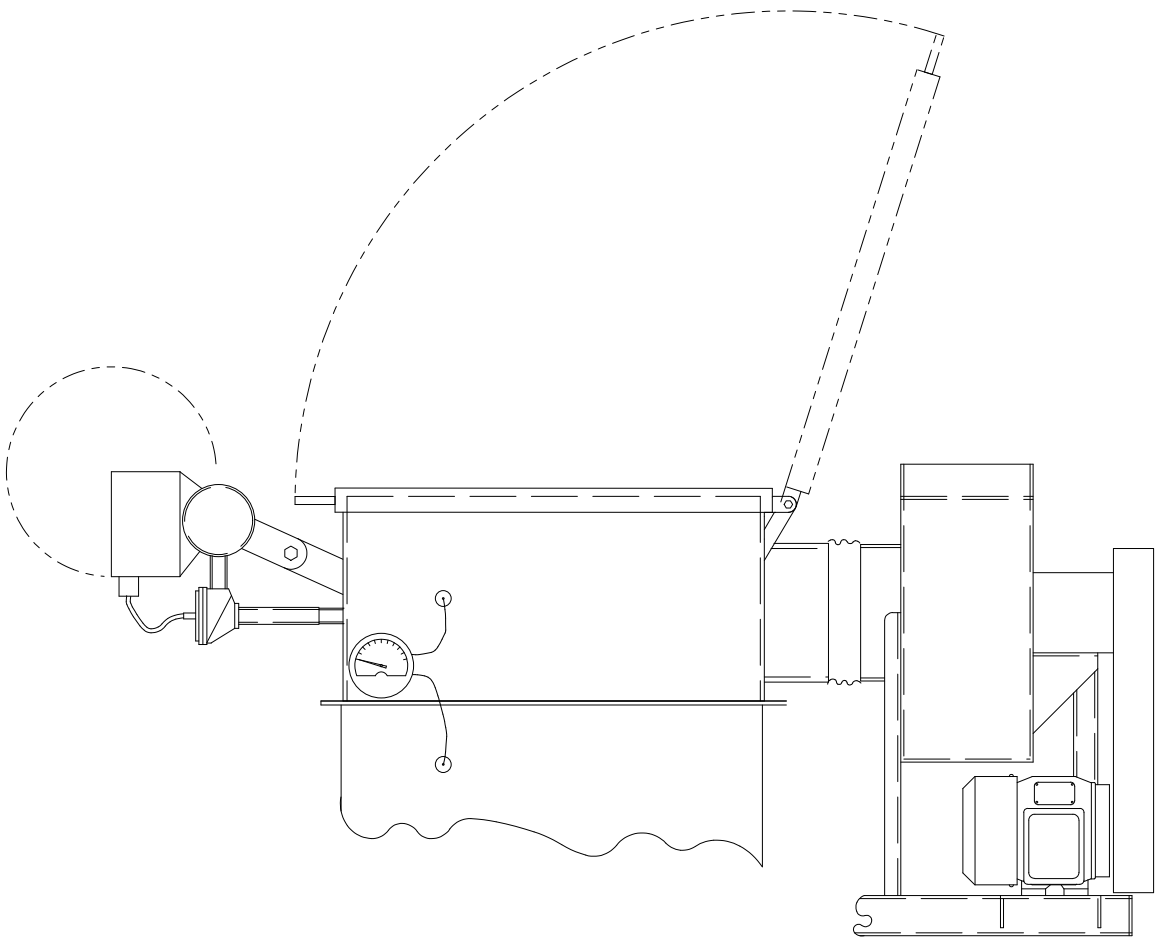




Smico Dust Collector

Manual



Start Up Instructions

1. Check the installation of all surrounding equipment. Be sure all surrounding equipment is functioning properly.
2. Wire the blower, and check that it is turning in the proper direction.
3. Install the filter bags and cages.
4. Connect the compressed air, and check for any leaks.
5. Connect power to the timer controls.
6. Turn all power on. At this point you should hear an occasional pop as the filter goes through a cycle.

Operation

When all components are functioning properly, start the dust laden air through the collector and observe the magnehelic gauge.

The collector should stabilize between 1/2 and 4 water gauge.

If the collector stabilizes above 5 WG then turn off the system and decrease the "Time off" setting. Then restart the collector.

The magnehelic gauge displays the current status of the system.

As the system runs normally, the gauge will stabilize around a certain number. As the collector is used, and the bags get dirty the reading on this gauge will increase gradually. When this value becomes excessive it is necessary to replace the bags. If there is a substantial decrease in the gauge reading this indicates a bag has been ruptured, and needs to be replaced.

In addition to the magnehelic gauge listening is a good indication of when a problem arises. For example: An operator who runs this machine should be able to hear when a row of bags does not "Pop."

Requirements

Electrical Requirements

This collector has a blower which has a 3 HP motor. This motor runs on 230/460 V; 3 phase; 60 cycle power. All proper controls and safety for this motor are not included; and are the responsibility of who installs this equipment.

The timer requires a 110 V lead. This lead must be controlled with the blower. Do not operate the blower without operating the timer. (This will cause the bags to get excessively dirty and require replacement before necessary.) Do not operate the timer without operating the blower. (The "Popping" of the bags reduces the life of the bags.)

Physical Requirements

There needs to be clearance above the machine to get the bags out.

Compressed Air Requirements

Trouble-free, maintenance-free operation is largely dependent on providing compressed air at the dust collector at the proper pressure and of the proper quality.

I. Compressed Air Pressure

For most applications, compressed air at 90-100 PSIG is adequate for proper cleaning of the filter bags. Pressures between 100-120 PSIG may be recommended for some critical applications. Operation at pressures above 110 PSIG should be checked with SMICO for approval and recommendations. Compressed air pressures below 90 PSIG require special considerations in the design and sizing of the dust collector and should be checked with SMICO.

II. Compressed Air Quality

The importance of clean, dry, oil free compressed air cannot be over-emphasized. Dirt, rust, and scale can prevent diaphragm valves and solenoid valves from operating properly. Moisture can cause valves to freeze in cold weather. Moisture and oil can cause deterioration of the valve diaphragms, and if the interior of the filter bags becomes coated with moisture and/or oil, eventual plugging of the bag fabric can occur.

The degree to which a compressed air system must be provided with safeguards to eliminate dirt, scale, moisture, and oil, will depend on the type of compressor, aftercoolers, receivers, and accessory equipment chosen or available, the piping material used, the piping layout between the compressor and the dust collector compressed air header, the lowest temperature to which the piping will be exposed, and the type of process and process conditions encountered.

A. Clean compressed air

1. A simple dirt leg installed at the point where the air line connects to the compressed air header is usually sufficient to trap small amounts of dirt, rust, and scale.
2. An inline filter or a centrifugal separator is required where large amounts of dirt, rust and scale are present, and especially where a possible shut down of the system is critical.

B. Dry compressed air

1. Liquid moisture traps
 - a. An automatic moisture drain should be installed on the compressed air receiver. Automatic drains are available in a variety of float operated types, piston types and pilot types.
 - b. Small amounts of liquid moisture can be handled with inline air filters with automatic drains.
 - c. Large amounts of liquid moisture require a centrifugal separator followed by a chemical dryer (consumable desiccant requiring replacement) to filter out the water droplet carry-over. The dew point is dependent on the temperature of the cooling water used at the aftercooler.

2. Compressed air dryers

- a. In applications where the compressed air piping is indoors or where the installation is in a warm or moderate climate and a compressed air dew point of 35 to 50 degrees F is sufficient to prevent moisture condensation in the pipe lines, the following types of equipment are available: the deliquescent desiccant non-regenerative type for small to medium volumes of air, and the mechanical refrigeration type with or without an afterwarmer for large volumes of air.
- b. In applications where the compressed air piping is outdoors or where the installation is in a cold climate and a compressed air dew point of -10 to -40 degrees F is required to prevent moisture condensation in the pipe lines, the following types of equipment are available: the inline desiccant type with manual regeneration for small volumes of air; the desiccant type with heatless automatic regeneration for medium volumes of air; and the dual tower desiccant type with automatic regeneration by heat for large volumes of air.

C. Oil Free Compressed Air

1. Much of the above mentioned equipment can be used to remove condensed oil and oil mist.
2. For installation where condensed oil and oil mist are the major problems, inline filters are available that use desiccant absorptive elements or packed beds of an oil absorbing granular organic polymer.

Top Mount Bag and Cage Installation

Open top of dust collector. Use the spring loaded pulls at the inside front of the dust collector to pivot air pipes clear.

Lower bag into the appropriate hole in the plate. Fit the snap band so that it spans across the plate. Fit the cage into the bag, and lower it into place. The cage is in place when the outer edge of the cage touches the plate.

Pivot air pipes back into position, lock into place with spring loaded pulls.

Bottom Mount Filter Installation

Filters are attached with a molded urethane ring in the top open end of each filter.

Access the filters by opening the side doors on the filter housing. Remove the existing filters by grasping filter near bottom, and firmly pulling downward and to sides until the ring in the top of the filter disengages from the mounting hub. Remove filters.

Install new filters by placing the filter over the mounting hub extending from top plate. Align the open end of the filter with the mounting hub, and work the filter around the hub until the groove ring is engaged with the hub, and the filter seats to the upper mounting plate. Check all filters for good fit, and close and seal doors.

Timer Controls

Operating Logic

During a cycle the controller energizes the first solenoid for a short duration. (This duration is set by the "On time" setting.) Then the controller waits for a long duration before continuing to the next solenoid. (This duration is set by the "Off time" setting.) When the controller energizes the last solenoid it begins the cycle again. This cycle can be started and stopped by supplying a switch to the "External control switch" leads. Under normal circumstances this switch is not necessary, and comes from the factory shorted.

Specifications

On Time: Adjustable from 50 to 500 ms
Off Time: Adjustable from 8.5 to 180 s
Time delay repeatability: $\pm 3\%$
Operating Voltage: 105 to 135 V AC 50/60 Hz
Output Type: Solid-state 200 VA switch
Transient Voltage Protection: 30 J varistor
Short Circuit Protection: 3 a fuse
Operating Temperature: -40° to 150° F

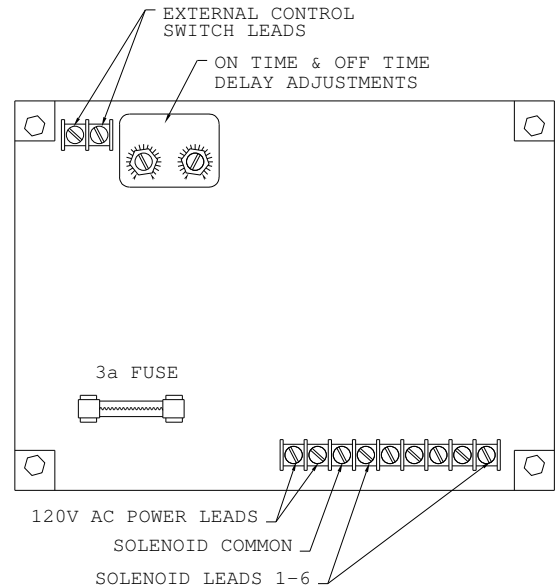
Solenoid Valves

Operating Logic

These are normally closed fast acting solenoid valves. When the solenoid is energized the valve opens which vents the pilot operated valve to the atmosphere. Do not put a muffler on the exhaust port or attempt to manifold the exhaust port. (Any type of back pressure in the system will slow the operation of the pilot operated valves which will impair the operation of the collector.)

Specifications

Pipe Size: 1/8"
Orifice Size: 1/8"
Cv Flow Factor: .34
Watt Rating: 6
Coil Insulation Class: F
Maximum Ambient Temperature: 125° F



Maintenance

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

Cleaning

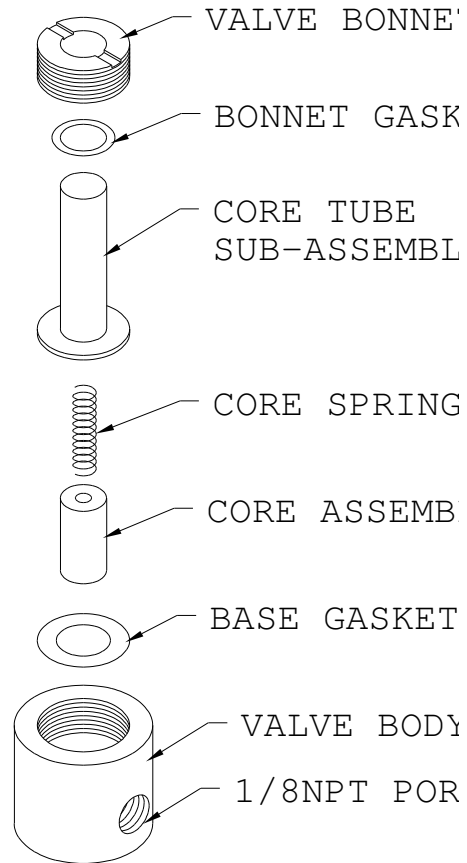
All solenoid valves should be cleaned periodically. The time between cleanings will vary depending upon service conditions. In general, if the voltage to the coil is correct; sluggish valve operation, excessive noise, or leakage, will indicate cleaning is necessary. In the extreme case, faulty valve operation will occur. Clean the valve strainer and filter when cleaning the valve.

Preventive Maintenance

1. Keep the air flowing through the valve as free from dirt and foreign material as possible.
2. While in service, the valve should be operated at least once a month to insure proper opening and closing.
3. Periodic inspection of internal valve parts for or excessive wear. Thoroughly clean all parts. If parts are worn or damaged install a complete rebuild kit.

Causes of Improper Operation

1. Incorrect Pressure: Check the valve pressure. The pressure must be between 80 and 120 PSIG
2. Excessive Leakage: Disassemble valve and clean all parts. If any parts are worn or damaged install a complete rebuild kit.



Installation

1. Push valve stem through the electric box wall. Place solenoid cartridge over valve stem, and lock in place with cap.
2. Connect the wiring by attaching one lead to the solenoid common terminal, and connecting the other lead to the solenoid terminal that corresponds to the particular row of bags.
3. Connect the fitting to the "In" side of the valve. (The fitting goes to a flexible tube connected to the pilot operated valve corresponding to the bags.) NOTE: Do not put anything on the outlet of the valve.
4. Test valve to insure proper installation.

Disassembly

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

1. Remove the cap on the solenoid, inside the electrical box. Pull the valve assembly out from the solenoid.
2. Unscrew the valve bonnet with the special wrench. (This wrench is supplied with the rebuild kit, or can be ordered separately.)
3. Remove core assembly, core spring, and solenoid base gasket from valve body.
4. Check all parts for excessive wear or damage. Clean all parts. If parts are worn or damaged install a complete rebuild kit.

Assembly

1. Lubricate all gaskets with DOW CORNING ® 111 compound lubricant.
2. Replace the core spring, core assembly, and the solenoid base gasket into the core tube sub-assembly.
3. Slide the bonnet gasket and the bonnet over the core tube sub-assembly.
4. Place sub assembly into valve body and tighten the valve bonnet to 90 ± 10 in-lbs.
5. Push valve stem through the electrical box and the solenoid cartridge.
6. Replace cap.

Pilot Operated Valves

Operating Logic

When the pilot valve opens, pressure above the diaphragm is released, allowing the main line pressure to act against the underside of the diaphragm. This opens the main valve orifice, allowing the compressed air to flow to the bags and "Shake" the dirt from them. The pilot valve then closes, the main line pressure bleeds to the top of the diaphragm and closes the orifice until the next cycle.

Specifications

Operating Pressure: 80 to 120 PSIG
Operating Temperature: 50 to 150° F

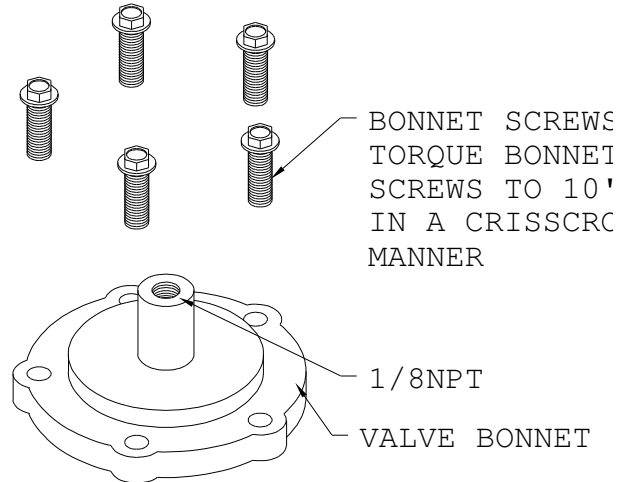
Maintenance

Warning: De-ressurize valve and bleed air from header before attempting to make repair to valve.

NOTE: It is not necessary to remove the valve from its mounting, or to remove the pilot line to repair the valve. (If the pilot line is not a flexible line it will then be necessary to remove it before proceeding.)

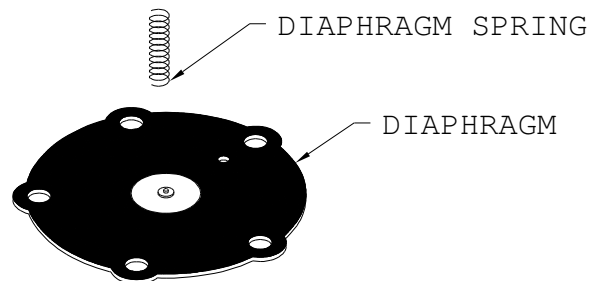
Cleaning

All pilot operated valves should be cleaned periodically. The time between cleanings will vary depending upon service conditions. In general, if the pilot valve is operating properly, and there is sluggish valve operation, excessive noise, or leakage, cleaning is necessary. In the extreme case, faulty valve operation will occur.



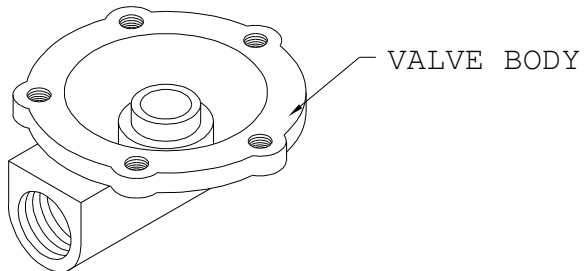
Preventive Maintenance

1. Keep the air flowing through the valve as free from dirt and foreign material as possible.
2. While in service, the valve should be operated at least once a month to insure proper opening and closing.
3. Periodic inspection of internal valve parts for excessive wear. Thoroughly clean all parts. If parts are worn or damaged install a complete rebuild kit.



Causes of Improper Operation

1. **Incorrect Pressure:** Check the valve pressure. The pressure must be between 80 and 120 PSIG
2. **Excessive Leakage:** Disassemble valve and clean all parts. If any parts are worn or damaged install a complete rebuild kit.
3. **Failure to Open or Close:**
 - A. If diaphragm remains open, bleed hole may be clogged. Disassemble valve, clean, and check for worn or damaged parts.
 - B. If diaphragm remains closed, the diaphragm may be torn. Disassemble valve and inspect for damaged or worn parts.
 - C. Failure of the remote pilot valve can also cause improper operation of the valve. Check the operation of the pilot valve.



Disassembly

1. Remove the outer screws.
2. This exposes the internal components of the valve.
3. Inspect for excessive wear or damage, and replace if necessary.

Assembly

1. Replace valve diaphragm, diaphragm spring, and valve cover.
2. Start all 5 outer screws, then tighten these screws in a crisscross manner to 10 - 11 ft·lbs.
3. Operate the valve to insure proper installation.

Magnehelic Gauge

Operation Logic

The magnehelic gauge measures the pressure difference between the clean air and the dirty air. This reading is generally a steady reading, and with regular inspection this reading will inform you when the bags need to be replaced, or when one is ruptured. When the gauge reads excessively high then the bags need to be cleaned. When the gauge readings drop significantly this usually indicates a bag has developed a rupture.

Specifications

Connections: 1/8 NPT
Scale: 0 to 8" WG (water gauge)
Accuracy: $\pm 2\%$ of full scale at 70°F
Pressure Rating: 15 PSIG
Operating Temperature: 20 to 140°F

Maintenance

Any attempted field repairs will void your warranty on the gauge. Do not attempt any repairs. If the gauge is not functioning properly return it to the factory for repairs.

Installation

This gauge must be mounted vertically. The high pressure port goes to the dirty air, and the low pressure port goes to the clean air. NOTE: Plug both unused ports.

Blower

Operating Logic

The blower provides the air flow rate which allows the bogs to collect the dirt. When the blower is on, the timer controls need to be on. If this is not done, the bags will quickly get dirty to the point of needing to be replaced.

Specifications

Motor: 2 HP 3600 RPM 230/460 V 3 phase 60 Hz TEFC

Drive: Drive Speed 3200 rpm

Static Pressure: 6" WG

Unobstructed Air Flow Rate: 1000 CFM

Air Flow Table

3600 RPM-1000 CFM

3000 RPM- 800 CFM

2400 RPM- 670 CFM

1800 RPM- 560 CFM

Maintenance

Lubrication

The bearings on the blower need 1 oz of grease every month.

General Maintenance

The only maintenance that is necessary on the blower, other than lubricating the bearings, is to check the belt and other components for wear or damage. All of these components require special repair equipment and should not be repaired in the field. Replace any slightly damaged components.

Installation

The blower will go in the frame only one way. The exhaust can be turned around in any direction in 45° increments. When the motor is wired, check the rotation of the motor to insure it is in the proper direction.

Parts List Top Mount Filter			
Item Description	Reference	Part Number	Quantity
Timer Controller Board	T2006-B10	735-130	1
Pilot Valve	PS8262C2	735-070	4
Pilot Operated Diaphragm Valve	8353C22	735-075	4
Filter Bags	503321	735-220	12
Filter Bag Cages	SMICO36	735-010	12
Magnehelic Gauge	2008	735-150	1
Door Clamps	CL-300PA	255-170	2
Bearings	TBSC-124468	735-100	2

Parts List Bottom Mount Filter			
Item Description	Reference	Part Number	Quantity
Timer Controller Board	2006-B10	735-130	1
Pilot Valve	P8262C2	735-070	4
Pilot Operated Diaphragm Valve	8353C33	735-075	4
Filter	735-226	735-226	8
Venturi	735-040	735-040	8
Mounting Hub	735-230	735-230	8
Magnehelic Hub	735-230	735-230	1
WICA Pressure Gauge	735-060	735-060	1
Door Clamps	CL-300-PA	255-170	2
Bearings	TBSC-124468	735-100	2