



**U.S.
Air Filtration, Inc.**

DUST COLLECTOR MAINTENANCE GUIDE

**A collection of troubleshooting
and maintenance tips to keep
your dust collector healthy and
running at peak performance.**



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Our dust collector maintenance guide contains troubleshooting and maintenance tips to keep your dust collection system running at peak efficiency.

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Chris Watson

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Pulse Valves &
Compressed Air Headers

Clean Air Plenum
Section Top Load
Style

Dirty Air Plenum

Bag & Cage Elements

Hopper Section

Dust Collector Fan



Inlet Flange

Filter Elements

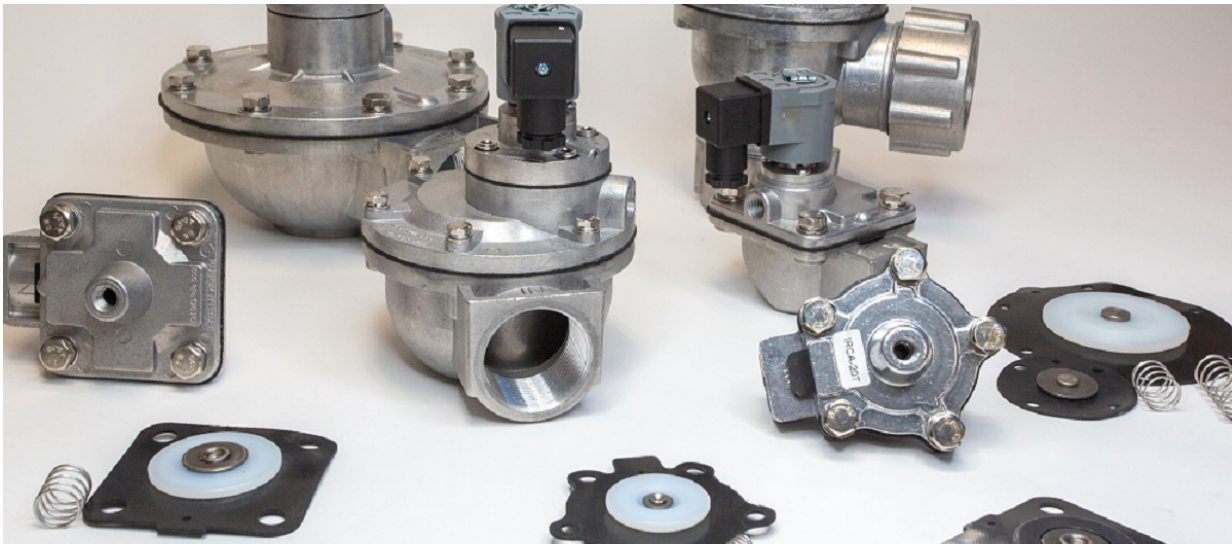
Hopper Section

Diaphragm Valves

High Efficiency
Cleaning Nozzles

Manual Slide Gate
w/ Drum, Lid, Flex
Chute Kit

5 Most Commonly Replaced Dust Collector Parts



Proper upkeep of your dust collector is essential to long term health and performance.

As your dust collector ages, system parts will be prone to wear and tear. To keep your system at peak performance, take note of the five most commonly replaced dust collector parts and how you can identify maintenance issues.

5 Most Commonly Replaced Dust Collector Parts:

- Timer board
- Solenoid Kit
- Diaphragm Kit
- Valves
- Filters

To know when it's time to replace your parts, look out for these common warning signs. The more you are prepared now, the better you will be at avoiding the high costs that quickly escalate with unscheduled downtime.

Common Warning Signs for Replacement

Timer Board:

- No power to the timer board
- Pulse valve not pulsing
- Pulse valve leaking air due to small electrical charge coming from timer board

Solenoid:

- Leaking pulse valve
- Pulse valve wont fire/pulse
- Rubber on plunger is worn
- Solenoid post is bent
- Plunger is rusted/corroded and can't move freely

Diaphragm Kit:

- Pulse valve is leaking air
- Weak pulsing
- Filter bags not being cleaned, increased differential pressure
- Is your spring broken?

Valve:

- Leaking air even after replacing diaphragm kit and checking solenoid and timer board
- Stripped or damaged threads
- Cracking on valve housing
- Stops pulsing
- Pulse is weak
- Filters aren't cleaning properly

Filters:

- High differential pressure
- Loss or reduction of velocity/ suction at pick-up points.
- Dusting from dust collector exhaust

When is it time to change your filters?



How do you know when it's time to change out the filters in your dust collector?

[This video walks through the troubleshooting steps you can take to determine if it's time for a filter change out.](#)

There are typically two reasons people change out their filters:

1. The build-up of filter cake is so excessive that it is blinding your filters.
2. You have a hole/leak in your filter(s).

Influences on the Life of a Filter

The following are several factors that impact the life of your filters:

- Air to cloth ratio
- Volume of dust loading
- Size of dust
- Presence of membranes or coatings
- Dust characteristics (powdery, sticky, shape)
- Air velocity through the filters
- Moisture in the dust
- Ambient air moisture
- Cleanliness of compressed air
- Presence of chemicals – oils, acids, etc.
- Operating temperature
- Frequency of cleaning cycle
- Average differential pressure
- Proper cage fit
- Proper installation



How to Detect and Solve a Dust Collector Leak



Have you noticed a continuous emission of dust from your collector? It's usually indication that the problem is inside your system and a common culprit is a leak in your filters. Here are some of the more common causes to look out for.

Causes of Leaking Dust Collector

- Missing or dislodged filters
- Seal has been compromised or damaged
- Broken seams on bags
- Filter(s) have a hole

If you're not able to diagnose your problem with a quick visual observation, then a simple die test is your next step. A die test uses fluorescent leak powder and concentrates it at it's entry points into the clean air plenum. It's these entry points that are your leaks. [Check out this short video guide](#) that talks about the main causes, how to perform a test, and how much leak powder you'll need for your dust collector system.

How to Install a Snap Band Filter Bag



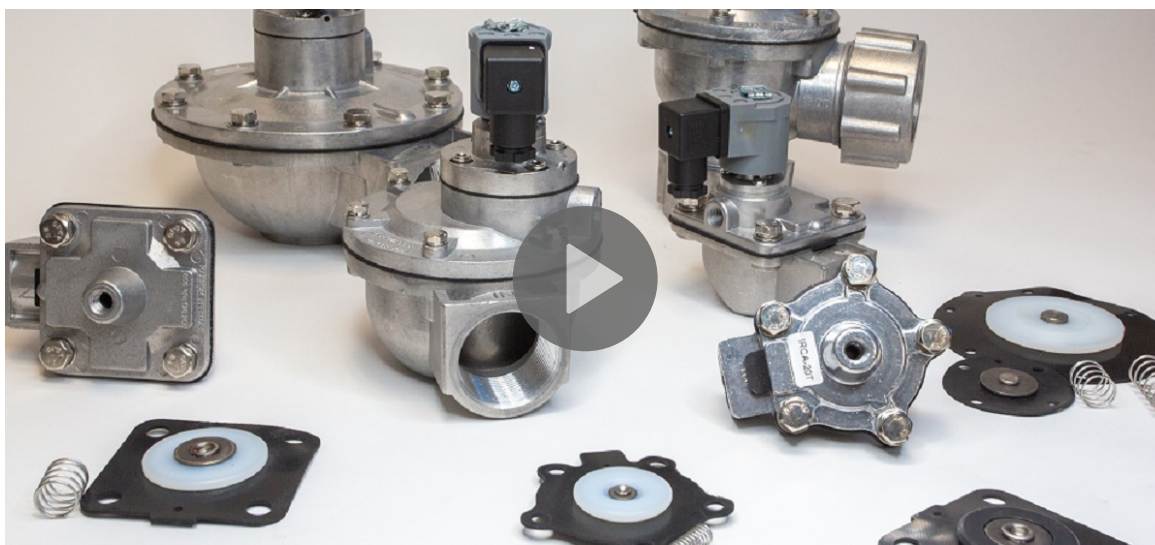
Time for a change out or need to install new filter bags? Learn how to properly install a filter bag into your dust collector's cell plate in this video.

A double beaded snap band filter bag can be used in a wide variety of dust collectors. In a pulse-jet or reverse air dust collector, you'll typically see it as the bag's top configuration. In a shaker dust collector you may see the snap band as a bottom configuration. The snap band is a flexible steel band double beaded gasket that helps create a dust tight seal. You may have also heard of the snap band referred to by other names such as:

Double Beaded Snap Band Names

- Beaded Snap Band Top
- Snap Band Top (Double Beaded and not the same as a single snap band top)
- Double Beaded Snap Ring

My Pulse Valve is Not Working, What's Wrong?



Have you ever had a pulse valve in your dust collector stop working? In this video we will be helping you troubleshoot your dust collector valves and various issues that might be causing the problem.

Symptoms of a Bad Pulse Valve:

- You hear air leaking through the valve
- Stops pulsing
- Pulsing is very weak
- Filters inside your collector are not cleaning properly

All of these symptoms can mean many different things are wrong with your dust collector. Fixing or replacing your pulse valve involves a bit of trial and error. In this video we'll demonstrate the most common problems you may experience with your pulse valves. We'll also highlight rare pulse valve issues and how to address them.

How to Replace Your Dust Collector Diaphragm Valve



Is your dust collector showing signs of trouble? It could be your diaphragm valve.

As your dust collector goes through it's life cycle, your parts will start to wear out. Watch this video on how you can quickly and safely replace your diaphragm valve. Be on the lookout for these common symptoms of a worn out diaphragm.

Common Symptoms of a Worn Out Diaphragm

- Rubber has crack or holes in it
- Diaphragm kit is pitted, allowing air to leak through
- Any holes tears or imperfections indicate it's time to change it out
- Is your spring broken?

Once you've diagnosed your issue down to an old worn out diaphragm, you'll need to get it replaced. [This short video that provides step-by-step instructions on changing out a diaphragm, as well as some helpful tips.](#)

How to Replace Your Solenoid Valve



Are the solenoid's on your pulse valve damaged? Learn the warning signs and how to replace your solenoids.

In this video, we'll walk you through how to replace a broken solenoid. If your solenoid has any of these symptoms below, you'll need to get it replaced before it escalates into a larger maintenance issue with your dust collection system.

Warning Signs of a Damaged Solenoid

- Rubber parts are worn
- Solenoid post is bent
- Plunger is get pitted
- Due to environmental conditions, the coil itself has suffered an electrical short. This results in weakened copper wires.

Cartridge Dust Collector Change Out Instructions



Filters are one of the 5 most commonly replaced dust collector parts. Getting your filters replaced quickly and accurately will help you avoid a costly shut down. [In this video below, we are showing how easy it is to change filters in a USAF cartridge collector in less than 30 minutes.](#)

Removing Filters

1. Remove outer door/handle assembly by turning the outer handle counter-clockwise. Set outer door/handle assembly aside once free of dust collector.
2. Remove inner door/handle assembly by turning the inner handle counter-clockwise. Set inner door/handle assembly aside once free of dust collector.
3. Remove filters by grabbing bottom of filter and pull straight out – being careful as filter may be dirty.

Installing Filters

1. Insert new filter cartridge into the dust collector with the gasket facing the cell plate (gasket side first).
2. Insert second cartridge, if necessary depending on your DC model, in the same manner as the first (gasket side first).
3. Take inner door/handle assembly and thread onto the rod by turning clockwise. Tighten the inner door/handle assembly so it compresses the cartridge filter gaskets by roughly 50%. This ensures the filters seal against the cell plate and the inner door seals the back of the cartridges.
4. Take the outer door/handle assembly and thread onto the rod by turning clockwise.
5. Tighten the outer door/handle assembly until the outer door gasket is compressed against the dust collector creating an air tight seal.
6. Caution: Be careful not to over tighten doors as the doors may bend or threads on handle and rod may be damaged. Tighten by hand.

Caution: Do not use sharp instruments or unusual force when installing filters. They are fragile!

Dust Collector Troubleshooting



Are you having problems with your dust collector? Troubleshoot your dust collector now.

Is your dust collector showing signs of trouble ahead? Keeping your dust collector healthy will prevent unscheduled down time, production loss, or a costly shut-down. Here are some of the common indicators your dust collector is having issues, and how you can troubleshoot them.

High Pressure Drop

1. Check timer indicator lights to see if it is functioning properly and pulsing the valves. Replace fuse or timer.
2. Check air pressure line regulator for proper pressure and leaks. Maintain 80 to 90 psi in header.

3. Check hopper discharge and 55 gal drum lid for leaks allowing re-entrainment of dust. Repair seal or joints if leaking.
4. Check differential pressure lines (tubing) for plug or breaks allowing faulty readings.
5. Moisture in the dust causes a hard dense cake, which may blind the filter media.
6. Check air supply for clean dry, oil-free air. Faulty air systems will coat the filter on the inside and blind the filter causing high-pressure drop and premature replacement. Always maintain clean dry air for the cleaning system.

Attempt to dry the tubes by circulating clean warm air through the collector and going through several cleaning cycles. Empty the hopper. Check the process to prevent condensation. If Nanofiber cartridges are exposed to high moisture, water or liquids of any kind they may need to be replaced.

A Reduction in Pressure Drop Accompanied by a Dirty Exhauster Output

1. One or more filters may have holes in them or have damaged seals. Perform colored fluorescent die test to identify, if possible. Repair/replace, as necessary.

Continued Drain on Air Supply

1. A solenoid valve may be stuck open or a diaphragm may be ruptured.

This can be detected by listening to each valve at the unit for constant airflow noise. Inspect rubber diaphragms and or solenoid seals and replace as needed. Open top doors and identify which blow pipe the air is flowing from. In turn this will identify the failed valve or solenoid assembly. Inspect diaphragm valve for failed diaphragm or small particle seated on diaphragm. Clean or replace as warranted.

Baghouse Entry Procedures



Performing maintenance or troubleshooting the interior of your baghouse can be dangerous. Here are some basic baghouse entry procedures to minimize your risk for accidents and hazards.

Power Down & Lock Out

Before you begin any maintenance or troubleshooting on your dust collection system, your first and most important step is to power down and lockout any machinery. Securing your baghouse for personnel entry can include locking down your rotary valve, locking your blower, or sealing off any adjacent baghouse compartments.

Also, make sure to shut off the compressed air supply to the pulse jet cleaning system and allow the system to cycle until the pressure is relieved before entering the baghouse. Taking these initial steps provides a safe working environment and will ensure that accidents are minimized.

Safety in a Confined Space

The inside of your dust collection system is almost always defined as a “confined space”. No matter the application, it’s best to ensure you have safety guidelines in place whenever entry into your baghouse needs to occur. Here are some of the general safety precautions you can take. Designate an additional crew member as a watchman. They should be present at the entrance point to ensure safety procedures are being followed and can immediately assist should any complications occur.

Communication

It’s important to let your team know what work is being done, where, and at what time. This allows others to re-schedule any work that could impede on safe entry into your baghouse.

Combustible Dust

If you are working with combustible dust, make sure the dust levels inside of your system are well below being explosive. All hot work, like welding, should be performed well outside of the perimeter of your baghouse. If hot work must be done inside the baghouse, thoroughly purge the space with clean air until dust is no longer present.

Emergency Plan

A total shut down and lock out of your baghouse will minimize safety hazards, but you shouldn’t hesitate to formulate a retrieval plan should an emergency occur while employees are in inside the confined space.

PPE Personal Protective Equipment

OSHA requirements for protective gear will vary based on your application. Basic protection can include a hard hat, safety glasses, gloves, and a face mask. Before entry into your baghouse system, make sure that your crew is supplied with and compliant in wearing safety gear required for your application. You can find additional information on OSHA's website about personal protection equipment hazards and solutions:

https://www.osha.gov/SLTC/personalprotectiveequipment/hazards_solutions.html



Guide to Differential Pressure



Differential pressure is a critical tool to make sure your dust collector is operating properly. [In this video, we'll answer these top questions about differential pressure and how to use differential pressure to keep your dust collector at peak performance.](#)

Top Questions about Differential Pressure

- What is differential pressure?
- How does differential pressure work?
- How can I use it to better maintain my dust collector?
- What do sudden changes in differential pressure mean?
- My differential pressure reading is high. What can I do to fix it?
- My differential pressure reading is low. What can I do to fix it?
- What differential pressure should my dust collector be at?

Since every dust collection system is different DP readings are relative and should be compared to the collectors baseline levels.

A dust collector with brand new filters usually sees a DP reading of one to two inches. As the filters age and become more entrained with dust the differential pressure levels over time, near the end of the filters life the DP will be around six inches and stay there even after the cleaning cycle has run.

Running a collector consistently above six is not recommended since it will likely cause a noticeable drop in plant suction and lead to faster dust entrainment and shorter filter life.



Guide to On Demand Cleaning



Pulse Jet Technology and On Demand Cleaning

Pulse jet cleaning is the most common type of dust collector available today and makes up nearly 50% of all new dust collector installations. In a pulse jet dust collector, filter bags are cleaned when a high pressure jet of air, or compressed pulse, is sent through the system to shock the bags and remove and fracture the dust cake. One advantage of pulse jet dust collectors is the bags can be cleaned while the dust collector is still running so plant production and processing can continue without interruption.

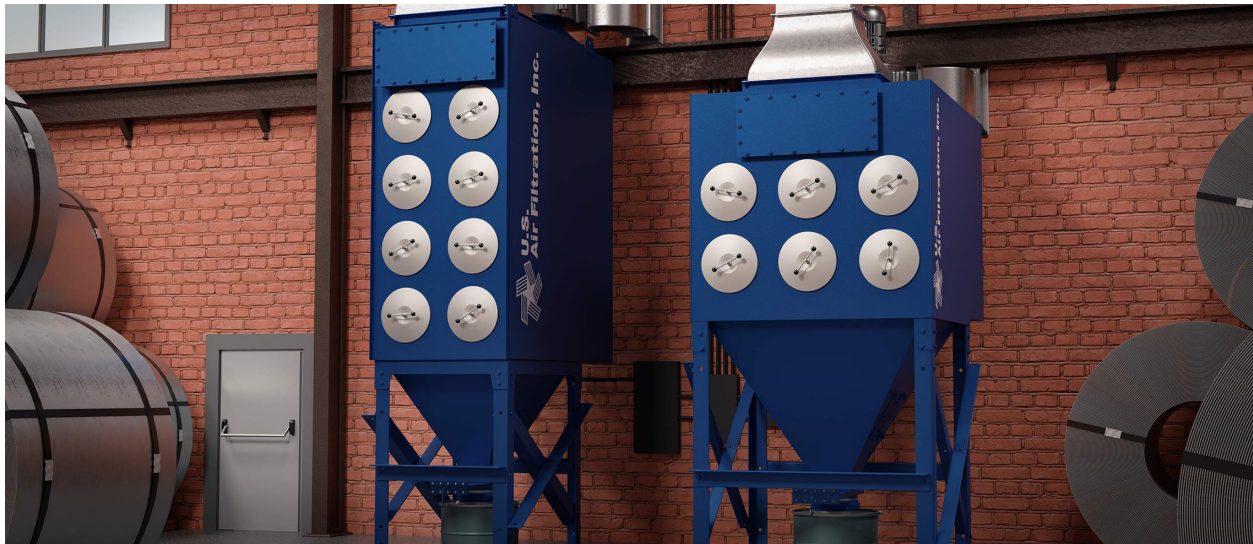
It's important that bags are cleaned regularly to improve airflow through the system, prevent plugging from dust build up, and improve pick up velocities. But it may be time consuming and labor intensive to know how frequently and how often the bags need to be cleaned. On demand cleaning is an automated cleaning system for your dust collector that can improve your dust collectors efficiency and performance while reducing energy consumption and labor costs.

How On Demand Cleaning Works

In a pulse jet dust collector, as dust starts to cake on the bag the differential pressure between the dirty air environment and the clean air environment increases. With on demand cleaning, the control panel is set by the operator to clean the bags only when the differential pressure reaches a high range, then the system will pulse down to a lower range. Cleaning pauses until the differential pressure reaches the high range once more and the system will automatically pulse down again. This continues as an ongoing cycle that is performed the entire time your dust collector is running.

[Check out our video to learn more about what on-demand cleaning can do to improve your dust collector and your operation.](#)

Dust Collector Preventative Maintenance Plan



**How do you ensure your dust collector is running at peak efficiency?
By being proactive with a maintenance plan.**

Following a maintenance plan for your bin vent or cartridge collector will help you address any issues before they create a larger issue. Some benefits include:

- Longer filter life
- Reduce unplanned down time throughout the year
- Prevent a dust collector explosion

On-Going Maintenance Procedure (may not apply to all models)

1. Check compartment differential pressure model inside the panel for normal operating range
2. Observe if timer properly operates all pulse valves

3. Check hopper dust level. Dust collectors are not designed to hold material.
4. Check the air pressure to the solenoid valves. Air pressure to the header should range between 70 and 90 psi. NEVER MORE than 100 psi. If more pressure is required to clean the filters then there is a problem with the filter media and or a problem with the particulate flows and density. High air pressure will cause failure in the diaphragm valves.
5. Lubricate fan bearings monthly if applicable.
6. Check damper valves for proper seating.
7. Inspect filter media monthly for wear and replace if necessary, as indicated by dust emission from discharge of fan or stack.
8. Paint to guard against corrosion.
9. Maintain door seals and gaskets and replace when they lose resiliency or become damaged. Do not paint seals or gaskets at any time.
10. Air Moving Equipment: Fans should be mounted on rigid foundation or supports. For specific requirements, see fan manufacturer instructions in this manual.
11. Check the anchor bolts periodically to see that the vibration has not loosened or damaged the fittings. Bearings should be periodically lubricated in accordance with the bearing manufacturer's lubrication instructions. Bearings should be removed, inspected, and replaced, if necessary, as soon as excessive fan shaft vibration becomes apparent. Also, check the shaft itself for such damage as scoring or heat cracks. Never over lubricated bearings.
12. Impellers should be inspected at regular intervals for imbalance due to deposited materials on the blades. Critical clearances between impeller, inlet rings, and fan housing should be checked and maintained in the same conditions as when the fan was installed. Similarly, the conditions of key ways and/or setscrews should be checked.

13. Belt tension should be maintained to prevent undue slippage or unnecessary stress on bearings (both motor and fan).
14. Most fan motors are mounted on sliding bases. Make sure the base is secure.
15. Large fan motors may be supplied with a pivoting motor base. This type of base automatically controls belt tension to respond to each change in load when properly adjusted. The tension is determined by the amount of offset of the motor with respect to the pivot point. To level the motor, loosen the cradle bolts at the ends of the pivot and adjust the take up screws on the lower part of the base until the motor is level. Tighten the cradle bolts.
16. Worn belts should be replaced; thus, spare V-belts should be maintained in stock. To change V-belts, loosen the bolts holding the motor to its base, remove worn belt and replace with new one. Make adjustments for proper tension and tighten bolts securely.
17. V-Belt sheaves should be replaced when groove wear interferes with the efficient functioning of the drive.
18. For fans with a modulation inlet damper, check the linkage for binding monthly.

Dust Collector Maintenance Checklist

Checklist	Frequency
1. Visual check of LED differential reading. Note: Differential pressure across cartridges should not exceed 5" WG, if system is at steady state fan pulling air. System may take several days to achieve a full dust cake loading.	Daily
2. Check for air leaks	Daily (per shift)
3. Listen for unusual noises in dust collector fan and motor	Daily
4. Inspect pulse valve for diaphragm leaks. Note: Pulse valve failures (ruptured diaphragm) will affect the collector cleaning system, repair as soon as possible.	Weekly
5. Check compressed air regulators on pulsing system.	Weekly
6. Check air pressure for pulsing system. Note: Air pressure should be 90 psi during normal operation.	Weekly
7. Check fan belts, if applicable.	Weekly
8. Pulse valves working when activated.	Monthly
9. Inspect for broken welds or holes in dust collector housing and connecting duct work.	Yearly

USAF has prepared this list of recommended preventative maintenance checks that can provide a better operating system with less overall maintenance and increased up-time. The frequency is only a recommendation. You may wish to increase or decrease the frequency.

Dust Collector Start-Up Checklist



**Looking to start up your collector after an extended shutdown?
Follow these steps to make sure your systems starts safely.**

Visual Inspection

- Make sure your dust collector is locked out and powered down before proceeding further.
- Inspect hopper to ensure the discharge, including screw and rotary valve (if applicable) are free of debris.
- Check the interior of your collector for signs of moisture. Is condensation inside the unit?
- Perform visual inspection of filters. Filter should be as clean as possible with minimal dust cake. Dust cake should be dry, not sticky or caked on.

- Check your cleaning system.
 - If you have a pulse jet unit – check your pulse cleaning system.
 - If you have a pulse jet unit - turn on header and listen for air leaks coming from your valves.

- [] If you have a shaker unit – check your motor assembly.
- [] If you have a reverse air unit – check to ensure bags are taut.

Fan Inspection

- [] Make sure your fan is securely bolted to your unit.
- [] Check to make sure the fan is sealed.
- [] Check tension on all belts and drives Check belts and chains for signs of wear, including cracking and stretch.

System Start-Up Inspection

- [] Start up your system by powering on your control panel and your fan.
- [] Check fan for excess vibration.
- [] Check your controller to ensure all valve are running.
- [] Check your differential pressure to make sure pressure is within limits.


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Differential Pressure Guide

ZONE	CARTRIDGE COLLECTOR	BAGHOUSE
Red (Dangerously High)	"WC" > 6	"WC" > 7
Yellow (Moderately High)	"WC" 4.5 - 6	"WC" 5 - 7
Green (Normal)	"WC" .5 - 4.5	"WC" 1 - 5
Blue (Too Low)	"WC" < .5	"WC" < 1

- [] If your differential pressure is in the blue range noted above, perform a leak detection test.

The U.S. Air Filtration Story & Team

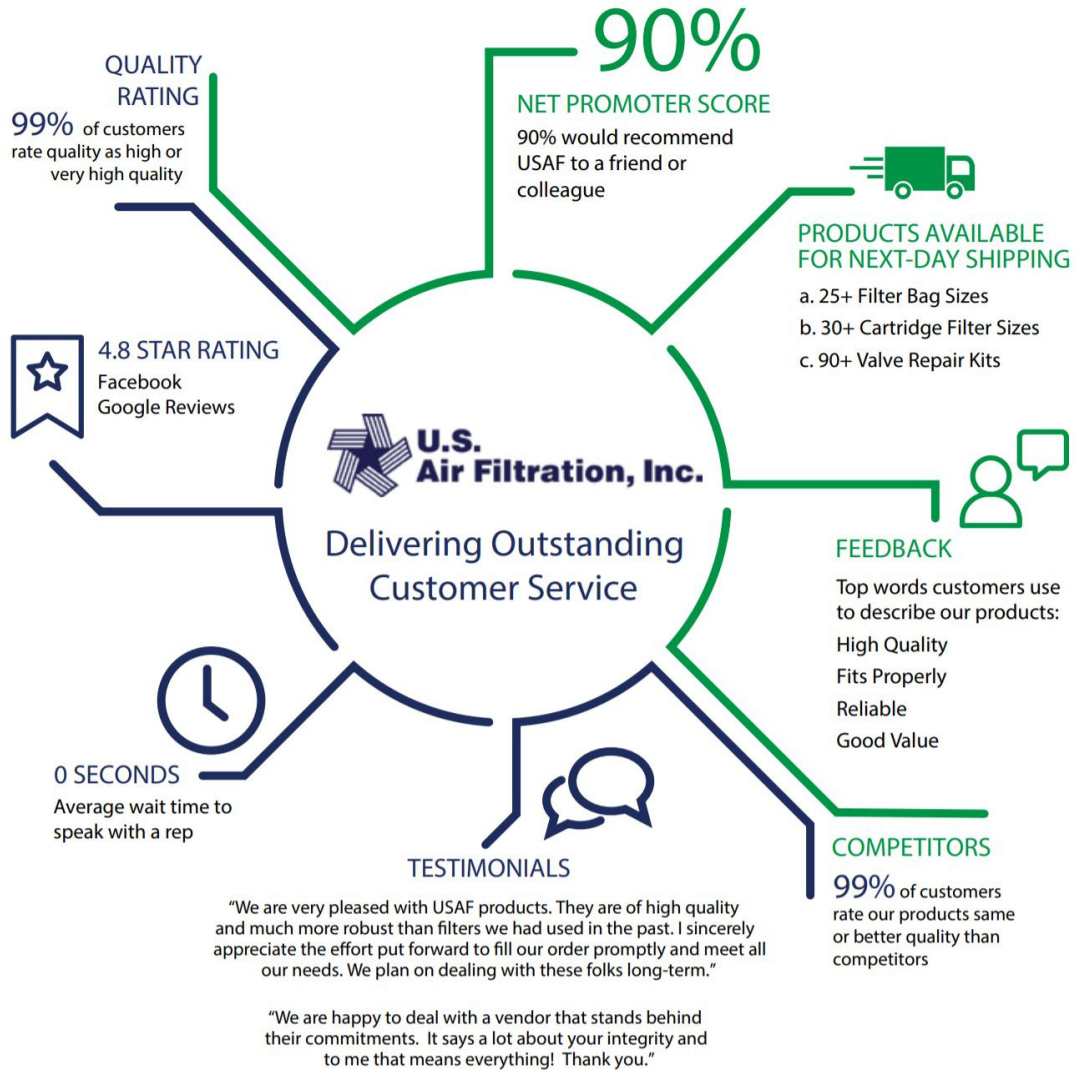


For over 40 years, U.S. Air Filtration's mission has been to help our customers achieve peak production by providing exceptional service, products and expertise in air pollution control. We have designed and manufactured standard and custom dust collection systems for customers around the world.

We have provided baghouse dust collectors, bin vent dust collectors, and cartridge dust collectors, To learn more about our design and manufacturing capabilities, check out our design services page or an eBook dust collector purchasing guide.

For more information on dust collector parts, maintenance, troubleshooting, an eBook on filter bag selection, and other resources you can visit us at www.usairfiltration.com or check out our YouTube channel.

For assistance with your specific application contact one of our dedicated account managers at 888-221-0312 or info@usairfiltration.com



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