do not clean down.
	Pressure tubing disconnected, ruptured, plugged, or kinked	Check tubing for kinks, breaks, contamination, or loose connections.
<b>Delta P arrow keys to not work</b>	Improper operation	Press and hold one of the three setpoint keys to use arrow keys.
	Programming keys disabled	Remove the Program Disable jumper from Terminals 3 and 4 on TB2.
<b>Cleaning light is ON, but cleaning system not functioning</b>	Improper wiring	Check wiring between the Delta P Control and the timer board, and between the timer board and solenoid valve coils.
	Defective solenoids	Check all solenoid coils for proper operation.
	Timer board not powered	Check power ON light on timer board's LED display. If not illuminated, check the supply voltage to the timer board. Check the fuse on the timer board. Replace if necessary.
	Timer board defective	If LED is illuminated, observe the output display. Install a temporary jumper across the pressure switch terminals. Output levels should flash in sequence. Check output using a multimeter set to 150-Volt AC range. Measure from SOL COM to a solenoid output. The needle will deflect when LED flashes for that output if voltage is present. If LED's do not flash, or if no voltage is present at output terminals during flash, replace the board.



## **Replacement Parts List**

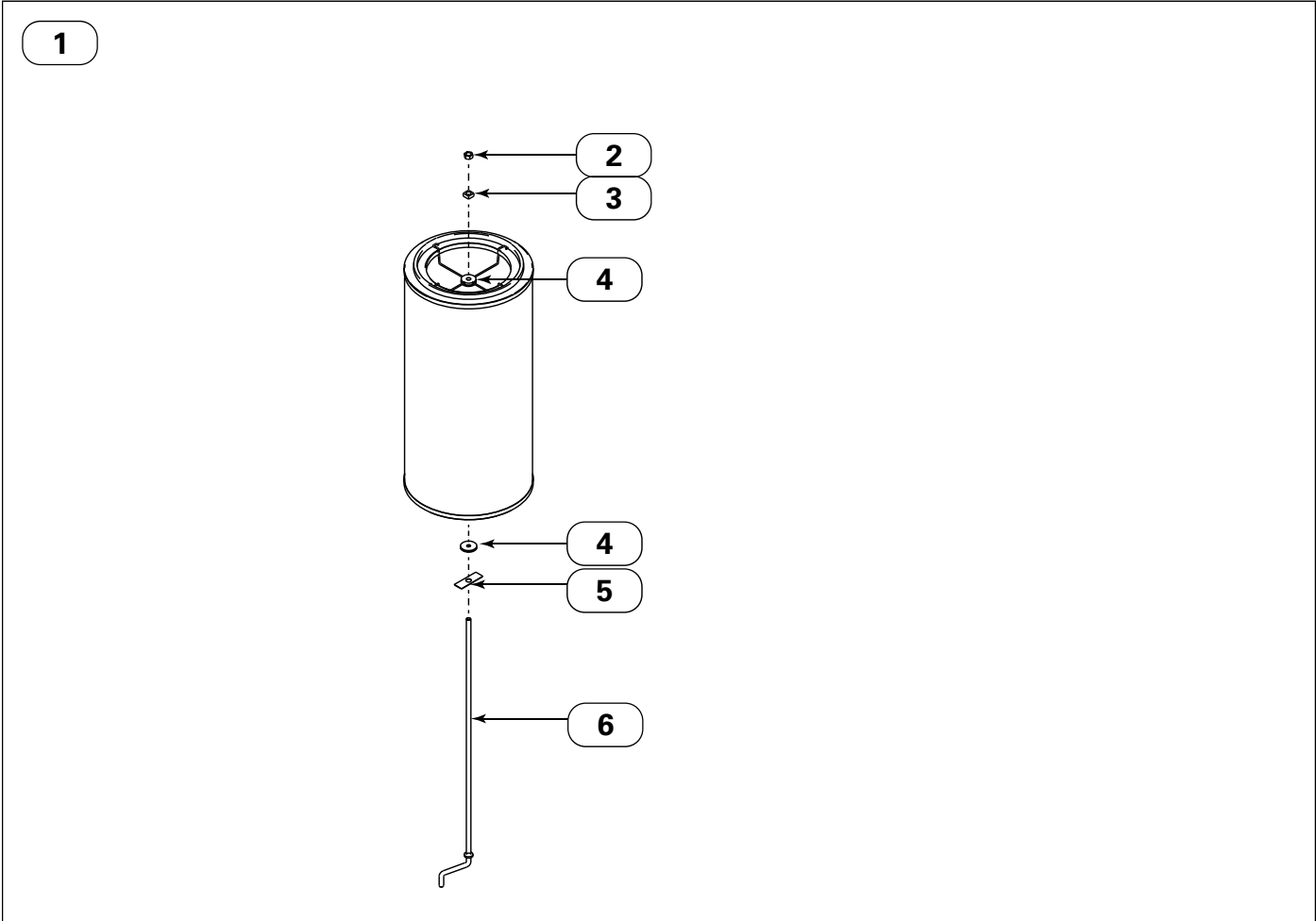
## TD Dust Collector



TD Dust Collector

Item	Part Number	Description	Model
1	P148646-016-340	Ultra-Web® Cartridge	TD-162
	P145891-016-436	Ultra-Web Cartridge	TD-573
2	1955500	Door Pack	TD-162
	1944400	Door Pack	TD-573
Not Illustrated			
	7946804	Warning Label	All

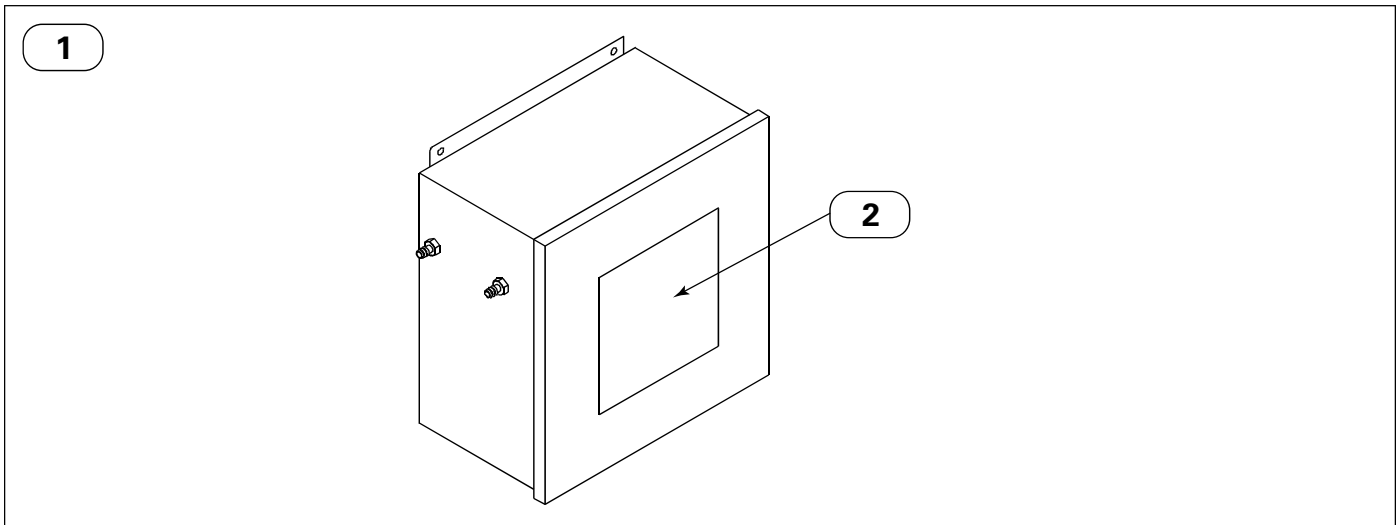
### Filter Assembly



Filter Assembly

Item	Part Number	Description	Model
1	1935401	Filter Assembly	All
2	0902809	1/2-13 Lock Nut	All
3	0903608	1/2-13 Square Nut	All
4	1905400	Gasket	All
5	2052900	Grounding Tab	All
6	1935701	Crank, 31-in Long	All

## Delta P Control Assembly

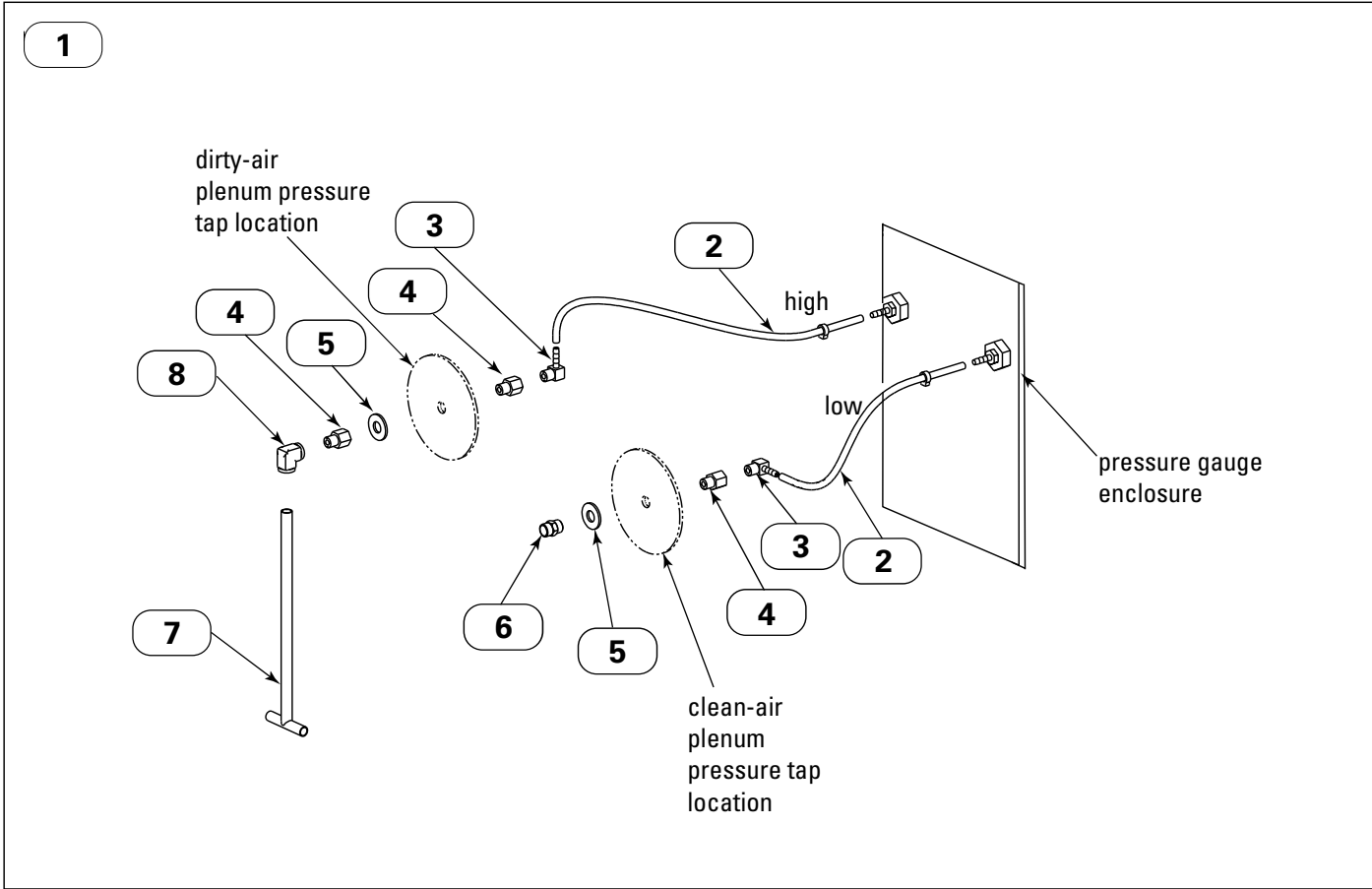


Delta P Control Assembly

Item	Part Number	Description	Model
1	7536902	Delta P Control with 3-Pin Timer 110 Volt NEMA 4	All
	AD3411402	Delta P Plus Control with 3-Pin Timer 110 Volt NEMA 4	All
2	7508201	Delta P Control Board	All
	7053601	Delta P Plus Control Board	All
Not Illustrated			
	AD3380901	Dustronics Control 3-Pin Timer 110 Volt NEMA 4	All

Note: Contact Donaldson Company, Inc. for 220 Volt Systems

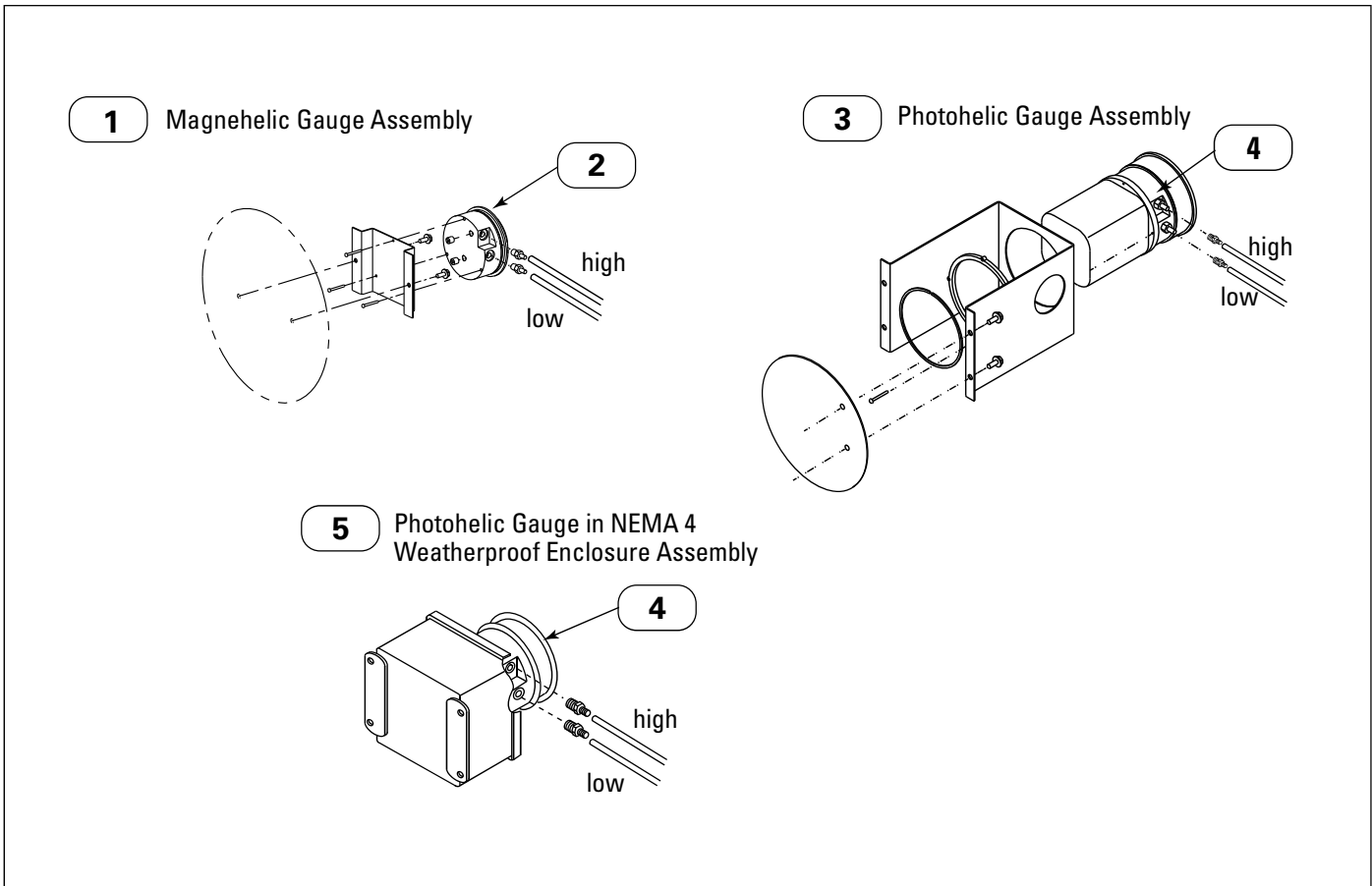
**Pressure Gauge Tubing Assembly**



Pressure Gauge Tubing Assembly

Item	Part Number	Description	Model
1	9502001	Pressure Tap Installation Kit	All
2	2334200	Plastic Tubing, Vinyl, 3/16-in ID, 5/16-in OD	All
3	1647700	1/8-in NPT x 3/16-in Barb Plastic Tubing Male 90° Elbow	All
4	2157400	1/8-in NPT x 1/8-in FPT Adapter	All
5	1846300	1/8-in NPT Female Coupling	All
6	2324501	Static Pressure Tee, Brass	All
7	2326000	1/8-in x 90° Brass Female Elbow	All

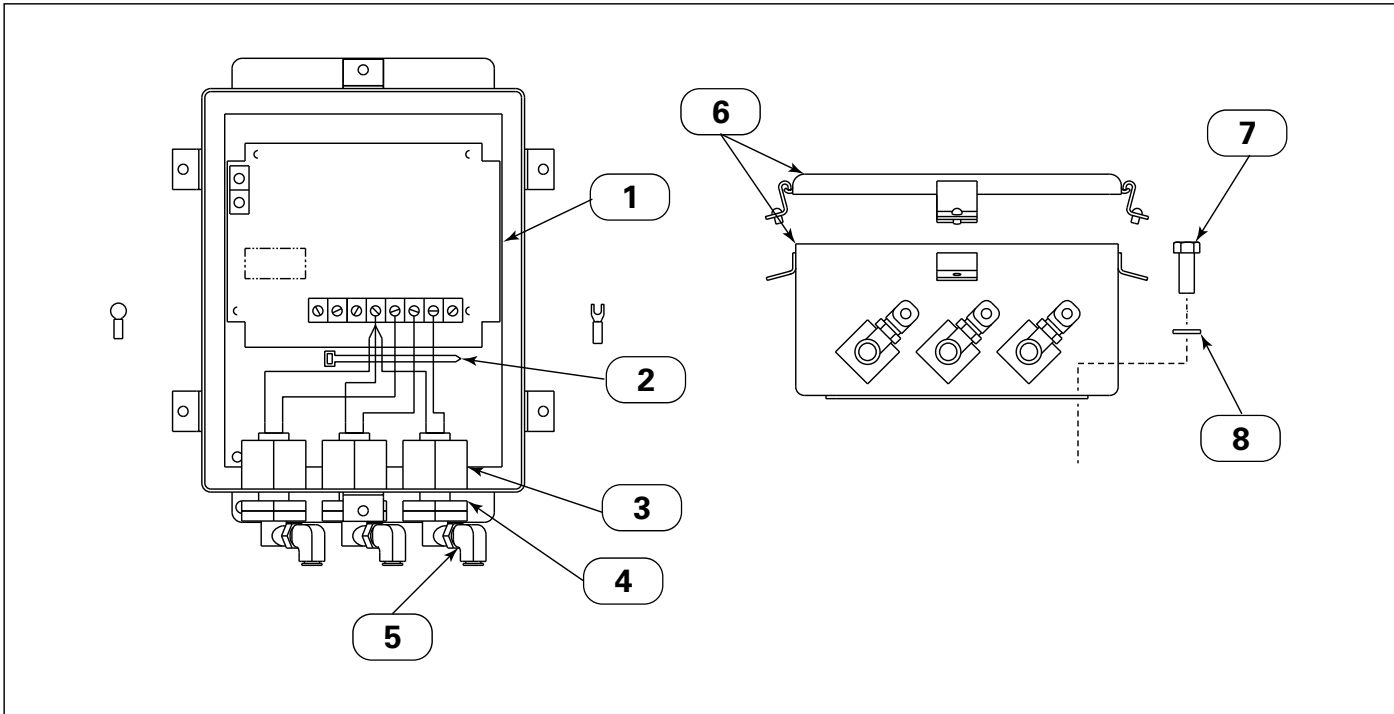
## Magnehelic® and Photohelic® Gauge Assembly



Magnehelic and Photohelic Gauge Assembly

Item	Part Number	Description	Model
1	2333900	Magnehelic Gauge Assembly	All
2	1647500	Magnehelic Gauge	All
3	2335200	Photohelic Gauge Assembly	All
4	1939600	Photohelic Gauge	All
5	4008500	Photohelic Gauge in NEMA 4 Weatherproof Enclosure Assembly	All
Not Illustrated			
	2324600	Magnehelic Gauge Mounting Panel	All
	2335300	Photohelic Gauge Mounting Panel	All

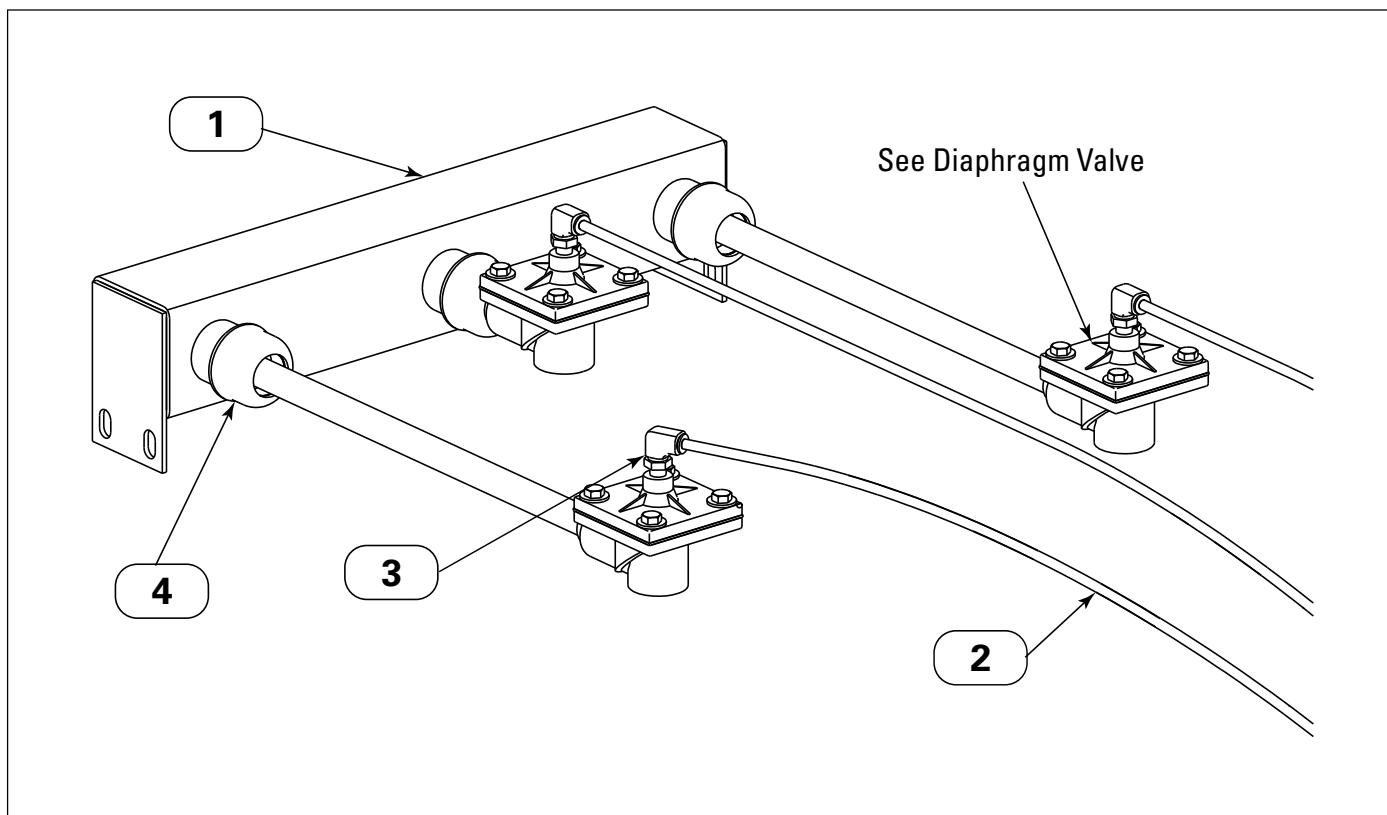
**Control Box and Timer Assembly**



Control Box and Timer Assembly

Item	Part Number	Description	Model
1	1905802	Control Box and Timer Assembly	All
2	1906100	Timer, 3-Pin	All
3	1801900	Solenoid Valve	All
4	1972000	O-Ring	All
5	2146200	Elbow, 1/8-in NPT to 1/4 OD Plastic	All
	2497400	Elbow, 1/8-nin NPT Stainless Steel to 1/4 OD Plastic	All
6	1905600	Control Box	All
7	0903505	1/4-14 Hex Washer Head Screw	All
8	0900709	1/4 Lock Washer Steel, Zinc Plated	All
Not Illustrated			
	2144100	Wiring Diagram, 3-Pin	All
	2463600	Solenoid Valve Rebuild Kit, NEMA 4, 3D2 KO380	All
	2540900	Solenoid Valve Coil, 120-Volt AC	All
	2146400	1/4-in OD Polyethylene Tubing	All
	3782800	Replacement Heater, 115-Volt AC	All
	3783000	Replacement Thermostat, 115-Volt AC	All
	3776004	Solenoid Enclosure, NEMA 7 and 9	All

## Manifold Assembly

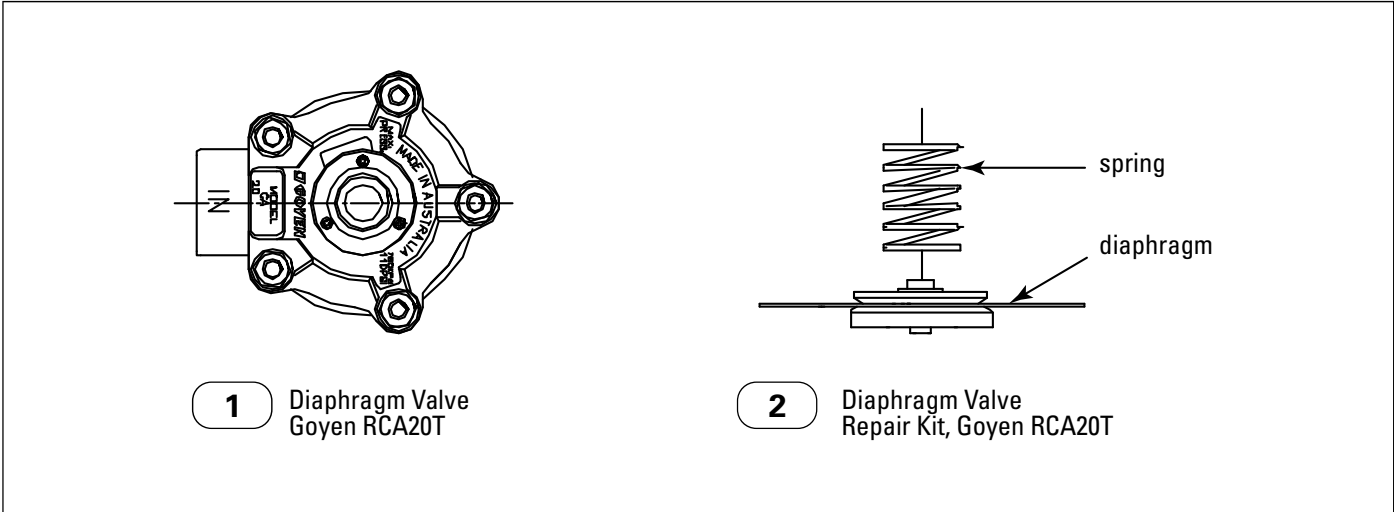


Manifold Assembly

Item	Part Number	Description	Model
1	1954500	Manifold Weldment	All
2	2146400	1/4-in OD Polyethylene Tubing	All
3	2146200	Elbow, 1/4-OD Tube, Push-In x 1/8-in NPT	All
4	2188301	Coupling	All



**Diaphragm Valve and Repair Kit**



**1** Diaphragm Valve  
Goyen RCA20T

**2** Diaphragm Valve  
Repair Kit, Goyen RCA20T

Diaphragm Valve and Repair Kit

Item	Part Number	Description
<b>Refer to collector for type of diaphragm valve originally supplied</b>		
1	7549207	Diaphragm Valve, 1/4-in RCA106T Goyen®
	7549204	Diaphragm Valve, 3/4-in RCA20T, Goyen
2	1821900	Diaphragm Valve Repair Kit, K2000 for RCA20T, Goyen
	Contact Factory	Diaphragm Valve Repair Kit, K1001 for RCA106T, Goyen

Goyen® is a registered trademark of Tyco International Ltd.





## 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.



### Parts and Service

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 <b>Air Separation Technologies Inc.</b> <a href="http://astcanada.ca">astcanada.ca</a>	 <b>AST</b> Engineering Inc. <a href="http://astengineering.ca">astengineering.ca</a>	 <b>AST</b> Mechanical Inc. <a href="http://astmechanical.ca">astmechanical.ca</a>	 <b>STEVENSON SPRINKLER</b> Fire Protection Ltd. <a href="http://stevensonsprinkler.ca">stevensonsprinkler.ca</a>