

# **FILTER TECHNOLOGY LTD**

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## **RM/BV Series Collectors**

### **Operation and Maintenance Manual**

#### **GENERAL DESCRIPTION**

Filter Technology, Ltd RM collectors remove solids or dust from an air stream. Dirty air enters the bottom of the lower section and is forced or drawn through the pleated bag filters where the dust is deposited on the exterior of the filter elements. The clean air continues through the center of the filter to the clean air plenum where it exits to atmosphere.

#### **APPLICATION NOTES**

While it is not the purpose of this manual to describe the possible applications and uses of Filter Technology Ltd's *RM* series collectors, these units should never be used in hazardous areas or for the collection of explosive materials without prior written consent of Filter Technology Ltd.

Maximum temperature of the incoming air should be limited to 250 degrees F, maximum pressure rating for standard shell is approximately 1 PSI or 30 inches of water.

## **OPERATING PRINCIPLE (Figure 1, 2, & 3)**

The RM / BV series dust collectors are designed for continuous operation cleaning the filter elements while the air passes through the unit. This is accomplished by directing a blast of compressed air into the top of each filter element. The compressed air blast both reverses the airflow and mechanically expands the filter dislodging the dust, which falls out of the bottom of the unit.

Starting with the supply of plant compressed air to the regulator supplied with the RM unit. The regulator system removes any water and oil is automatically drained from the filter by the auto drain on the base of the regulator. The regulator reduces the incoming air pressure (maximum input pressure is 140 PSI) to 85 PSI approximate which is the required pressure for cleaning the filters without damage.

The header stores a volume of air sufficient to allow the diaphragm valve to pulse when actuated. The diaphragm valves are controlled by the solenoid valves, which act as a pilot in that they hold compressed air on the diaphragm preventing them from opening. The diaphragm valves are actuated by the release of pressure from the solenoid valves. From the diaphragm valves the pulse of air travels through the Flex-couple to the blowpipes, exiting through holes in the bottom of the pipes and into the top of the individual filters. One row of filters is pulsed or cleaned at a time allowing the remaining units to continue to filter the air flowing through the collector.

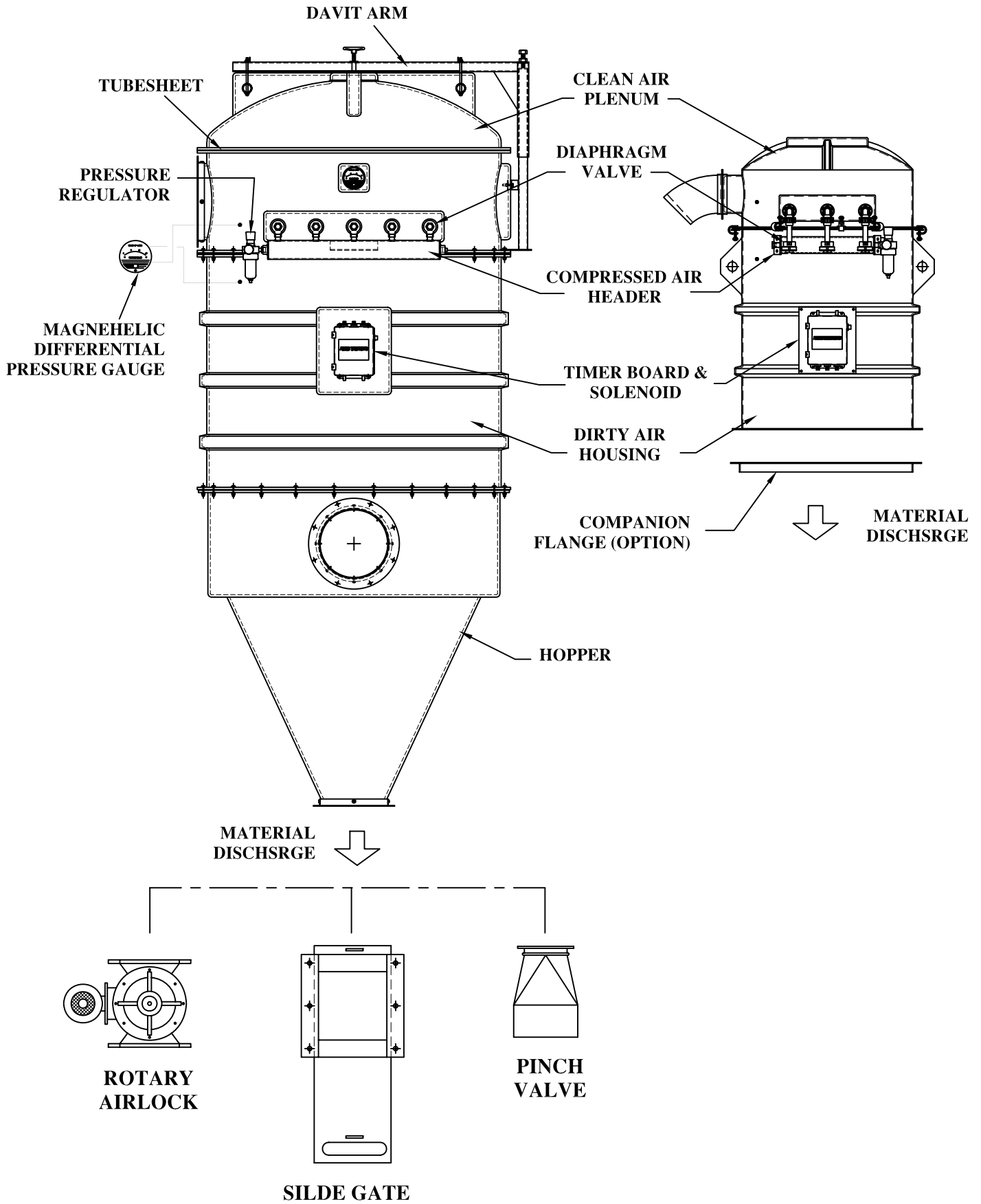
Generally the collector will operate at less than 4" W.G. differential pressure at a timer "off " time of 10 to 12 seconds. The purpose of the timer board is to provide a signal to the solenoid valves, which translate the electrical signal into the release of air pressure, which actuates the diaphragm valves.

The duration of the cleaning pulse and the interval between pulses can be adjusted to meet the cleaning demands of the application.

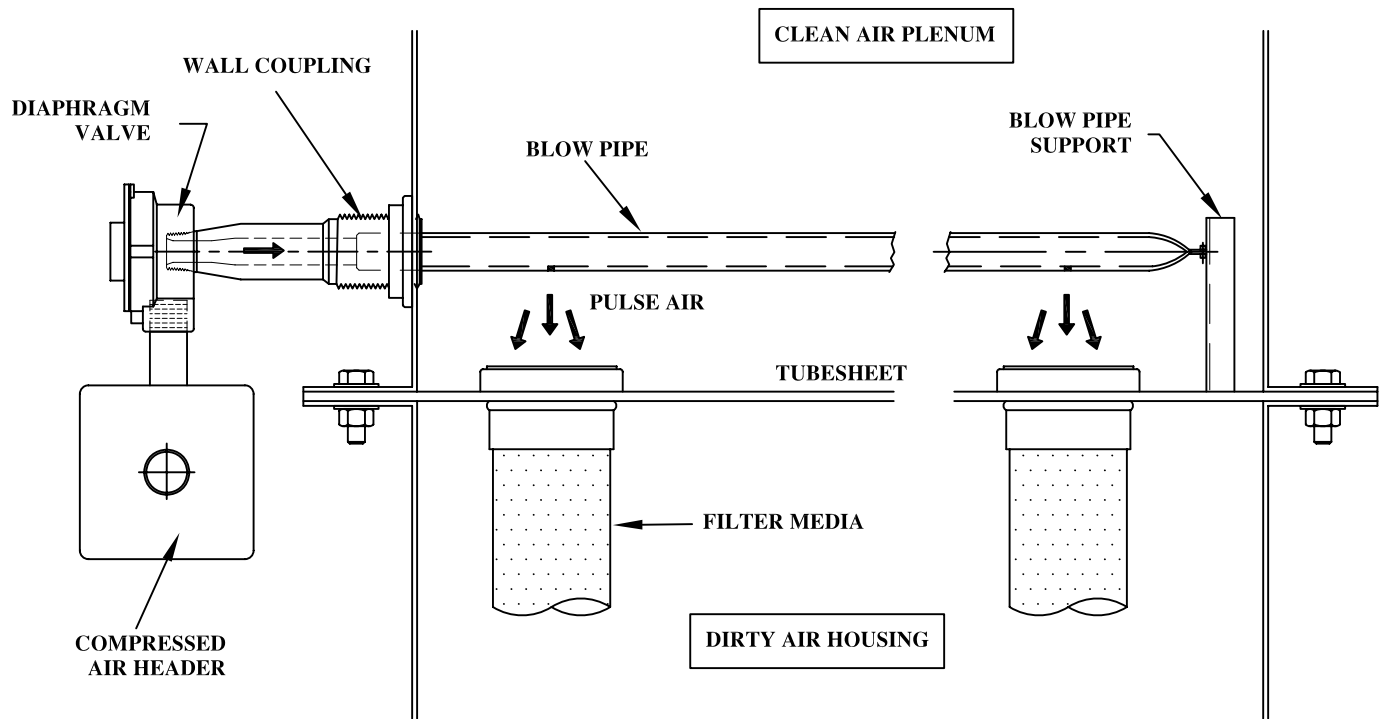
Once the RM collector is properly installed and settings are made normal operation is automatic and only a periodic check of the unit is required. Checking the unit involves verifying the cleaning system is operating (this should be done when dust laden air is passing through the unit which over time will cause the automatic system to operate) or alternately by placing the unit in the manual clean mode

### **Warranty**

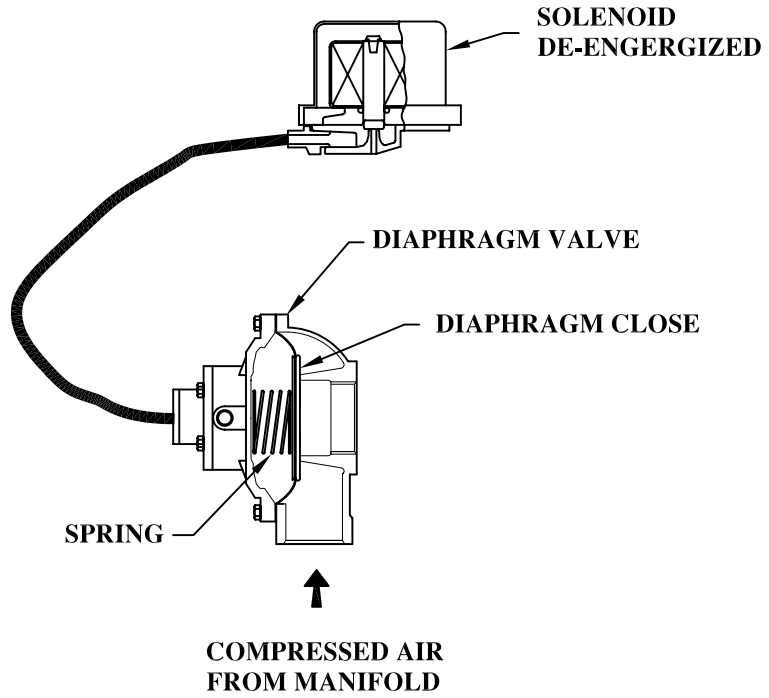
The RM series bin vent / dust collectors are covered by Filter Technologies Standard Warranty, Terms & Conditions. One year on the total unit when operated within the parameters and application data provided to Filter Technology Ltd.



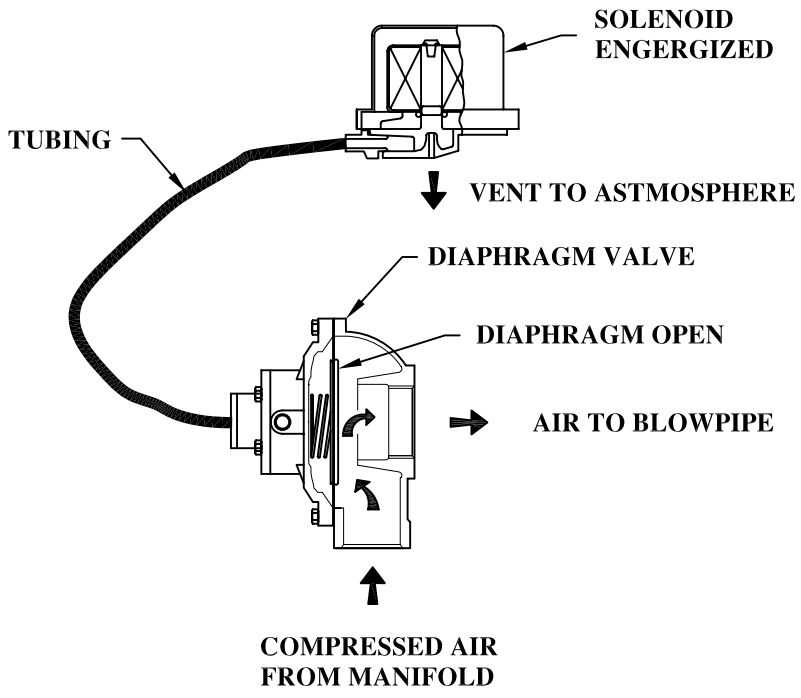
**FIG. 1 ROTATIONAL MOULDED & BIN VENT DUST COLLECTOR**



**FIG. 2 PULSE CLEANING FUNCTION**



( DIAPHRAGM VALVE CLOSE )



( DIAPHRAGM VALVE OPEN )

**FIG.3 SOLENOID DIAPHRAGM OPERATION**

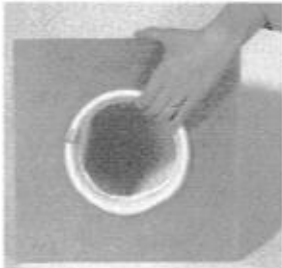
## FILTER INSTALLATION

The pleated bag filter elements are currently supplied are attached to the tubesheet by the use of a snap band collar. After snapping the collar in place, drop the filter in and press it into the collar.



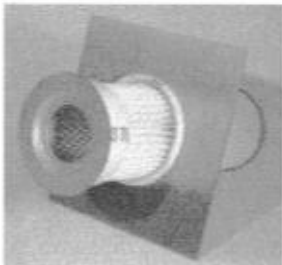
**Figure 1**

Install snapband (arrow up) by forming the band into a kidney shape and fitting the snapband groove into the tubesheet.



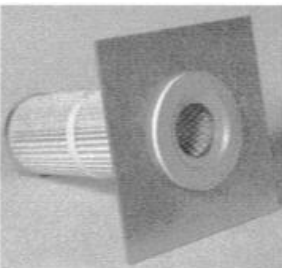
**Figure 2**

Expand the snapband  
Make sure that the tubesheet edge fits perfectly in the snapband groove all around the opening so that there are no bumps or creases in the band



**Figure 3**

Insert the pleated bag filter through the snapband from the topside of the tubesheet. Press down on the filter until the inner seal is aligned with the snapband.



**Figure 4**

The pleated bag filter is properly installed when the flange is in contact with the top of the snapband. The flange will not touch the tubesheet. Airtight Seal is formed by our DSS Design.

## **UTILITY REQUIREMENTS**

### **Compressed Air**

Compressed air at pressure of not less than 85 PSI and not more than 140 PSI at the inlet to the supplied pressure regulator. Air should be clean and water or oil free (even though unit is equipped with filter, primary separation should be provided as part of the air supply). Line size should be a minimum of 3/4-inch diameter.

## **CLEANING MECHANISM CONTROL AND WIRING**

See separated timer and control panel for wiring information

## **MAINTENANCE**

Maintenance for this unit consists of periodic visual inspections of the unit, periodic replacement of the filters and trouble-shooting based upon the findings of these inspections. During these inspections the following items should be checked or performed:

Inspect the mounting of the unit for tightness and leaks and adjust as necessary.

Inspect for any air leaks in the cleaning system, dislodged, or missing tubing. (see trouble-shooting section for remedies).

Inspect the discharge of the unit for presence of dust. If found see trouble – shooting section below).

Check auto drain for correct operation.

### **Filter replacement**

Remove the connection from the dirty air housing to the control box by pushing in on the colored flange on the fitting and pulling out on the tubing.

Re-attach the tubing from the control box to the dirty side housing by pushing in the colored flange on the fitting and inserting the tube. Correct insertion can be verified by pulling on the tube. Re-insert as necessary.

Turn the hand wheel on the roof counterclockwise until it disengages from the internal hold down bar. Then tighten the 3/4" bolt on the davit arm unit. The top lifts to clear the plenum wall and swing away for access. Pull the blowpipes into the wall coupling to disengage the blowpipe from the slot and the lift out pulling the blow pipe out of the wall coupling. You may have to remove the hold down on some models to remove the filter.

## TROUBLESHOOTING UNIT

Problem / cause	Action
<p><b>Dust in clean air plenum</b></p> <p>Loose or improperly installed filter</p> <p>Hole in filter</p>	<p>By tracing the location of the accumulated dust it may be possible to identify the filter, which is leaking. If loose or improperly installed correctly.</p> <p>If hole in filter replace filter or if a replacement is not immediately available, the hole in the tubesheet may be temporarily plugged.</p>
<p><b>Loss of airflow</b></p> <p>Note: loss of airflow may not be caused by filter but rather by other changes to the system.</p>	<p>Remove unit from service (turn off fan) and initiate cleaning cycle. Allow cleaning to go completely through cycle twice or three times.</p>
<p><b>Loss of airflow even after manual cleaning</b></p> <p>Cleaning system not operating</p> <p>Cleaning system operates</p>	<p>Trouble-shoot cleaning system (timer, diaphragm valves, solenoids, compressed air, etc. as below)</p> <p>Inspect filters for clogging. If cleaning system is correct and bags do <i>not respond they may need to be replaced</i></p>
<p><b>Cleaning system does not operate</b></p> <p>No noise of valves pulsing</p>        <p>Just clicking noise from solenoids</p>	<p>Verify that timer is on and power is reaching the terminals of timer. If powered small lights on timer should periodically illuminate. If no lights contact factory - may be defective timer. If lights on timer, verify connections to solenoids, solenoids should “click” when energized. Make sure to verify the “common line” returning to neutral side.</p> <p>Verify compressed air source. If air on header, verify tubing connections between solenoids and diaphragm valves. If connection is bad with air pressure a noticeable leakage will likely be present. Make sure to remove air supply and bleed system prior to attempting to correct any leaks.</p>



Problem / cause	Action
<p><b>Cleaning system operates but one or more rows of filters do not clean</b></p>	<p>Verify clicking noise when solenoid on that row is pulsed. If no clicking noise, check timer connections. If connections are correct, solenoid may need replacement</p> <p>If clicking noise on solenoid but diaphragm valve does not actuate, check plumbing between solenoid and diaphragm valve.</p> <p>If plumbing is correct, diaphragm valve may be clogged. Bleed air supply prior to attempting to correct. Remove cover and inspect. If dirty, remove and re-check. If diaphragm is damaged contact Filter Technology Ltd for replacement parts.</p>