

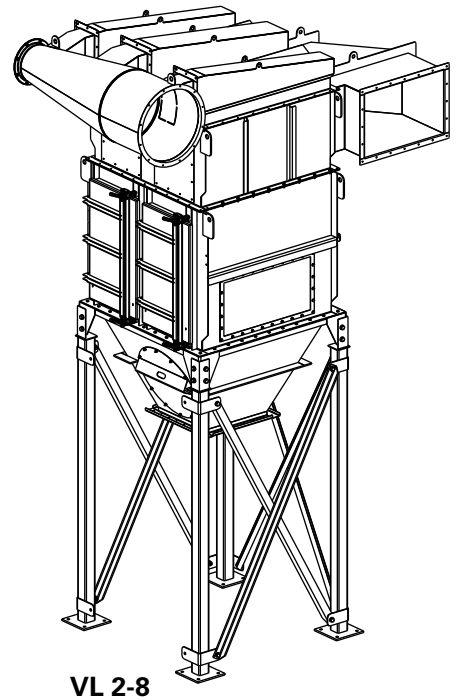
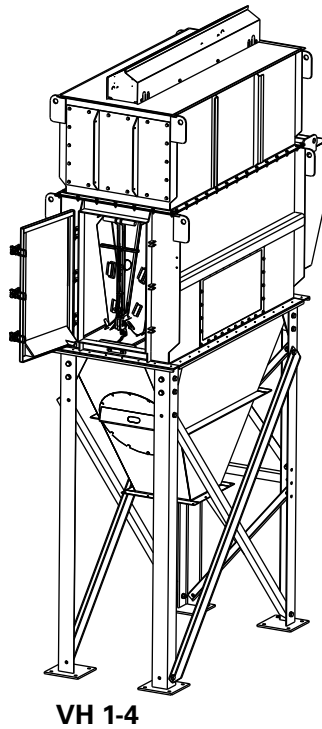
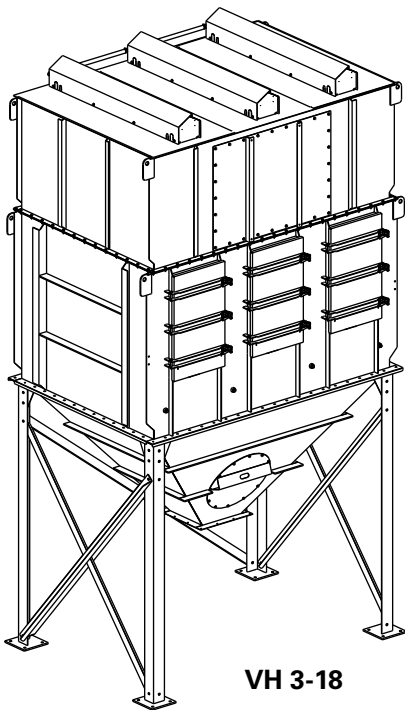
**Torit® PowerCore®**

VH 1-4, 1-6, 2-8, 2-12, 2-16, 2-20, 3-18, 3-24, 3-30

VL 1-4, 1-6, 2-8, 2-12, 2-16, 2-20, 3-18, 3-24, 3-30

**Installation and Operation Manual**

Installation, Operation, and Service Information



This manual is property of the owner. Leave with the collector 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.**



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 _____	

## Contents

Description.....	1	Preliminary Start-Up Check .....	17
Purpose and Intended Use .....	1	Maintenance Information.....	18
Operation.....	4	Operational Checklist .....	18
Inspection on Arrival.....	5	Filter Removal and Installation.....	18
Installation Codes and Procedures .....	5	Valve and Diaphragm Service Procedures.....	21
Installation.....	5	Dust Disposal .....	22
Foundations or Support Framing .....	6	Compressed Air Components.....	22
Collector Location .....	6	Optional Equipment.....	23
Site Selection .....	6	Fan Blower .....	23
Rigging Instructions.....	6	TBI and TRB Style Damper and Silencer Support	
Hoisting Information .....	6	Bracket.....	24
VH Typical Installation.....	7	55-Gallon Drum Pack.....	25
VL Typical Installation .....	8	Dumpster Pack .....	27
Standard Equipment.....	9	Rotary Valve and Transition-VH Only .....	28
Hopper and Leg Installation .....	9	Magnehelic® Gauge .....	29
Provisional Anchor Bolt Recommendations.....	9	Photohelic® Gauge.....	30
Inlet Manifold (Standard) or Outlet Manifold (optional		Delta P Control.....	32
where available) Installation.....	10	Delta P Plus Control .....	33
Hopper Access .....	11	Platforms and Ladders .....	34
Clean Air Outlet.....	11	Heavy Duty Cold Climate Kit with Weather Cover-VH	
Compressed Air Installation .....	12	Only.....	35
Electrical Wiring.....	12	Pre-Wired Solenoids to Junction Box.....	36
Antistatic Grounding Installation.....	12	Explosion Vent .....	37
Solid-State Timer Installation.....	15	Troubleshooting.....	38
Solenoid Connection.....	15		
Timer and Solenoid Specifications.....	15		

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



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



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



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



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

## Description

The Torit PowerCore VH and VL collectors are continuous duty dust collectors that uses rectangular style filter packs with the proprietary axial flow PowerCore filter media. The system is designed to provide optimum performance for high efficiency, low operating pressure drop (energy usage) within a small size collector. Continuous duty means the filter packs can be pulse cleaned on-line without interrupting airflow through the collector. Standard sizes range from 4 to 30 filter packs.

Options include anti-static Ultra-Web® media, various cleaning controls including 24VDC, explosion vents and several dust container options.

## Purpose and Intended Use



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

Do not misuse or modify.

The VH and VL-Series collectors separate solid particulate from an airstream as part of the dust control system for a process.

The VH-Series is commonly used in minerals, mining and abrasive blasting markets.

The VL-Series is commonly used on light and fluffy dusts of bulk density, 40-lb/cuft.

Although primarily designed for negative pressure systems, the VH and VL-Series can be configured for applications under positive pressure. Contact Donaldson Torit for information on positive pressure systems.

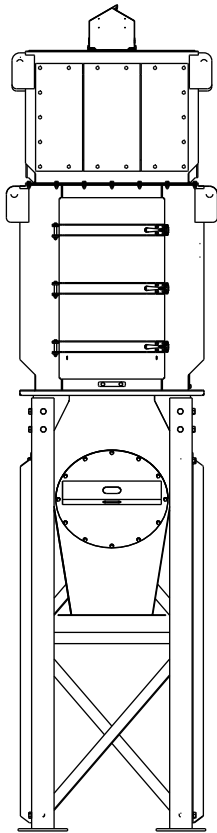


Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials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

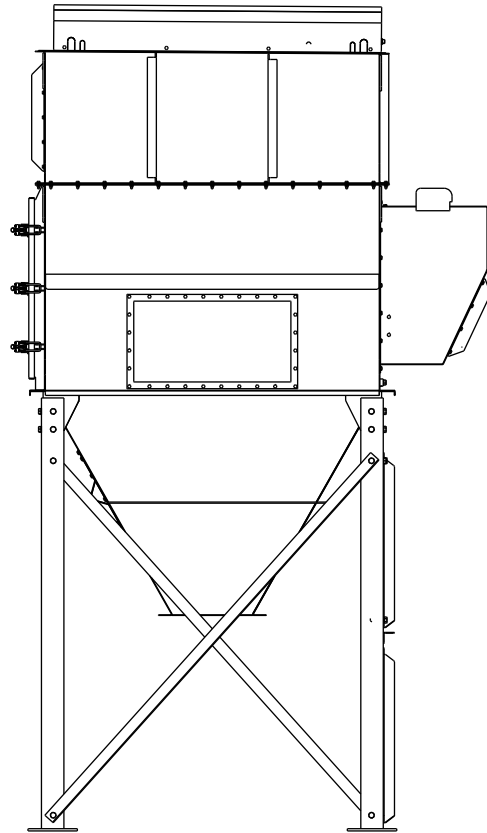
Consult and comply with all National and Local Codes related to fire and/or explosion properties of combustible materials when determining the location and operation of all dust, fume, or mist collection equipment.

Standard Donaldson Torit equipment is not equipped with fire extinguishing or explosion protection systems.

## VH Rating and Specification Information



Front View  
VH 1-6



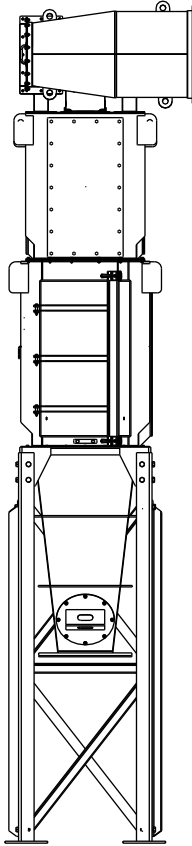
Typical Side View

Collectors are rated for the following loads as calculated per relevant sections of the IBC 2009 code\*:

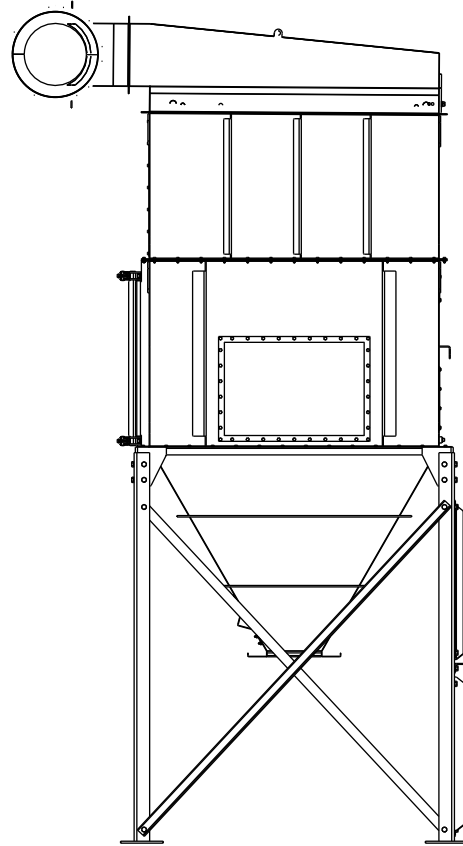
Basic Wind Speed & Exposure .....	90 mph, Exposure C
Seismic Spectral Acceleration, $S_s$ .....	1.5 g
Seismic Spectral Acceleration, $S_1$ .....	0.6 g
Installed Unit Base Elevation .....	Grade
Occupancy Category .....	II
Compressed air, psig .....	90-100
Housing rating, inches water gauge .....	-20
Control Power .....	24 VDC or 120 Volt 50/60 Hz

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

## VL Rating and Specification Information



Front View  
VL 1-6



Typical Side View

Collectors are rated for the following loads as calculated per relevant sections of the IBC 2009 code\*:

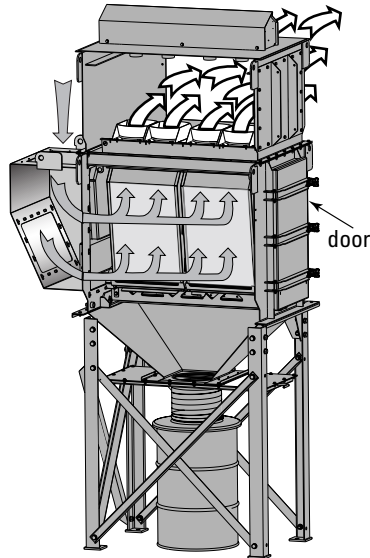
Basic Wind Speed & Exposure .....	90 mph, Exposure C
Seismic Spectral Acceleration, $S_s$ .....	1.5 g
Seismic Spectral Acceleration, $S_1$ .....	0.6 g
Installed Unit Base Elevation .....	Grade
Occupancy Category .....	II
Compressed air, psig .....	90-100
Housing rating, inches water gauge .....	-20
Control Power .....	24 VDC or 120 Volt 50/60 Hz

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

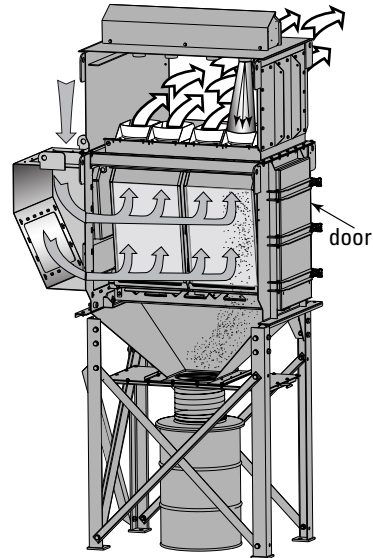
## Operation

During normal operation, dust-laden air enters the unit through the inlet. Airflow is directed towards the filters and heavier particulate falls directly into the storage bin. The filter packs remove fine particulate and clean, filtered air passes through the filter packs to the clean-air plenum and discharges through the clean-air outlet.

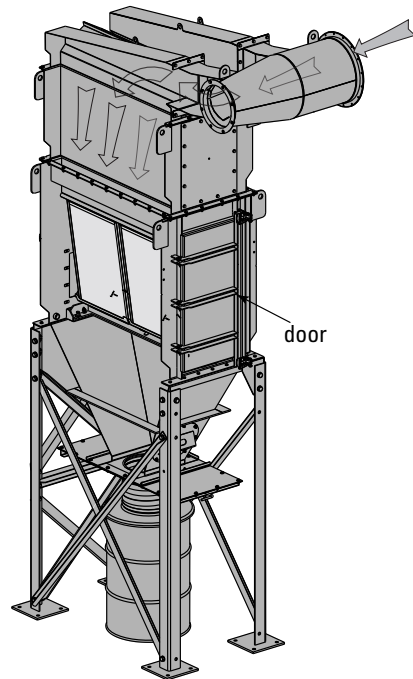
Filter cleaning is accomplished using pulse-jet technology. Air diaphragm valves provide the pulse cleaning when an electronic solenoid valve actuates the pulse cleaning. Filters are easily removed without tools when they need to be changed.



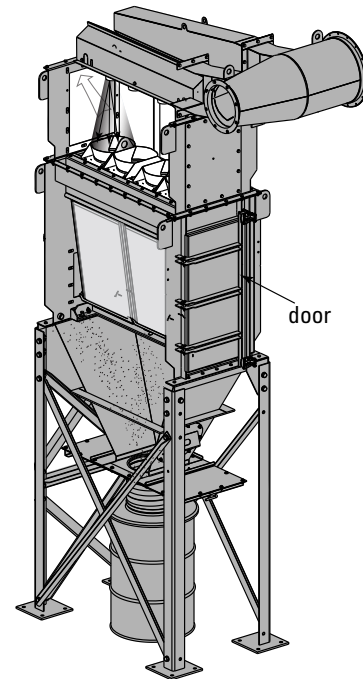
VH Normal Operation



VH Filter Cleaning Operation



VL Normal Operation



VL Filter Cleaning Operation

## Unit Operation

## Inspection on Arrival

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

## Installation Codes and Procedures



Codes may regulate recirculating filtered air in your facility.

Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding recirculating filtered air.

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

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

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

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

### NOTICE

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

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

## Installation



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

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

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

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

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



Site selection must account for wind, seismic zone, and other

load conditions when selecting the location for collectors.

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

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

Consult a qualified engineer for final selection of anchorage.

### NOTICE

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

All compressed air components must be sized to meet the system requirements of 90-100-psig supply pressure.

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

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



The collector is suitable for either indoor or outdoor installations. Reference the Rating and Specification Information.

### Foundations or Support Framing

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

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

### Collector Location

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

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

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

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

### Site Selection

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

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

Portable collectors require special installation accommodations.

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

## 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 and/or property damage.

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

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

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

Use all lifting points provided.

Use clevis connectors, not hooks, on lifting slings.

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

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

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

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

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

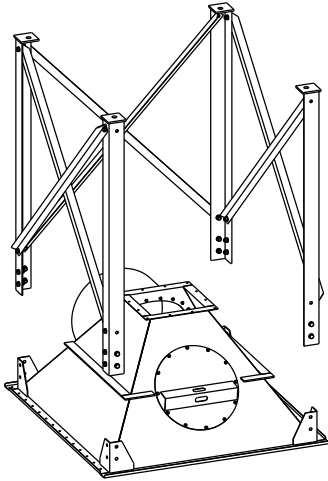
Use drift pins to align holes in section flanges during assembly.

## VH Typical Installation

**CAUTION**

Take center of gravity into consideration when lifting unit.

Do not install blower before lifting unit.



Steps 1-2

1. Place hopper discharge-side up on ground or other level surface and attach legs to hopper.
2. Assemble leg cross braces.
3. Turn hopper and leg assembly over and lift into position over anchor bolts.
4. Level hopper.
5. Tighten all fasteners securely, including all anchor bolts.

**CAUTION**

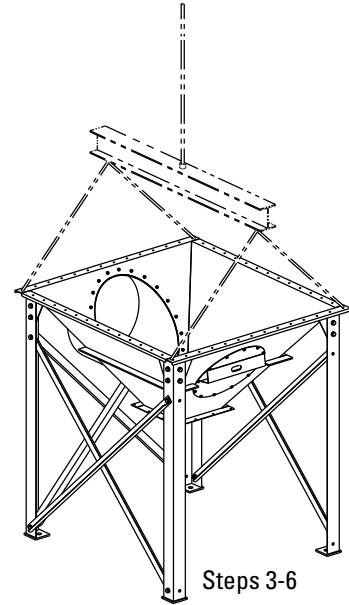
Tighten all hardware before removing crane.

6. Apply rope sealant to upper hopper flange (hopper/cabinet seam) so sealant is positioned on the inner edge of the bolt holes (see instructions shipped with collector).
7. Lift unit over leg and hopper assembly and lower slowly.
8. Secure with bolts, washers, and nuts supplied.

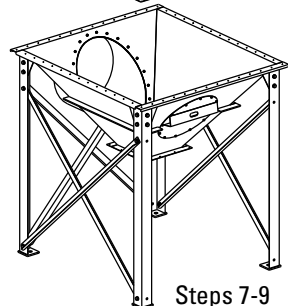
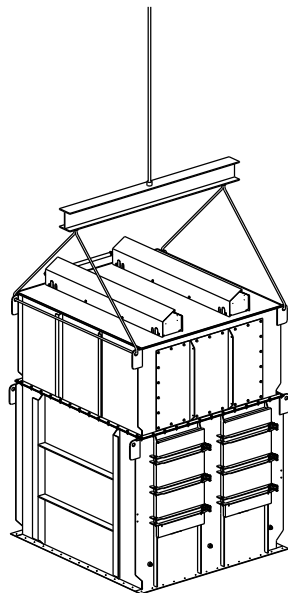
**CAUTION**

Tighten all hardware before removing crane.

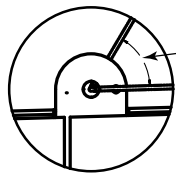
9. Remove crane.



Steps 3-6



Steps 7-9

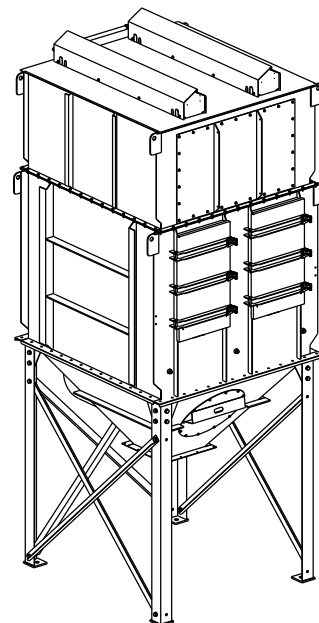
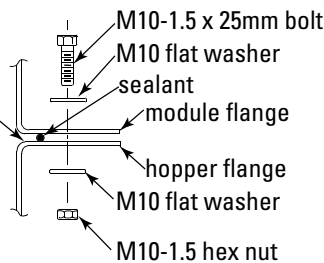


angle not to exceed 30° from vertical (min 60° from horizontal)



Do Not lift with this orientation

Apply sealant after marriage of hopper to cabinet and cabinet to inlet (steps 7-9)



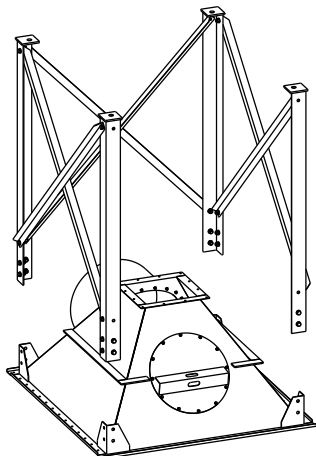
### VH Typical Installation

## VL Typical Installation

### **CAUTION**

Take center of gravity into consideration when lifting unit.

Do not install blower before lifting unit.



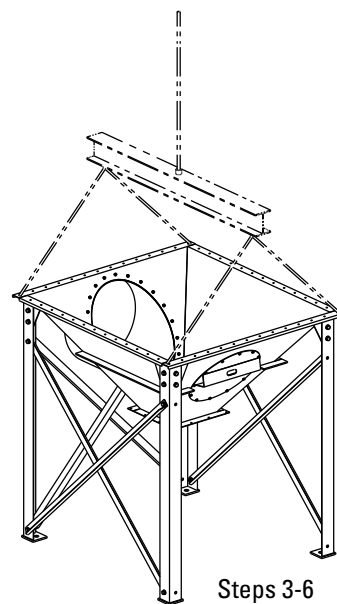
Steps 1-2

1. Place hopper discharge-side up on ground or other level surface and attach legs to hopper.
2. Assemble leg cross braces.
3. Turn hopper and leg assembly over and lift into position over anchor bolts.
4. Level hopper.
5. Tighten all fasteners securely, including all anchor bolts.

### **CAUTION**

Tighten all hardware before removing crane.

6. Apply rope sealant to upper hopper flange (hopper/cabinet seam) so sealant is positioned on the inner edge of the bolt holes (see instructions shipped with collector).
7. Lift unit over leg and hopper assembly and lower slowly.
8. Secure with bolts, washers, and nuts supplied.
9. Apply sealant around inlet opening.
10. Lift inlets individually onto collector. Secure with bolts, washers, and nuts supplied.

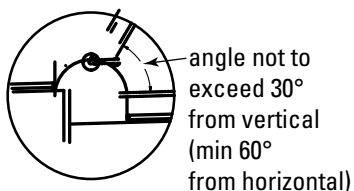
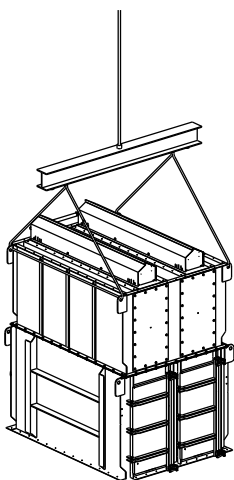


Steps 3-6

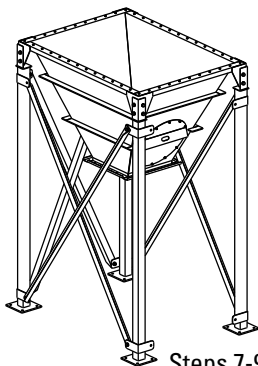
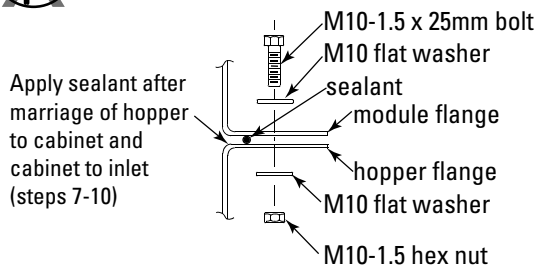
### **CAUTION**

Tighten all hardware before removing crane.

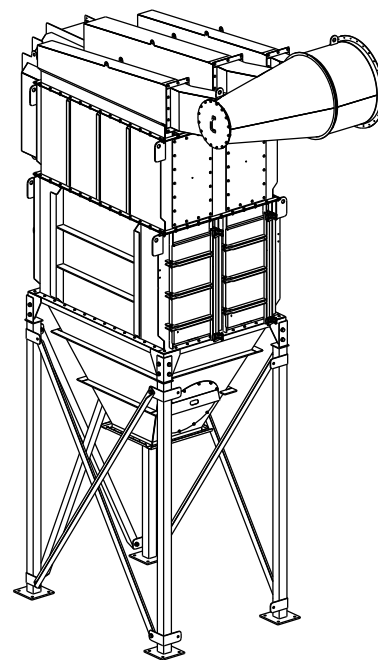
11. Apply sealant to inlet flanges.
12. Lift inlet plenum and secure to inlet with bolts, washers, and nuts supplied.
13. Support inlet plenum before removing crane.
14. Remove crane.



Do Not lift with this orientation



Steps 7-9



## VL Typical Installation

## Standard Equipment

Standard collectors include a base unit, leg pack, hopper, 110VAC solid state timer board in NEMA 4 enclosure, Magnehelic Gauge, compressed air connection and sprinkler tap.

## Hopper and Leg Installation

### **WARNING**

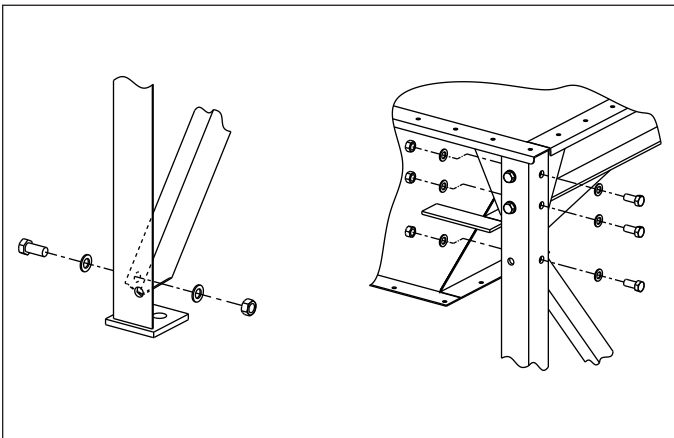
Anchors must comply with local code requirements and must be capable of supporting dead, live, wind, seismic, and other applicable loads.

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.

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

1. Prepare the foundation or support framing in the selected location. Locate and install anchors.
2. Stand the hopper on the body to hopper flange with the discharge end up.
3. Use drift pins to align holes.
4. Reference the Leg and Cross Brace Assembly drawings. Attach the legs to the hopper gusset using the hardware supplied.



Leg and Cross Brace Assembly

5. Turn leg and hopper assembly over and position over anchor bolts. Secure each leg pad to the foundation anchor bolts with customer-supplied flat washers, lock washers, and nuts. Do not tighten hardware at this time.
6. Level hopper.
7. Tighten all hardware securing legs, cross braces, hopper gussets, and foundation anchor bolts.

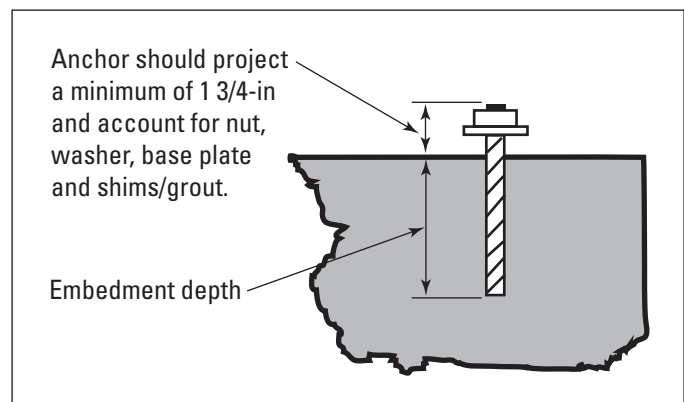
### **CAUTION**

Tighten all hardware before removing crane.

8. Apply sealant/gasket per instructions.
9. Lift unit per rigging instructions and place on hopper. Align with drift pins. Attach base unit to hopper with supplied hardware. Tighten after all hardware is in place.

## Provisional Anchor Bolt Recommendations

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



Typical Foundation Anchor

## Inlet Manifold (Standard) or Outlet Manifold (optional where available) Installation

1. Inlets, inlet and outlet manifolds are to be installed following field installation of hopper and legs and anchoring of collector.
2. Lift and install individual inlets referencing assembly drawings shipped with collector.

3. Lift inlet manifold and bolt to individual inlets referencing assembly drawing shipped with collector.

### **CAUTION**

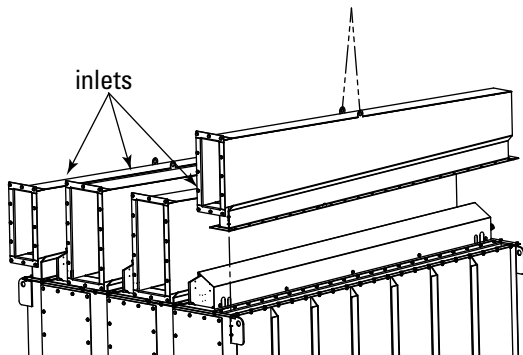
Tighten all hardware and support inlet manifold before removing crane to prevent personal injury and/or property damage.

Inlet and outlet manifolds are considered part of the duct system and must be supported in the field by others.

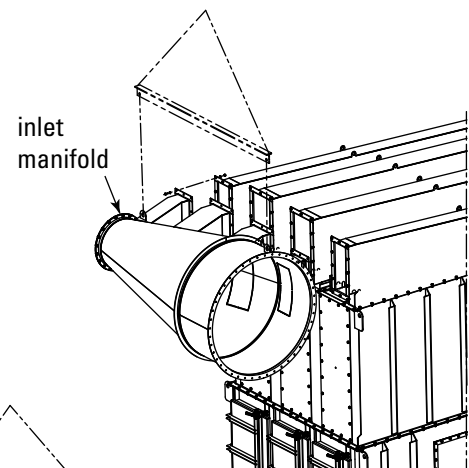
4. Lift outlet manifold and bolt to collector referencing assembly drawing shipped with collector.

### **CAUTION**

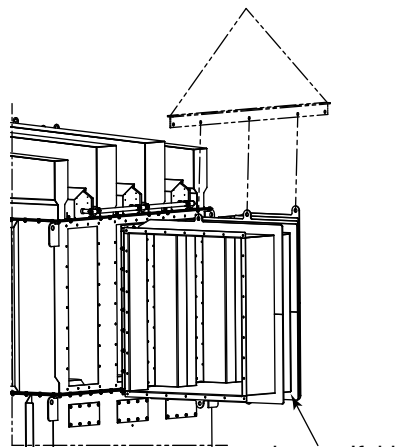
The inlet and outlet manifolds are considered part of the duct system and must be supported in the field by others.



Step 2



Step 3



Step 4

Inlet and Outlet (where available) Manifold Installation

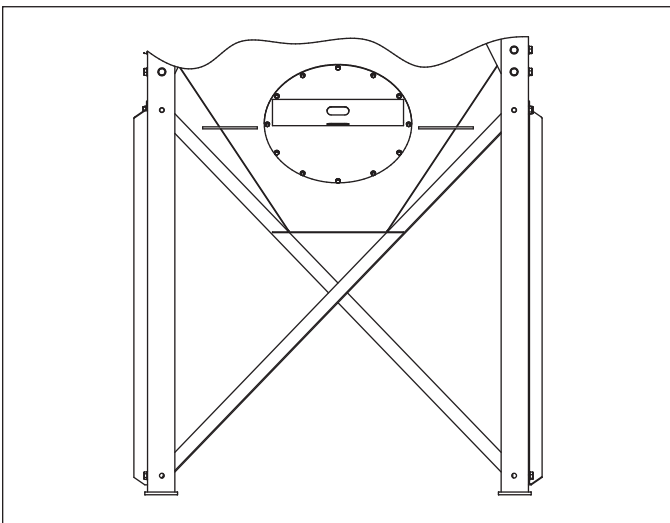
## Hopper Access

### **WARNING**

Completely turn off and lock out any dust collector and ancillary equipment before removing hopper access cover.

Use caution when removing hopper access cover to avoid personal injury.

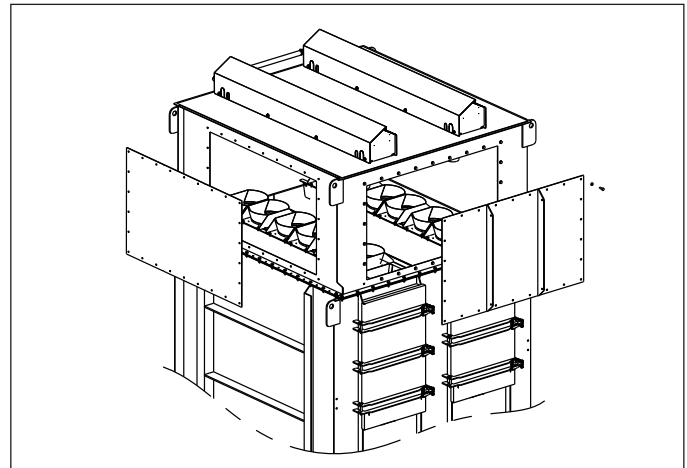
Use special care reaching inside hopper for any dust related hazards or ancillary equipment or any other components.



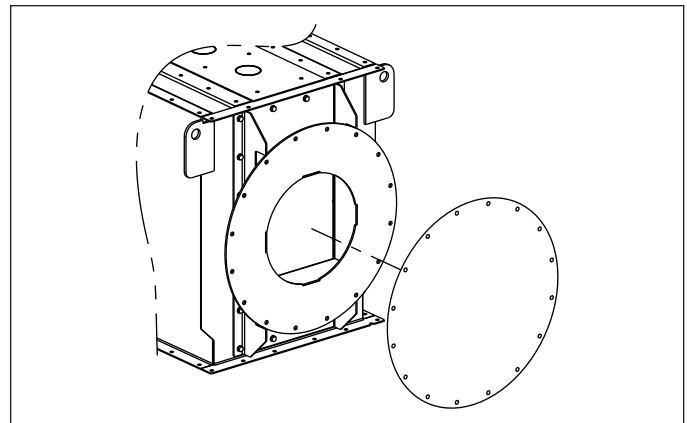
Hopper Access

## Clean Air Outlet

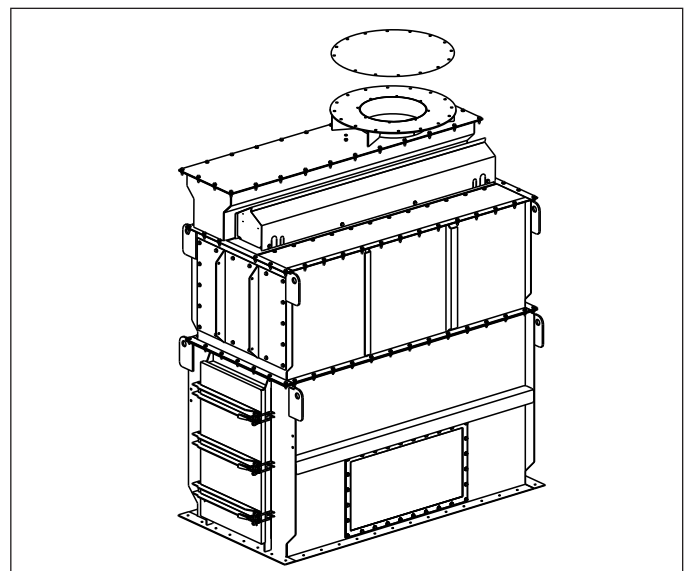
Remove clean air plenum outlet cover or temporary shipping cover.



VH Clean Air Plenum Outlet Covers



VL Power Hole Covers



VH Power Hole Cover



## Compressed Air Installation

### WARNING

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

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

### NOTICE

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

All compressed air components must be sized to meet the system requirements of 90-100-psig supply pressure.

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

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

1. Remove the plastic pipe plug from the collector's air manifold and connect the compressed-air supply lines. Use thread-sealing tape or pipe sealant on all compressed-air connections.
2. Install a customer-supplied shut-off valve, bleed-type regulator with gauge, filter, and automatic condensate valve in the compressed-air supply line.
3. Set compressed-air supply to 90-psig. The valve should open and close sequentially at factory set 15-second intervals (10-second intervals on VH and VL 2-20 and 3-30 units).

## 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 collector's rating plate for required voltage.

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

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

## Antistatic Grounding Installation

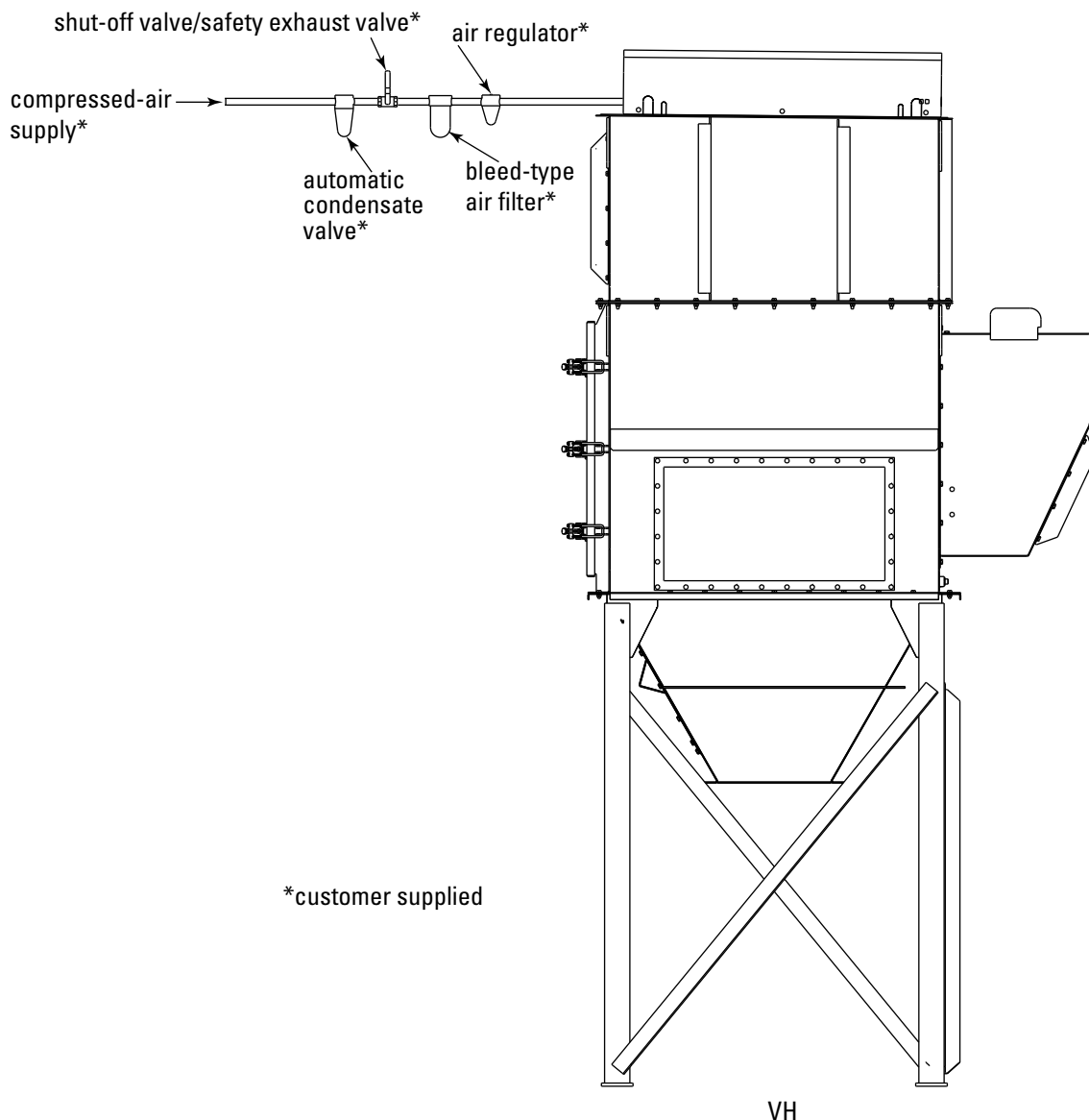
If the collector is equipped with antistatic filters and bonded, the collector will need to be grounded by a qualified electrician.

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

**⚠ WARNING**

Turn power off and lock out electrical power sources.

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



VH Compressed Air Installation

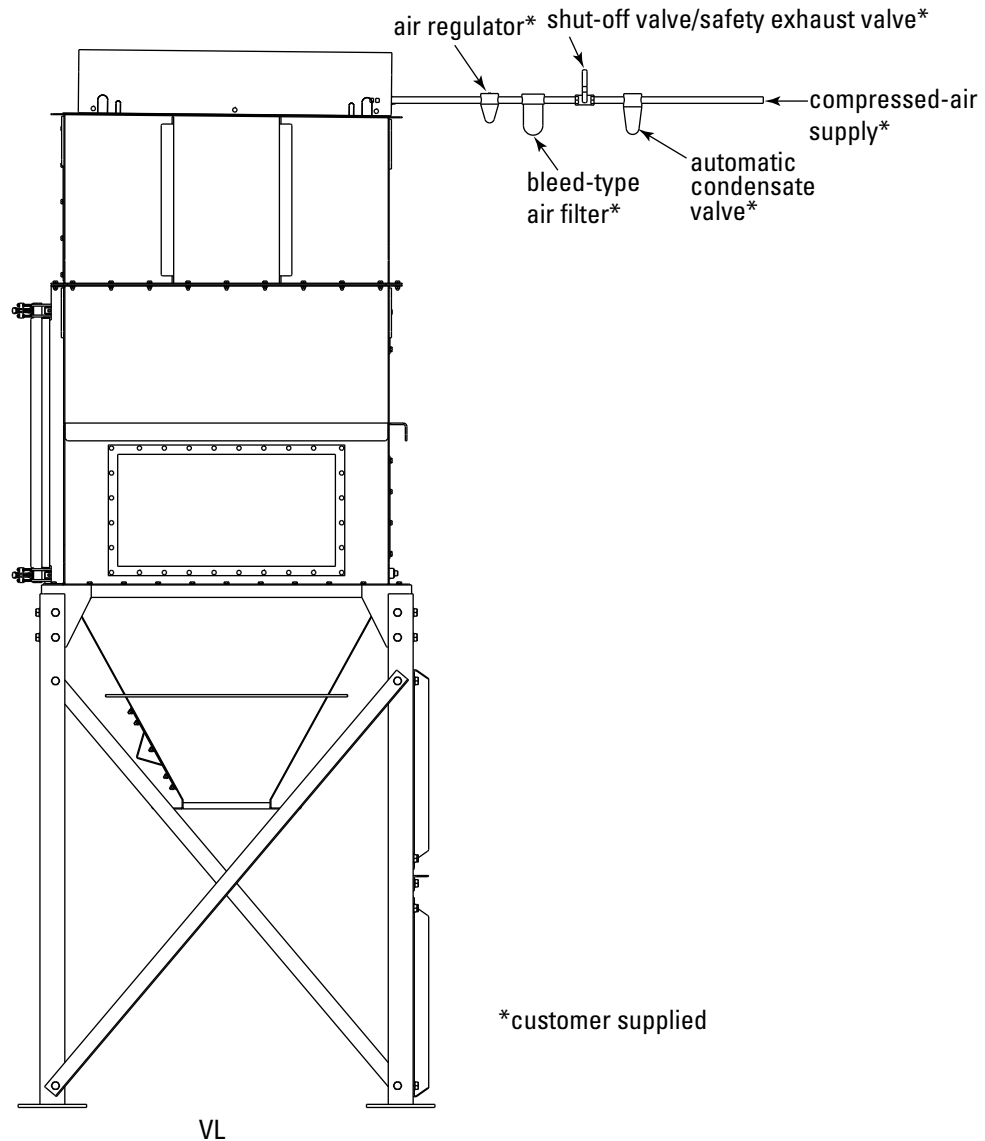




**WARNING**

Turn power off and lock out electrical power sources.

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



VL Compressed Air 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 timer is used to control the filter cleaning system. Available timers include 3, 6, and 10-pin solenoid valve control.

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. Plug the program lug into the pin that corresponds with the number of solenoid valves controlled for 3-10 PIN. For 20 and 32 PIN solenoid controls, set the switch positions on the DIP switch labeled LAST CHANNEL to the corresponding number of pulse valves using the chart printed on the timer board.
3. With power supply ON, check the operation of the timer and valves. The valves should open and close sequentially at factory set 15-second intervals (10-second intervals on VH and VL 2-20 and 3-30 units).
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, 240 VAC also available).

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

## Solenoid Connection

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

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 (standard) or 24VDC (optional)

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

**Pulse ON Time**  
Factory set at 100-milliseconds.

**NOTICE**

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

**Pulse OFF Time**  
Factory set at 15-seconds (VH and VL 2-20 and 3-30 units are set at 10-seconds), adjustable from 1 to 1.5-second minimum to maximum 60 to 66-second.

**Operating Temperature Range**  
-20° F to 130° F

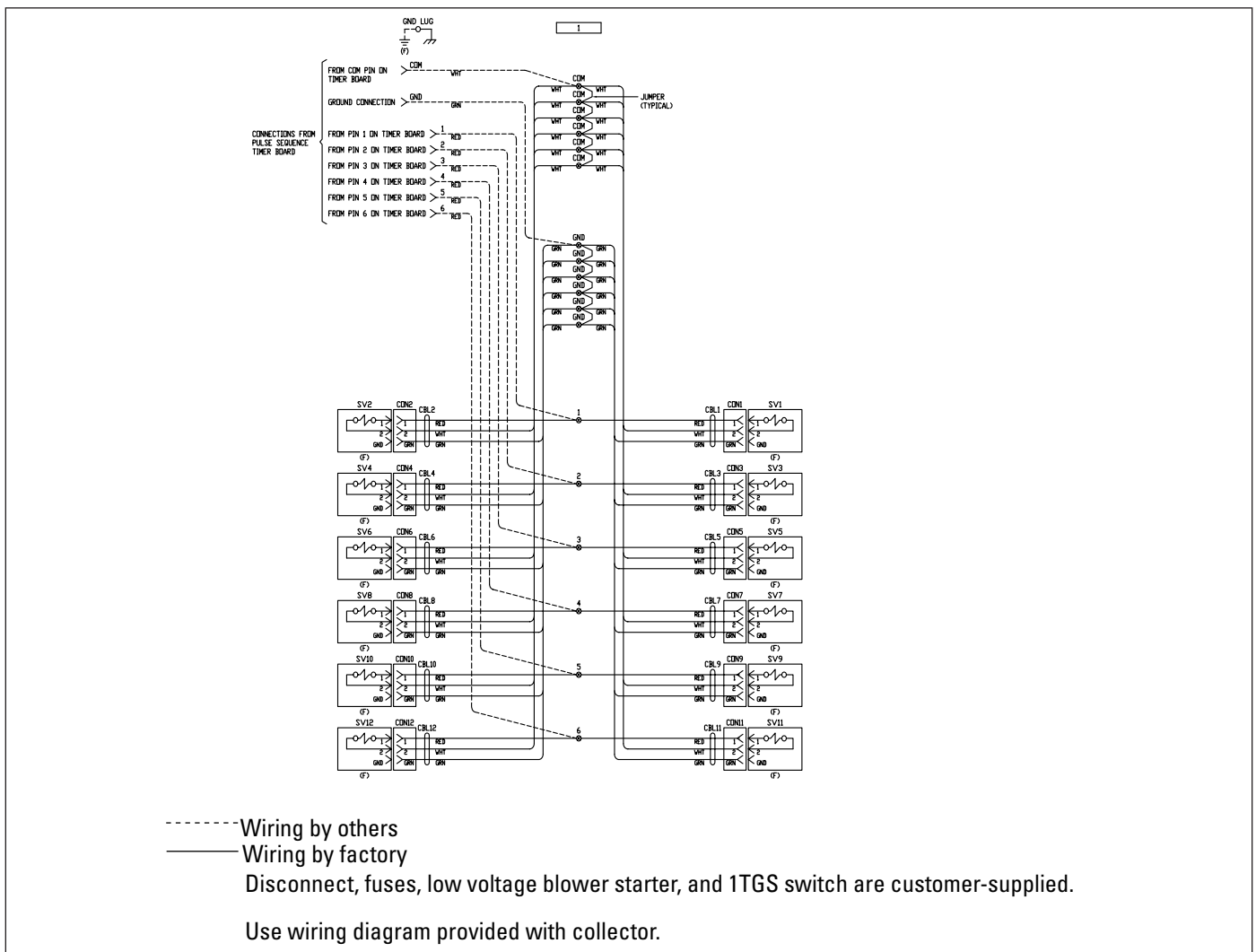
**Transient Voltage Protection**  
50 kW transient volts for 20-millisecond duration once every 20 seconds, 1% duty cycle.

**Solenoid Valves**  
115-V at 19.7 watts each  
24VDC @ 18 VA watts

**Compressed-Air**  
Set compressed-air supply at 90-psig.

**NOTICE**

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



Solid-State Timer Typical Wiring Diagram for VH 2-12

## 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.

Check that hopper discharge is properly set and functioning.

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

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

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

Optional fans over 600 lbs must be independently supported.

1. Check all electrical connections for tightness and contact.
2. Check for proper rotation as noted on the fan and/or hopper discharge device housing.

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

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

### **WARNING**

Do not interchange a power lead with the ground wire. Severe personal injury and/or property damage 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 fan exhaust damper is set to the fully-closed position.
6. Check and remove all loose items in or near the inlet and outlet of the collector.
7. Check that all remote controls and solenoid enclosures (if applicable) are properly wired and all service switches are in the OFF position.
8. Check that all optional accessories are installed properly and secured.
9. Turn power ON at source.
10. Turn the compressed-air supply ON. Adjust pressure regulator for 90-psig.
11. Turn 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 fan motor failure.

13. Turn powered hopper discharge devices ON.

## 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, bleed and lock out lines before performing service or maintenance work..

### NOTICE

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

All compressed air components must be sized to meet the system requirements of 90-100 psig supply pressure.

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

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

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 and/or property damage.

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

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

## 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.

## Filter Removal

1. Release latches to open filter access door.
2. Remove lever safety pin.
3. Lower lever to horizontal position so rod inside lever engages into filter tray mechanism.
4. Lift lever to vertical position. This will lower filter tray to the "down" position.
5. Pull T-handle up to disengage rod inside lever from filter tray mechanism.
6. Lower lever and rest on door opening.
7. Grab the handles of the left and right filters simultaneously. Lift up on one filter handle while firmly pulling down on the other filter handle rocking the filter packs up and down on alternating sides. This action should free the filter pack gaskets from the tubesheet.
8. Grab the hand hold on the filter support tray and slowly pull the tray out until the top edge of the filter just clears the filter seal frame.
9. Slowly pull out this first filter while holding the filter tray in place with the opposite hand. Remove the opposite filter.
10. Repeat step 9 alternating left and right side filter removal until all filters are removed.
11. Position the tray such that it is pulled out to the built in stop position.

### Additional Steps for Models VH and VL 2-16, 2-20, 3-24 and 3-30

Once the first four filters have been removed from the cabinet (2-left and 2-right), the filter tray can be pulled forward and the front section removed to simplify access to the rear filters. To remove the front section of the filter tray:

- a. Pull the tray forward until it reaches the built-in stop.
- b. Reach inside towards the back of the front tray section and remove the clevis pins located on both sides of the tray joint.
- c. Using both hands push down on front of the tray while sliding the tray slowly into the cabinet. After a few inches the front portion of the tray should tip down easily.

- d. Lift the front tray section out of the cabinet and set it safely aside.
- e. Reaching into the cabinet, slide the rear tray section forward to access the remaining filters.

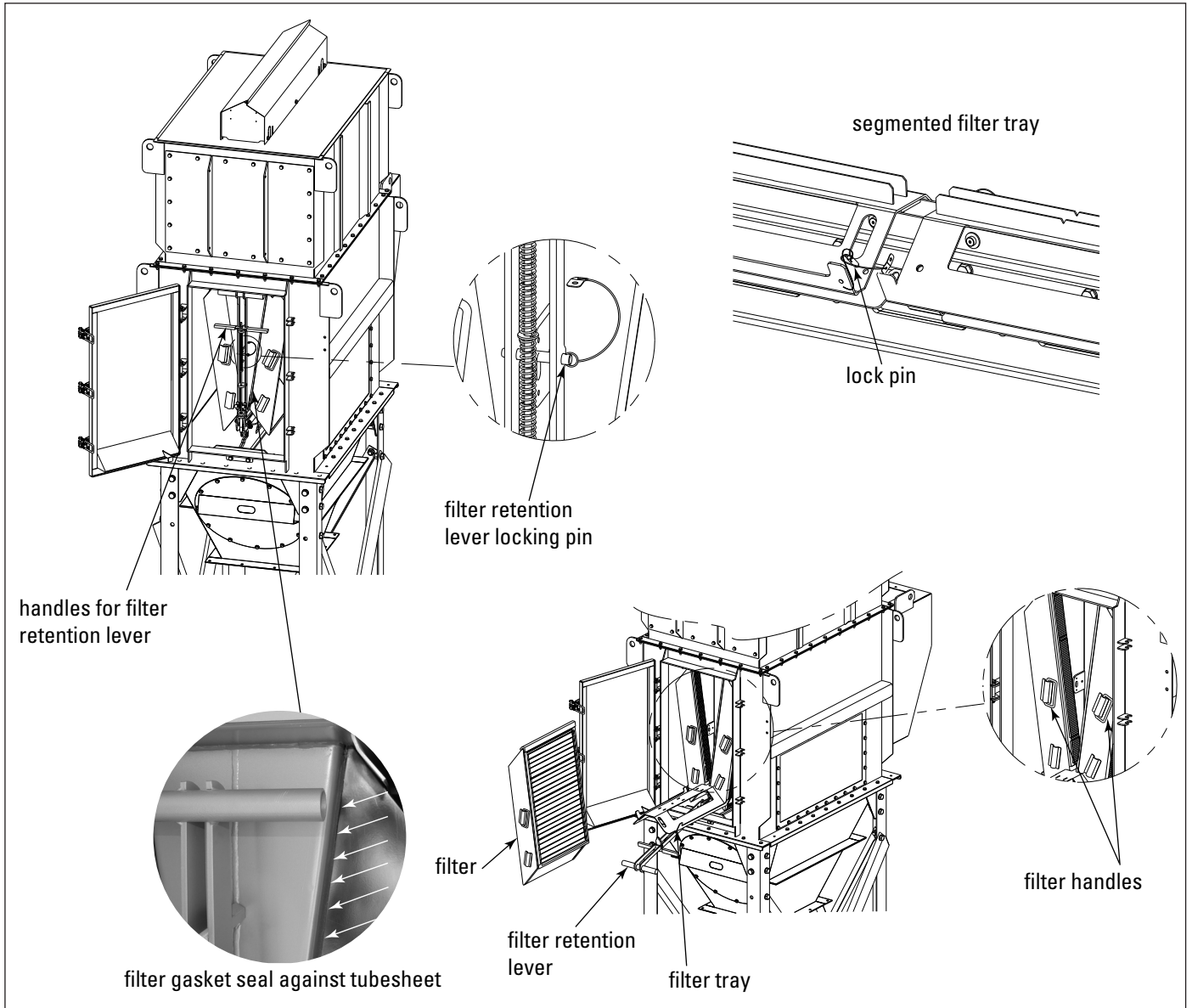


Do not pull the tray out too far. The top edge of the filters should stay within the filter cabinet to avoid filters falling and causing injury or damage to the equipment.

- f. Repeat steps 10 and 11, alternating left and right until all filters are removed from the cabinet.

## Filter Installation

1. Install one filter on the left or right side of the tray. Push the filter to the back of the tray.
2. Install one filter on the opposite side of the tray and push the filter to the back of the tray.
3. Grasping both handles of both filter packs, firmly lift up on one filter while pulling down on the other. While doing this, push the filters and filter tray back into the collector to position the tray for the next set of filters to be installed.
4. Repeat steps 1-3 until the tray is completely full.
5. Push tray all the way in.
6. Pull T-handle and return lever to vertical position to engage filter tray mechanism.
7. Lower lever until lever contacts door frame. Filter tray will raise to the "up" position.
8. If excessive resistance is encountered while returning level to vertical position, repeat step 3.
9. Pull T-handle to disengage lever from filter tray mechanism.
10. Return lever to vertical position and reinstall safety pin.  
**Note:** Filter access door will not close if filter tray is not in the "up" position.
11. Make sure gaskets on filter closest to the door are firmly sealed against the tubesheet as shown in Filter Removal and Installation. If not, make sure all filters are pushed all the way to the back of the tray and that the tray is pushed all the way in.



Filter Removal and Installation

### Additional Steps for Models VH 2-16, 2-20, 3-24 and 3-30

After you install the first two filters in the cabinet (1-left and 1-right), the front portion of the support tray must be attached. To attach the front section of the filter tray:

- a. Slide the rear portion of the support tray towards the back of the cabinet, exposing the front roller bearing.
  - b. Position the rear of the front tray section on the front roller bearing.
  - c. With the front of the tray pressed down, slowly slide the tray into the cabinet until it contacts the v-frame tubesheet.
  - d. Lift the front of the tray to a horizontal position and pull the tray slowly forward until it drops onto the roller. Then push the tray back into the cabinet roughly 1/3 of its length. (10-12 inches). It should now be in contact with the rear section of the tray.
  - e. Align the front and rear sections of the tray and install the clevis pins on both sides.
  - f. Position the assembled tray so the installed filters are just inside the cabinet.
  - g. Repeat filter installation steps 2 – 6 until all filters are installed and the tray is fully inside the cabinet.
9. Grab the handle of both filter packs and press firmly to ensure the filters and tray are all the way to the back of the cabinet. The front edge of the filter packs should not project past the v-frame tubesheet.

### Valve and Diaphragm Service Procedures

#### Tools Required

Safety glasses

3/8" drive socket wrench

13mm shallow or standard depth 3/8" drive socket

Inch/Pound 3/8" drive torque wrench

Needle nose pliers (optional)

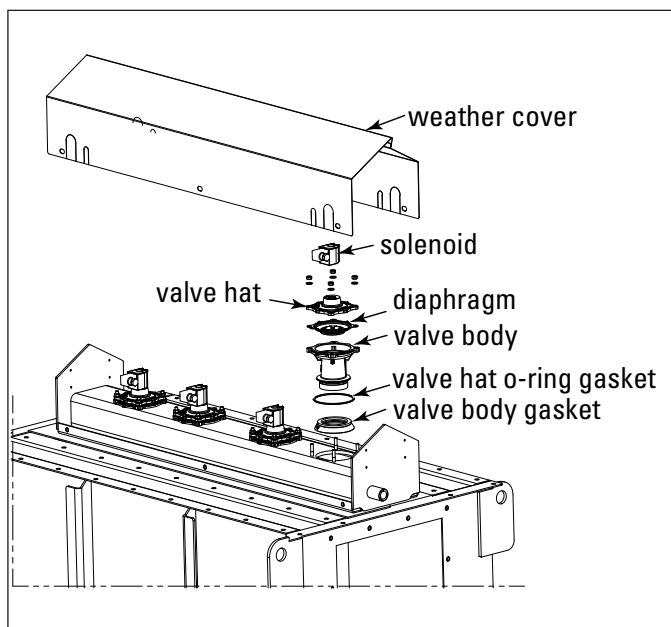
### Valve and Diaphragm Replacement

1. Remove the protective manifold-valve cover and set aside.
2. Loosen and remove the four 8mm nuts securing the valve assembly to the manifold and set aside.
3. Remove the upper valve body/solenoid assembly from the lower valve body and set to the side.
4. Remove the diaphragm and replace with a new diaphragm.
5. Reposition the upper valve body/solenoid assembly on the lower valve body.
6. Follow the Valve Hardware Installation instructions to secure the valve assembly to the manifold.
7. Tighten bolts to 90-in lbs in a crisscross pattern in 3 stages (30%, 60% and 100%).
8. Check for any leaks.
9. Reinstall the protective manifold valve cover.



## Valve Seal(s) Replacement

1. Remove the protective manifold-valve cover and set aside.
2. Loosen and remove the four 8mm nuts securing the valve assembly to the manifold and set aside.
3. Remove the upper valve body/solenoid assembly from the lower valve body and set to the side.
4. Lifting straight up, remove the lower valve body assembly from the manifold, using care to avoid losing the diaphragm.
5. Remove both the upper and lower black rubber gaskets from the lower valve body and replace with new gaskets or replace the complete lower valve body and gasket assembly.
6. Reposition the lower valve body in the manifold.
7. Reposition the diaphragm on the lower valve body seat.
8. Reposition the upper valve body/solenoid assembly.
9. Follow the Valve Hardware Installation instructions to secure the valve assembly to the manifold.
10. Reinstall the protective manifold valve cover.



Valve and Diaphragm Replacement

## Valve Hardware Installation

1. Reposition the four 8mm nuts onto the threaded studs mounted on manifold.
2. Hand-tighten all four nuts so they are just 'snug' into place.
3. Using an inch-pound torque wrench, tighten the first nut to 30 inch-pounds.
4. Move the wrench to a nut diagonally across from this first nut and tighten to 30 inch-pounds.
5. Repeat steps 3 and 4 until all four nuts are tightened to 30 inch-pounds.
6. Repeat steps 3-5 tightening nuts to 60 inch-pounds.
7. Repeat steps 3-5 again, tightening the nuts to a final 90 inch-pounds.

### NOTICE

Failure to following the above procedure for tightening the nuts may compromise seal integrity of the valve body, resulting in compressed air leakage and degradation in valve performance and diaphragm life.

## Dust Disposal

1. Empty dust container(s) as necessary to minimize dust in the hopper.
2. If the optional 55-gallon drum attachment is used, empty when drum is 2/3 full.
3. If optional slide gate is used, close gate before servicing drum.

### CAUTION

Sharp edge of slide gate may result in personal injury while closing the slide gate. Keep hands clear when operating the slide gate.

4. Check integrity of gasket under drum cover.
5. 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.

## Optional Equipment

### Fan Blower

**⚠ WARNING**

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

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

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

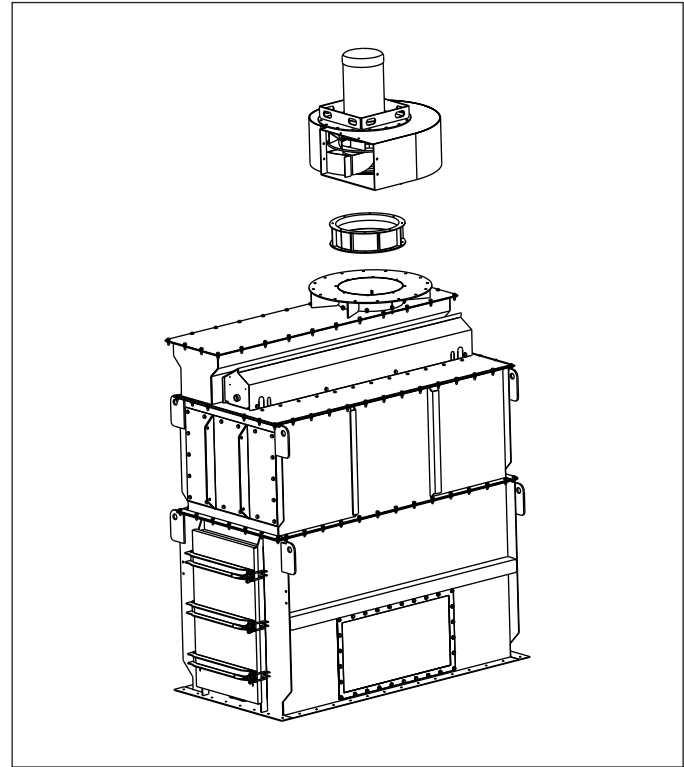
Location must be clear of all obstructions, such as utility lines or roof overhang.

**⚠ CAUTION**

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

**NOTICE**

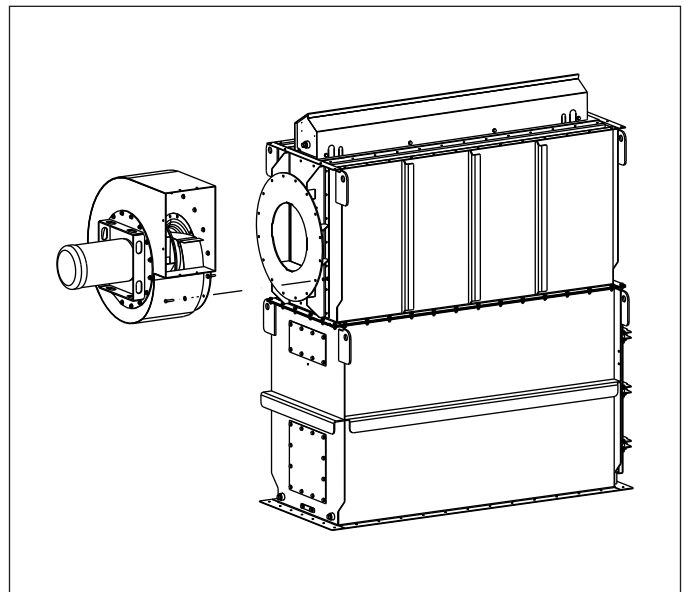
The use of a damper or variable fan drive (VFD) is required to control airflow through the collector. Lack of a control damper or VFD will shorten filter life.



VH Fan Blower

### Fan Mounting - TBI

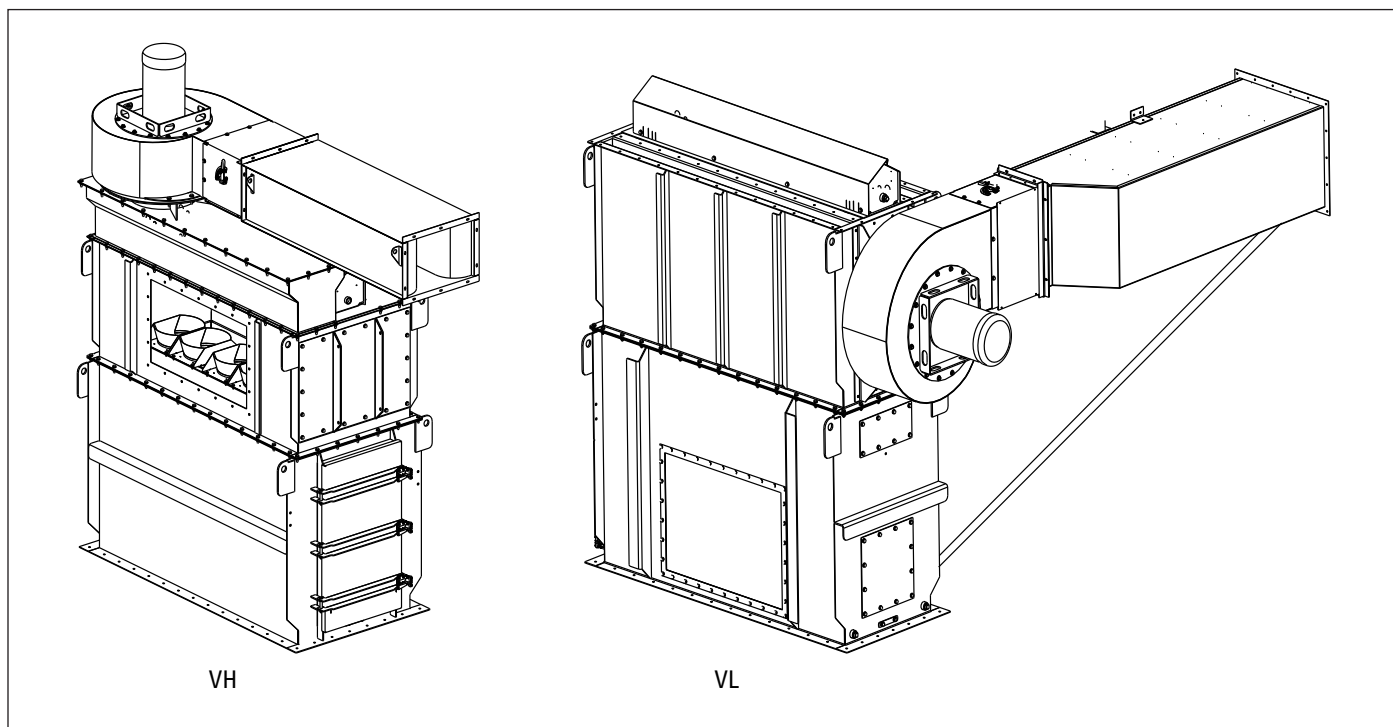
For models offering top mount TBI (VH) or rear mount (VL), refer to the most current version of the TBI Fan Installation, Operation and Maintenance manual.



VL Fan Blower

## TBI and TRB Style Damper and Silencer Support Bracket

1. Loosely assemble the silencer's support brackets.
  - a. Align the support bracket to the underside of the silencer, flush with the cabinet wall and mark the drill locations.
  - b. Drill pilot holes with a 0.339-in bit.
  - c. Secure brackets using 3/8-in thread-forming bolts.
2. Loosen the wing nut on the damper and adjust from 30 to 50% closed.



TBI and TRB Style Damper and Silencer Support Bracket

## 55-Gallon Drum Pack

The drum pack is designed to fit a customer-supplied, standard 55-gallon drum and provides easy access for dust removal and disposal. A flexible hose connects the drum cover to the hopper. Placing a pallet under the drum allows heavier materials to be moved quickly using a forklift or pallet jack. If a pallet is used, the length of flexible hose may need to be shortened.



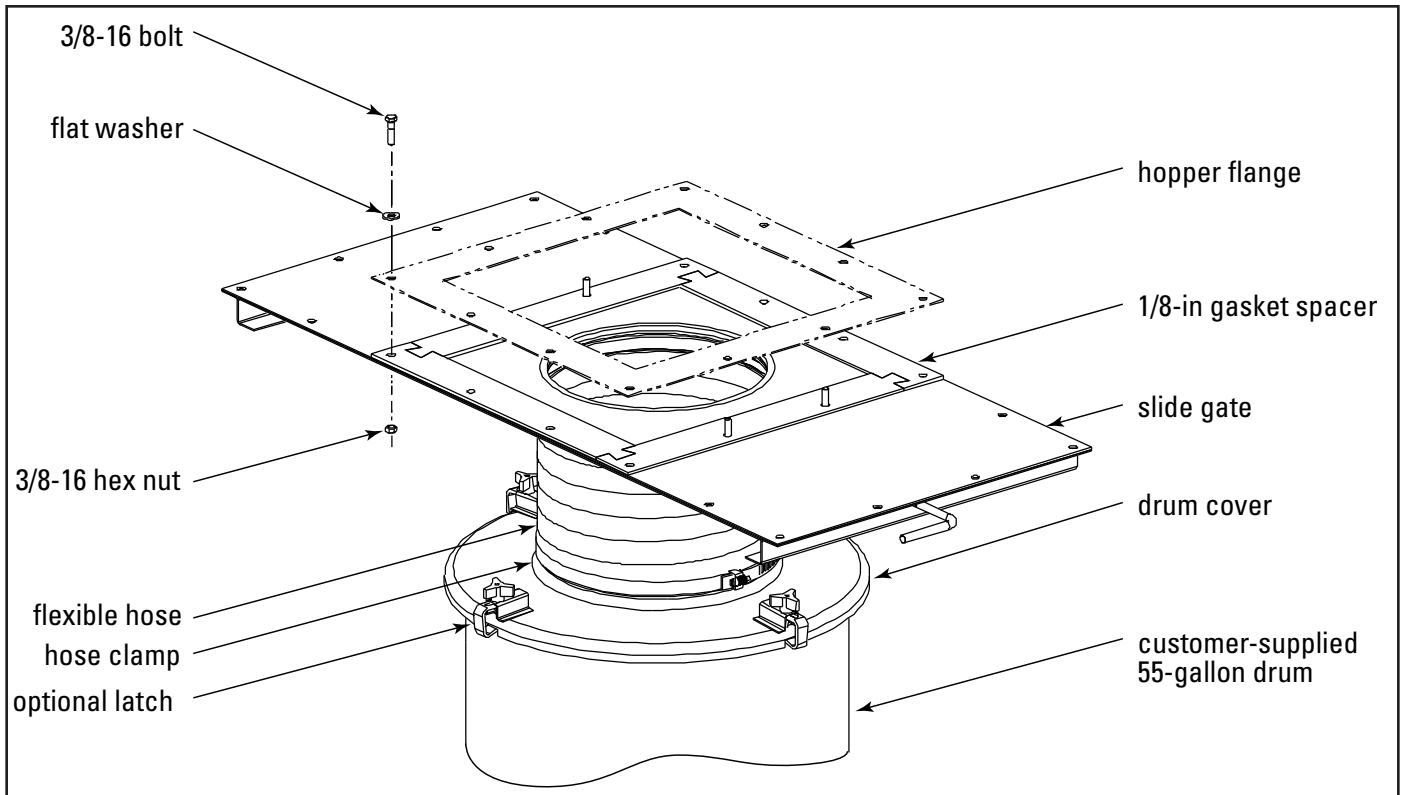
Sharp edge of slide gate may result in personal injury while closing the slide gate. Keep hands clear when operating the slide gate.

### With Slide Gate

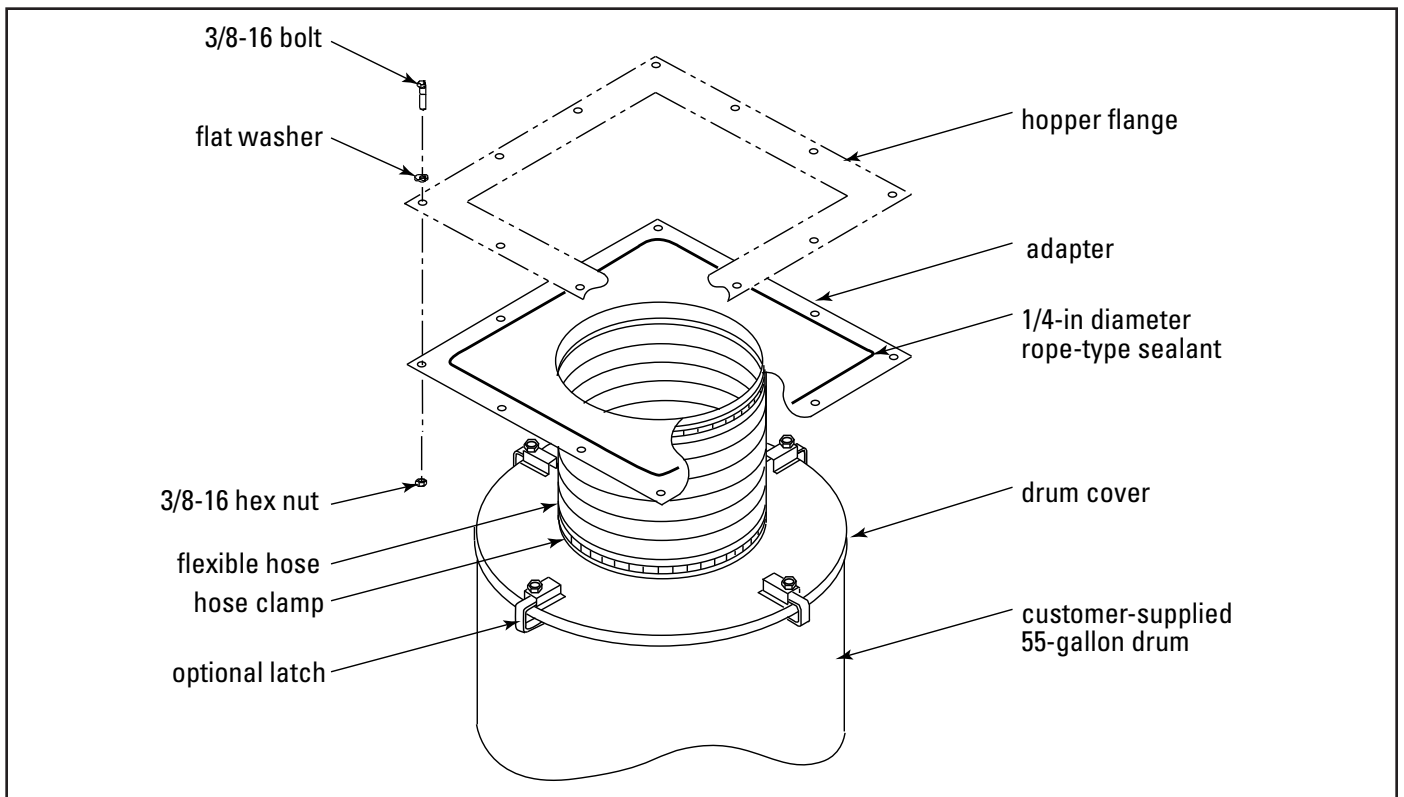
1. Place the 1/8-in gasket spacer between the hopper flange and slide gate as shown.
2. Attach the drum pack and slide gate to the hopper flange using 3/8-16 bolts, washers, and hex nuts.
3. Attach the drum cover to the 55-gallon drum.
4. Use latches to secure the cover to the drum, if equipped.
5. Connect the flexible hose between the drum cover and slide gate. Secure with hose clamps.

### Without Slide Gate

1. Place 1/4-in diameter rope-type sealant between the hopper flange and the drum cover mounting flange toward the inside edge of the bolt pattern.
2. Fasten using the bolts, washers, and nuts supplied.
3. Attach the drum cover to the 55-gallon drum.
4. Use latches to secure the cover to the drum, if equipped.
5. Connect the flexible hose between the drum cover and the adapter. Secure with hose clamps.



55-Gallon Drum Pack with Slide Gate



55-Gallon Drum Pack without Slide Gate

## Dumpster Pack

The dumpster, cover, and all associated hardware are provided as a package. This includes a flex hose to connect the dumpster lid to the hopper, and guides to locate the dumpster in the correct position under the hopper.

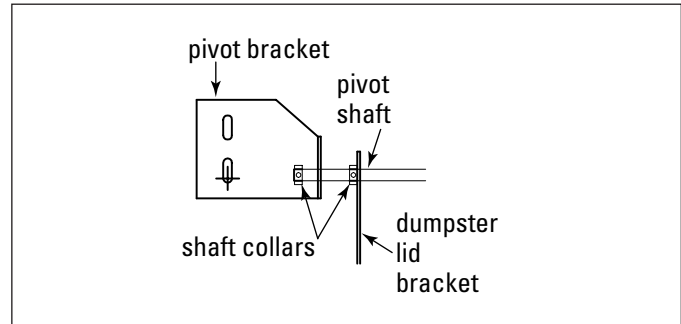
### Installation

1. Fully install dust collector as outlined in the IOM and installation drawings.
2. Install dumpster guides as illustrated in the dump hopper and leg pack drawing and arrangement drawings shipped with the Dumpster Pack.
3. Place lid on dumpster then place dumpster under hopper. Install flex hose to hopper bottom.
4. Place pivot rod through lid and leg pivot point. Be sure to place shaft collars as illustrated.
5. Mount pneumatic cylinders. Run tubing to control valve after installing control valve in convenient location.
6. Connect a compressed air source to the pneumatic control valve.
7. Connect flex hose from the hopper to the dumpster lid and tighten using hose clamp.

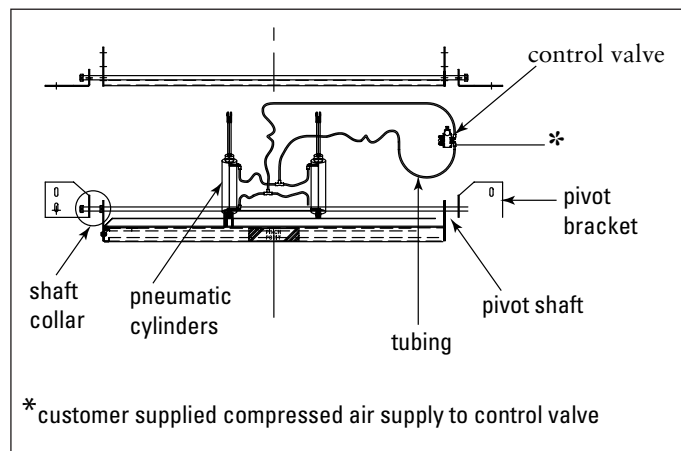
### Operation

**CAUTION** Improper operation or installation of dumpster pack can lead to personal injury and/or property damage.

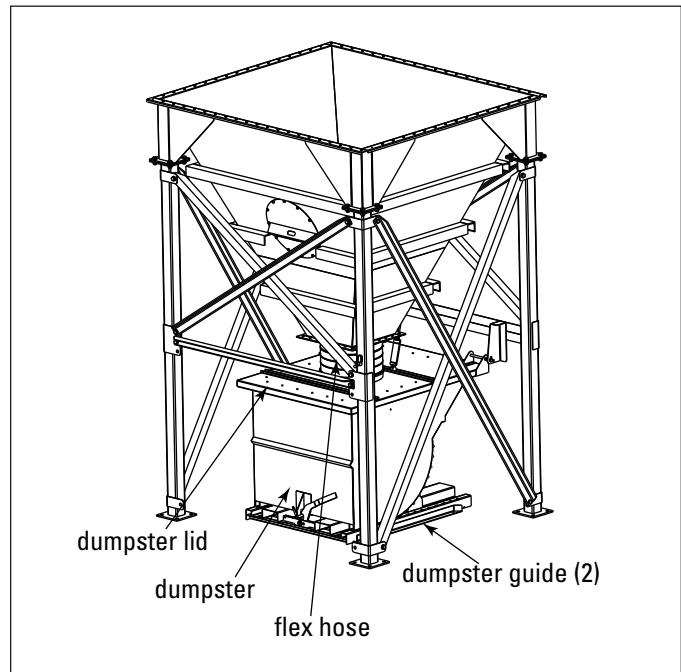
1. Lift lid by moving valve lever until lid is totally separated from dumpster.
2. Lift dumpster with fork lift. Use caution when clearing lid.
3. Empty dumpster.
4. Return dumpster and position correctly.
5. Use caution closing lid. Watch for pinch points.
6. Secure lid with locked clamps (if equipped).



Pivot Bracket



Dumpster Mechanism



Dumpster Pack

## Rotary Valve and Transition-VH Only

### **⚠ DANGER**

Rotating blades can cause serious injury.

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

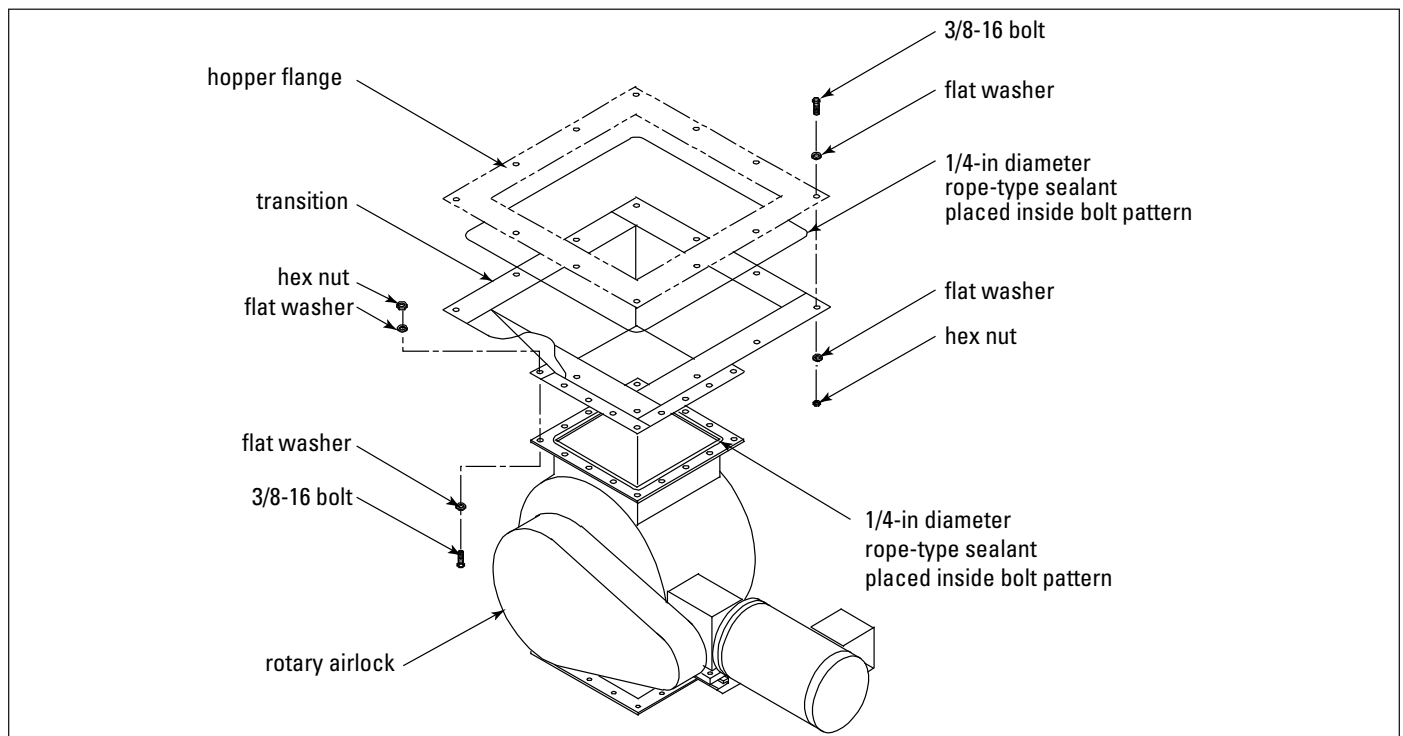
Keep hands, feet and loose clothing away from both inlet and outlet openings to avoid injury or damage when valve is operating.

### **NOTICE**

Optional discharge devices may require independent support.

Discharge devices over 800 lbs. must be independently supported.

Rotary Valves are used to maintain a seal on the hopper outlet while material is discharged from the hopper. A transition allows a valve to be connected to the hopper discharge when there is a size difference between the hopper and the valve.

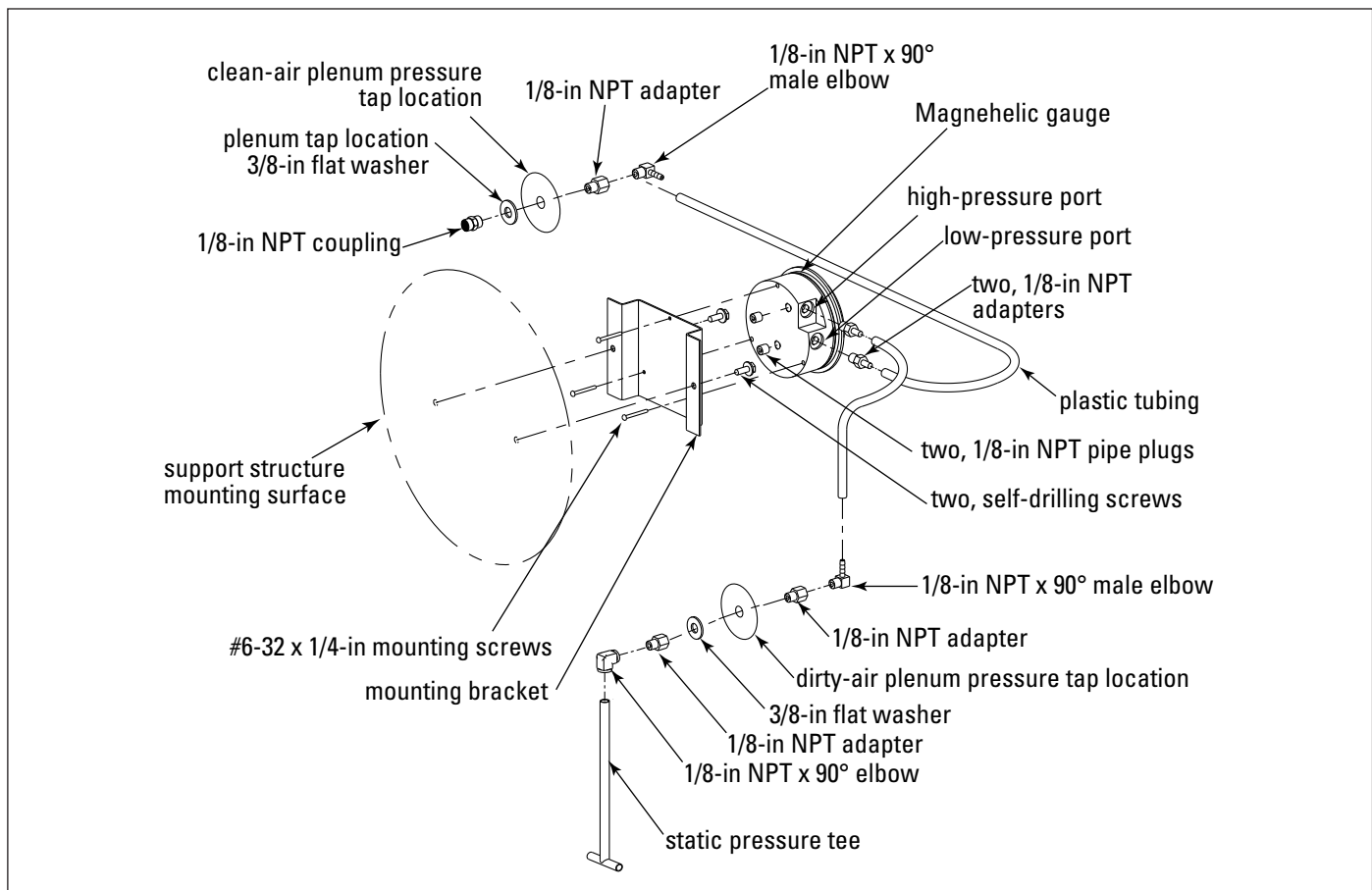


Rotary Valve and Transition

## Magnehelic® Gauge

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

1. Choose a convenient, accessible location on or near the collector for mounting that provides the best visual advantage.
2. Plug the pressure ports on the back of the gauge using two, 1/8-in NPT pipe plugs supplied. Install two, 1/8-in NPT male adapters supplied with the gauge into the high- and low-pressure ports on the side of the gauges.
3. Attach the mounting bracket using three, #6-32 x 1/4-in screws supplied.
4. Mount the gauge and bracket assembly to the supporting structure using two, self-drilling screws.
5. Thirty-five feet of plastic tubing is supplied and must be cut in two sections. Connect one section of tubing from the gauge's high-pressure port to the pressure fitting located in the dirty-air plenum. Connect remaining tubing from the gauge's low-pressure port to the fitting in the clean-air plenum. Additional tubing can be ordered from your representative.
6. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.



Magnehelic Gauge Installation



## Photohelic® Gauge (Available in 110V or 24VDC)

### **⚠ WARNING**

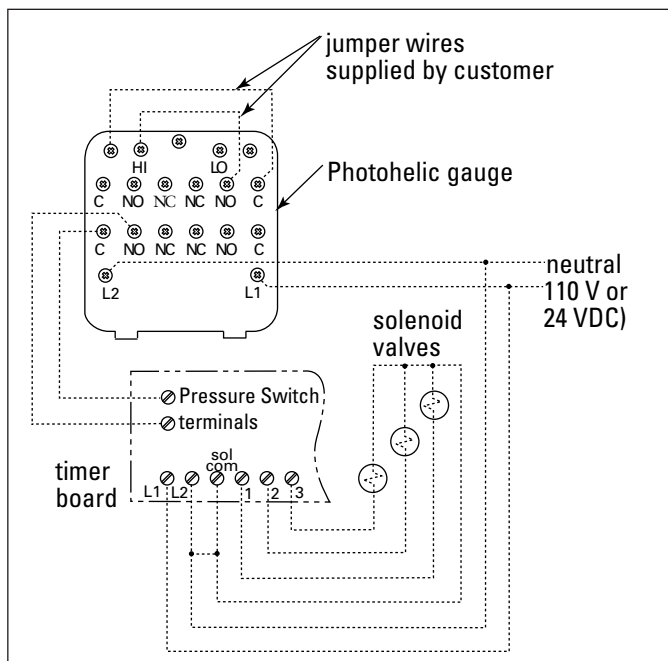
Electrical installation, service, or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

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.

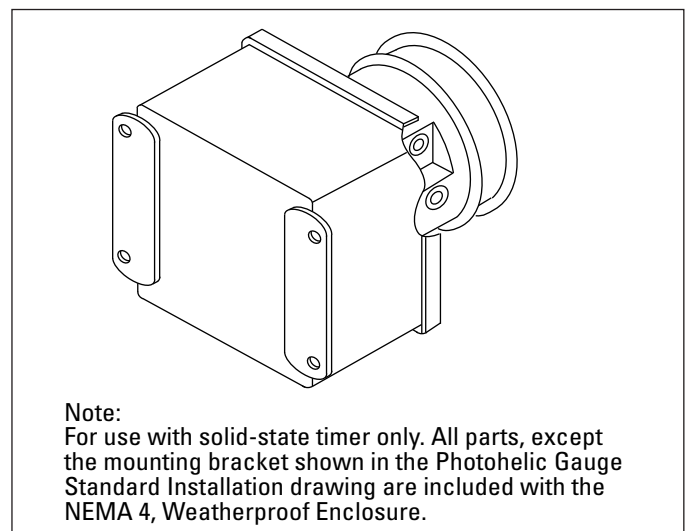
The Photohelic combines the functions of a differential pressure gauge and a pressure-based switch. The gauge function measures the pressure difference between the clean-air and dirty-air plenums and provides a visual display of filter condition. The high-pressure tap is located in the dirty-air plenum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

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

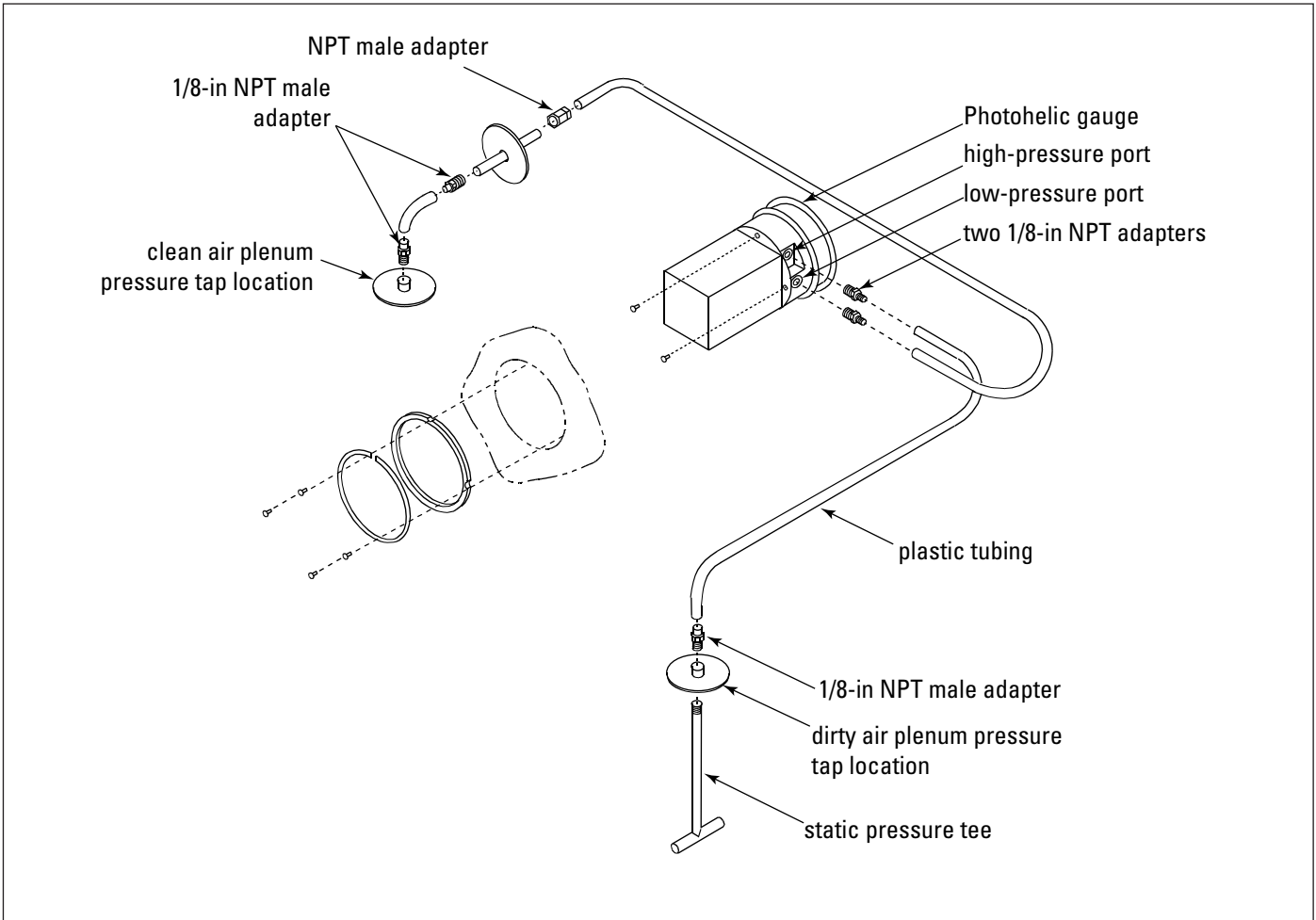


Photohelic Gauge Wiring Diagram

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 in Optional NEMA 4 Weatherproof Enclosure



Photohelic Gauge, Remote Panel or Door Installation

## Delta P Control

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

### Description

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

### Operation

#### Normal

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

## Platforms and Ladders

Stationary platforms are available for use with the VH collector.

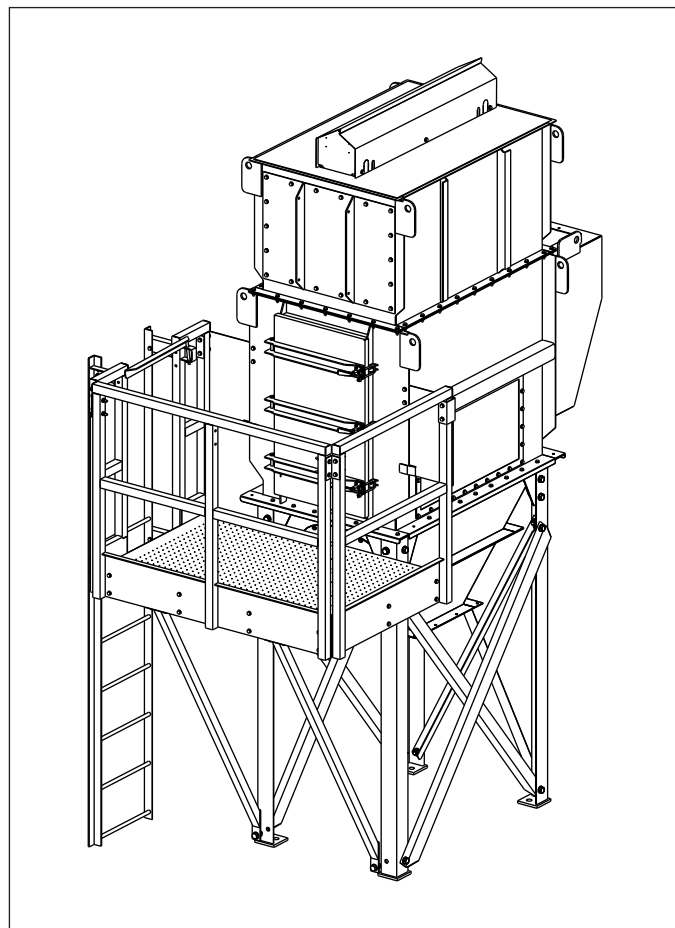
Complete installation and assembly instructions are shipped with the platform.

### **CAUTION**

Dropping the platform can result in personal injury and/or property damage. Secure the platform assembly to the crane or forklift with straps or clamps.

## Stationary Platform

1. Pre-assemble the platform according to the instructions shipped with the platform. The hardware and placement is called out on the assembly drawing.
2. Lift the assembled platform into position and secure following the assembly drawing instructions.
3. Tighten all hardware before removing crane or forklift.
4. Check platform hardware each time the platform is used.



Stationary Platform

## Heavy Duty Cold Climate Kit with Weather Cover-VH Only

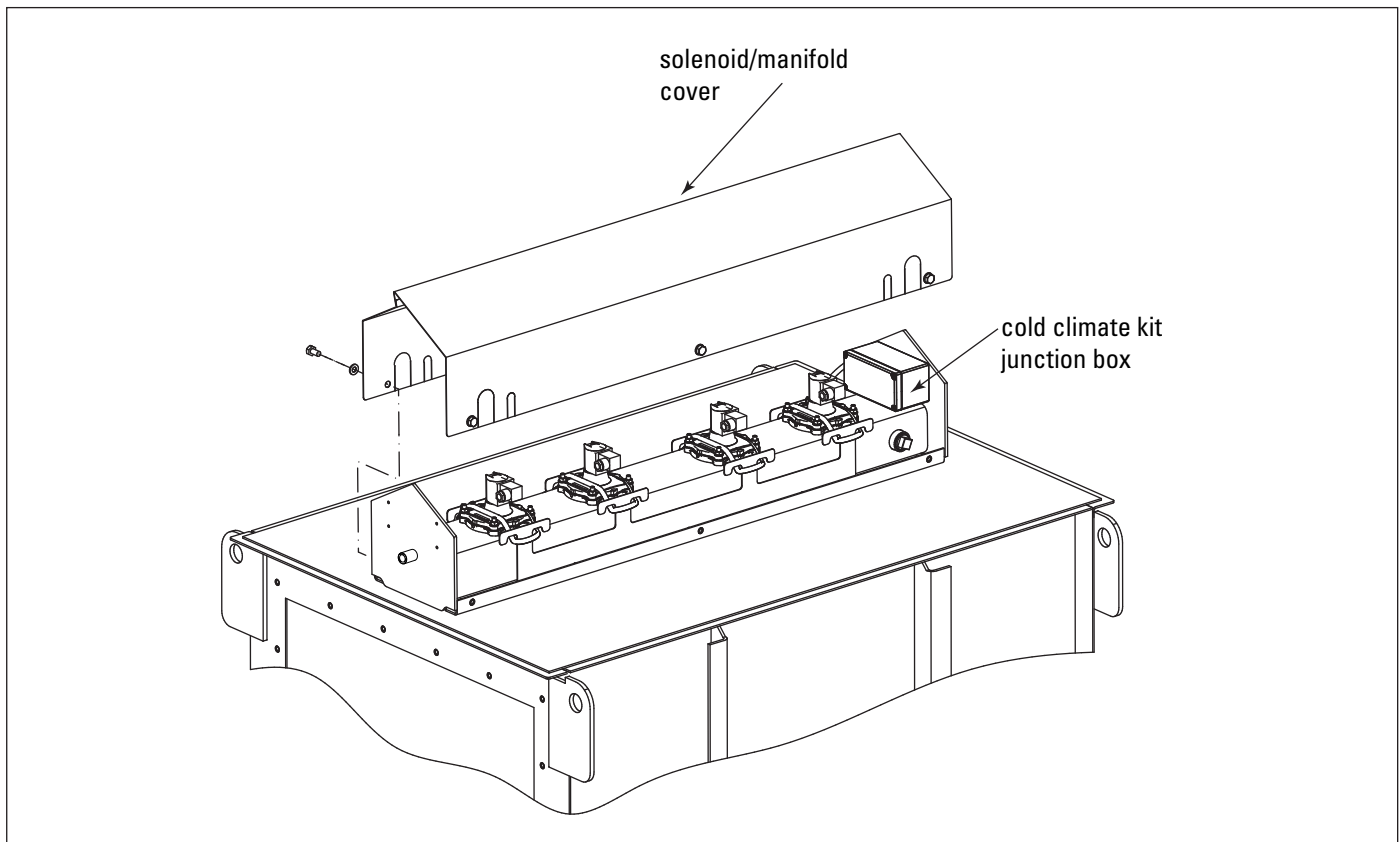
### **⚠ WARNING**

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.

A Heavy Duty Cold Climate kit is available for applications that have moderate-to-high amounts of moisture in the compressed-air supply. The kit consists of a heat cable to deliver heat to the large pulse valves. This kit is factory-installed and detailed installation instructions are provided to field wire to the junction box.



Heavy Duty Cold Climate Kit with Weather Cover

## Pre-Wired Solenoids to Junction Box

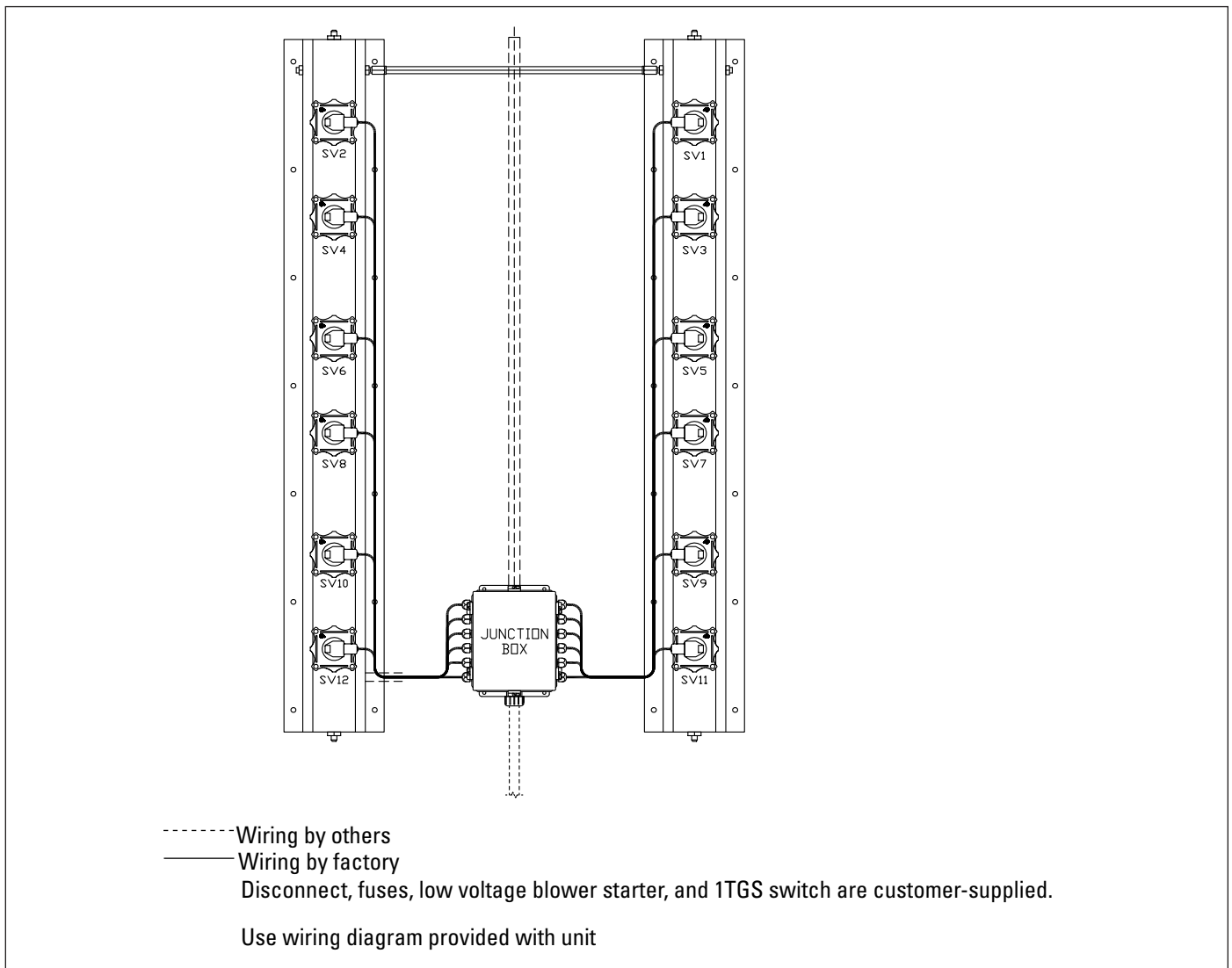
### **WARNING**

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.

A pre-wired solenoid to junction box option is available. Wiring of junction box to timer board to be performed in the field by certified electrical contractor per supplied wiring diagram.



Solenoid Pre-Wired to Junction Box

## Explosion Vent

### **WARNING**

Personal injury, death, and/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 and/or property damage.

The risk of personal injury and/or property 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.

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 for equipment.



## Troubleshooting

Problem	Probable Cause	Remedy
Fan blower and motor do not start	Improper motor wire size	Rewire using the correct wire gauge as specified by national and local codes.
	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	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.
Fan blower and motor start, but do not stay running	Incorrect motor starter installed	Check for proper motor starter and replace if necessary.
	Access doors are open or not closed tight	Close and tighten access doors. See Filter Replacement.
	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.
Clean-air outlet discharging dust	Filter packs not installed correctly	See Filter Replacement.
	Filter pack damage, gasket damage, or holes in media	Replace filter packs as necessary. Use only genuine Donaldson replacement parts. See Filter Replacement.
Insufficient airflow	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.
	Filter packs need replacement	Remove and replace using genuine Donaldson replacement filter packs. See Filter Replacement.

## Troubleshooting

Problem	Probable Cause	Remedy
Insufficient airflow continued	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.
	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.
No display on the Delta P Controller	No power to the controller	Use a voltmeter to check for supply voltage.
	Fuse blown	Check the fuse in the control panel. See wiring diagram inside the control panel. Replace if necessary.
Display on Delta P Controller does not read zero when at rest	Out of calibration	Recalibrate as described in Delta P Maintenance Manual
Delta P Controller ON, but cleaning system does not start	Pressure tubing disconnected, ruptured, or plugged	Check tubing for kinks, breaks, contamination, or loose connections.
	High Pressure On or Low Pressure Off setpoint not adjusted for system conditions	Adjust setpoints to current conditions.
Pulse cleaning never stops	Pressure switch not operating correctly	Check pressure switch inside the control panel.
	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.
	No pressure sensing controller (Photohelic, Delta P or Delta P Plus) in use	NA - pulsing is normal.
Alarm light is ON	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.
Delta P arrow keys to not work	Improper operation	Press and hold one of the three setpoint keys to use arrow keys.



## The Donaldson Torit Warranty

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



**Donaldson**  
FILTRATION SOLUTIONS

### Parts and Service

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

**Donaldson Company, Inc.**  
**Torit**  
**PO Box 1299**  
**Minneapolis, MN 55440-1299**  
**U.S.A.**

**800-365-1331 USA**  
**800-343-3639 within Mexico**

**[donaldsontorit@donaldson.com](mailto:donaldsontorit@donaldson.com)**  
**[donaldsontorit.com](http://donaldsontorit.com)**

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

© 2011 Donaldson Company, Inc.  
Printed in USA

IOM AG8039501 (ENG), Revision 4  
January 2015