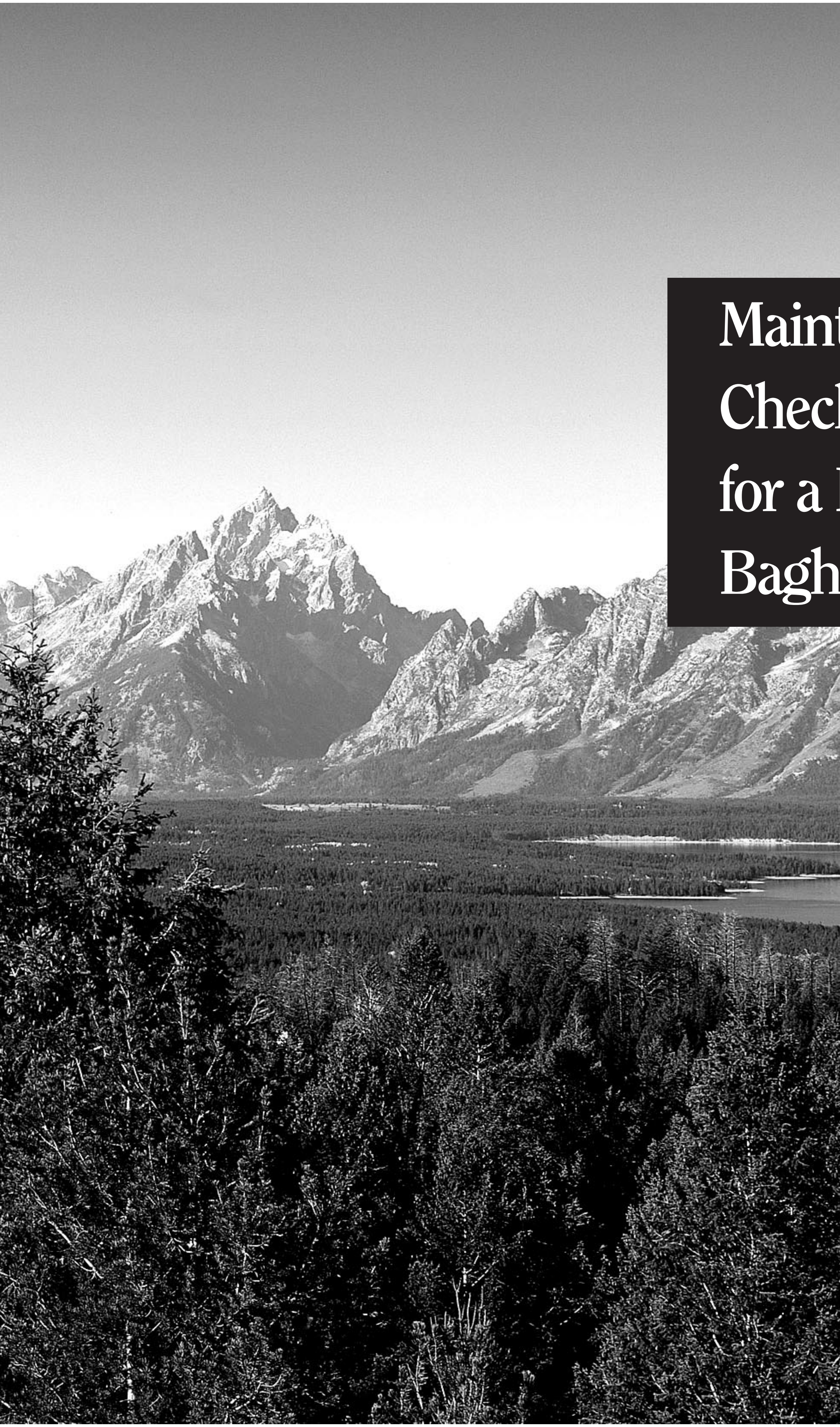

Maintenance Checklist for a Better Baghouse

SLY INC

TECHNOLOGY FOR A CLEAN ENVIRONMENT

Maintenance Check List for a Better Baghouse

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TECHNOLOGY FOR A CLEAN ENVIRONMENT

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Introduction: With increased local and global attention being given to the control of air pollution, containment of nuisance dust in all industrial applications is becoming increasingly important. This calls for the proper design, installation, operation and maintenance of dust collection equipment. Since its inception, the fabric style dust collector (baghouse) has offered companies the ability to effectively capture airborne particulate from an air stream. Whether toxic or not, containment of particulate is necessary to provide a healthy and clean work environment.

In an effort to ensure that your equipment functions as designed, we recommend a schedule of inspections and the timely repair of damaged or malfunctioning equipment. A routine inspection and maintenance program will positively impact the equipment's performance and life. Following is an overview of procedures that can be used as a guide from which to tailor your own program.

1) Inspection/Maintenance Program: A typical program consists of a schedule for periodic inspections that are performed on a daily, weekly, monthly, semi-annual and annual basis. When a baghouse is not periodically inspected, the effectiveness of its operation can be adversely affected. Subsequently, the baghouse may not meet the outlet emissions specified on an EPA operating permit.

As a convenience, we have included in this check list an "Inspection Log" for the different styles of Sly baghouses. These logs may be used as is, or modified to fit a specific installation. In either case, they cover the most important items that should be monitored to maintain an effective and efficient dust collection system. An added benefit is the development of an accurate history of operation, should questionable performance be experienced at a later date.

2) Pressure Drop: Pressure drop, or differential pressure, is the amount of static resistance experienced when operating a positive or negative pressure baghouse. This pressure drop is typically measured across the filter bags in inches of water column (in. w.c.). Examples of some standard gauges used for this monitoring are a Magnehelic¨ gauge, Photohelic¨ switch/gauge and manometer. Pressure drop is a good indicator regarding the amount of dust that has collected on the filter media, and if continually monitored and logged, the condition of the bags themselves.

New filter bags have the lowest pressure drop because of the inherent permeability of the media. As the bags develop a dust cake, some particulate embed themselves into the interstices of the filter media, and the pressure drop will increase accordingly. It is the filtering of the airstream through this accumulated dust cake that provides high efficiency collection of fine particulate. In fact, the highest efficiency a dust collector can offer is just before the cleaning mechanism is initiated. However, high differential pressures can cause bleed thru or blinding of the filter media. Therefore, it is suggested not to exceed the manufacturer's recommended operating pressure drop.

Keeping a daily log of a baghouse's differential pressure, *from the time the filter media is new,* will provide the opportunity to diagnose problems that may occur (i.e., an increase in dust emissions, reduced ventilation air at the dust source, shortened bag life, etc.). Following an initial seasoning or conditioning period of filter bags, the pressure drop should stabilize into a consistent operating range relative to the cleaning cycle, application and style of equipment. Therefore, at subsequent bag changes, this operating range can be predicted. Deviation from this historical level will alert an operator to investigate the cause of such an occurrence.

3) Cleaning System: Any method used by the equipment to dislodge accumulated dust cake from the filter media is its cleaning system. This may be reverse air, shaker or pulse clean. Regardless of the style of cleaning, it is imperative that this system function properly at all times. Without an effective cleaning system, dust will continue to build on the bags. The resultant will be an increased pressure drop and reduced volume of ventilation air at the pick-up points. Further, airstream velocities within the ductwork will decrease and cause drop-out of dust in the ducts. This may choke the entire system and render it ineffective.

As indicated on our Inspection Logs, cleaning systems require more than just periodic monitoring. It is suggested that all components of the system be regularly inspected, and corrections made in a timely manner. Besides the items noted on the attached logs, refer to your OEM's Installation & Maintenance Manual to include other items specific to their equipment.

4) Hopper Discharge: The hopper on a baghouse *is not* to be used for storage of the collected product, unless originally designed to do so. Storing material in a hopper can lead to bridging of the dust, or it may set up as a solid mass requiring considerable labor and down time to correct. Material build up, if not discovered in time, can fill a hopper to its inlet and plug the unit. Further, with low density materials, the airstream may sweep the dust into the bag section, ruining filter bags and clogging the dust collector.

It is strongly recommended that whatever method is used for material discharge (rotary valve, screw conveyor/pneumatic conveyor, etc.) it should be inspected frequently. This inspection should also be followed at shut down and bag changes.

5) Visible Emissions: Any particulate that can be seen discharging from the exhaust stack is considered visible emissions. These emissions are an indication that there is a breach in a seal or a broken (torn) filter bag. In either case, the leak must be found and corrected immediately. Not only will the emission cause a health concern and damage to property outside the plant, monetary fines imposed by the local EPA may also result. In addition, a fan located downstream of the collector can be damaged from abrasion or become imbalanced if this condition is not corrected quickly.

The exhaust from a dust collector should be continually monitored and checked off in the Inspection Log. Besides visual inspections, one may consider incorporating a "Broken Bag Detector" into the clean air ductwork. Should a bag begin to fail or there be a leak in a bag seal, the particles that bypass the media will be detected. Typically, these detectors use triboelectric or scattered light technologies. These devices can be wired to an alarm horn, siren or flashing light for an immediate acknowledgement of an upset condition.

6) Exhaust Fan: In a dust collection system, an exhaust fan is needed to accelerate ventilation air from the point of pick-up, through the ductwork and baghouse filter media, and out the exhaust stack. A fan is selected to accommodate each application with respect to volume (ACFM) and pressure drop throughout the system. This pressure drop is calculated by evaluating the static resistance of the baghouse, all ductwork and pick-up points/hoods. (See page 16 for assistance.)

Should an exhaust fan experience loose or worn belts or an imbalanced impeller, it will not exhaust the volume of air it was originally designed to handle. Without adequate ventilation air, a dust collection system will not operate effectively. Thorough fan inspections are to be performed on a semi-annual basis. However, any time unusual vibration, squealing, or other obvious variances from standard operation is observed, the original manufacturer is to be contacted for their evaluation and comment.

7) Filter Media: The most important item in a baghouse is the filter media because it allows for the accumulation and support of a dust cake. This dust cake is what provides high filtering efficiencies during operation. Periodic inspections of the filter bags is mandatory. Inspect the clean air side of the baghouse for leaks, and the bags for tears. Should the pressure drop within a dust collector become extremely high, relative to historical data, it may be caused by excessive dust cake or blinding of the filter bags.

Excessive dust cake is evident when visually inspecting the filter bags (when the dust collector is presumed to be clean) and finding them covered with a layer of the collected dust. Should this occur, one could suspect that the cleaning system is not functioning properly. However, if the dust cake has hardened to the bags and will not dislodge easily, the most probable cause is moisture in the baghouse. Moisture in a dust collector may have resulted from dew point excursions, high moisture content in the process gas, in the compressed air supply, or a leak in the collector or ductwork that allowed water to enter the dust collector.

The other obvious cause of high differential pressure may have been caused by blinding of the filter bags. Blinding can occur from improper start-up conditioning of the filter bags following the previous bag change. See "Start-Up Procedures" for suggestions on how to minimize the possibility of blinding.

8) Structural Integrity: The structural integrity of equipment can not only affect its performance, but cause health and housekeeping concerns, and reduced equipment life. An overall inspection should be done annually. It is suggested that the welds, joints and flange seals be inspected. Any leaks in the collector must be sealed either mechanically or by using silicone caulking. In a negative pressure system, a breach in a seal or weld will introduce ambient air into the collector. With this air, moisture and contaminants can find their way into the collector. In a positive pressure system, dust will blow out of the collector causing housekeeping problems and a potential health hazard to employees exposed to the dust.

Look for the obvious. Check the structural support members for signs of fatigue and excessive corrosion. Be certain that all fasteners are in place and tightly secured, especially on the ladder and access platform. Replace any missing bolts, clean and re-weld any cross bracing or gussets that may have cracked welds. Look closely at the filter's external walls for corrosion or signs of bowing. Clean and repaint where necessary. Repair any holes that may have developed in the dust collector walls or hopper(s).

9) Auxiliary Equipment: Aside from the baghouse itself, a thorough inspection of any system will include a check of all miscellaneous complimentary equipment. Some of these items may include the exhaust fan, rotary airlock valve, screw conveyor, inlet and/or outlet dampers, etc. It is very important that any ancillary equipment be added to the Inspection Log.

10) Ductwork: Another important component in a ventilation system is the ductwork. If the particulate does not have an opportunity to reach the baghouse, the dust collector will not be able to perform its function. Standard practices suggest a minimum airstream velocity within any duct of 3500 feet per minute (fpm), and between 4000 and 4500 fpm for heavier dusts, such as sand. Should the dust travel at lower than adequate velocities, it will tend to settle and accumulate in the ducts choking the system. This restriction of flow will increase the pressure drop in the system, and the energy required to induce the air to move. The resultant will be reduced ventilation air at the pick up points. It is advisable to periodically inspect the entire length of ductwork for dust accumulation. (See page 17 for a list of dusts and recommended duct velocities.)

Start-Up Procedures: Proper start-up procedures will help to extend the life of new filter media in a dust collector. What is generally accepted as "Start-Up" procedures is the process designed to intentionally develop a dust cake on the bags. This we refer to as seasoning or conditioning of the filter media.

Seasoning of a collector's filter bags is one of the most important procedures a company can perform. In a fabric filter dust collector, the filter media is used to support a dust cake.

A dust cake is the porous layer of collected particulate that develops during the conditioning period of new collector bags, and following each cleaning cycle. The process can be accelerated in many installations by introducing a precoat material such as agricultural lime into the system. Commercial precoats are also available.

Following installation of the filter bags and inspection of the related auxiliary equipment, the exhaust fan can be started. However, it is extremely important that the new filter bags *are not* exposed to the full volume (ACFM) of the fan. A reduced volume is recommended during the seasoning process. Close the fan damper (or inlet dampers) to one half open until the monitoring gauge reads approximately 50 to 65% of the manufacturer's recommended maximum flange to flange differential pressure. Once at this level, fully open the damper and continue to monitor the pressure drop. At roughly 75% of the manufacturer's recommended differential pressure, the cleaning system can be initiated. Normal operation and periodic cleaning will bring the pressure drop to a calculable and historically stable level.

Depending upon the application, development of this differential pressure may take a number of hours to a number of days. This is necessary to ensure that the new filter media is exposed to low filtering velocities of dust laden air. Reducing the volume decreases the airstream's velocity (air-to-cloth ratio) protecting the virgin bags from high velocity impingement of dust. Should the bags be exposed to the fan's full volume, fine particles may embed themselves into these inner fibers of the bags and begin a "blinding" condition. This can also damage the fibers of the media which will reduce the life of the bags.

Conclusion: We at Sly Incorporated want our customers to know as much as they can about the proper operation and maintenance of a baghouse. With this information as a guide, a maintenance program can be developed for any dust collection system. However, it is not our intention to offer this as an all inclusive list. Each piece of equipment and application is different, and each with its own unique components and features. They should be noted in your program as important to the operation of your equipment and monitored accordingly.

Glossary of Terms

Abrasion Resistance
The ability of a fiber or fabric (media) to withstand surface wear.

ACFM
Actual cubic feet of gas per minute. The volume of the gas flowing per minute at the operating temperature, pressure, elevation and composition.

Air-to-Cloth Ratio
The ratio between ACFM flowing through a dust collector and the square feet of filter area available ($ACFM/Ft^2$). Sometimes referred to as the velocity of air through the cloth.

Baghouse
An air filtration device utilizing fabric filter bags for removing solid particulate from a gas stream (dust collector).

Blinding
Blockage in a fabric or media by dust that cannot be discharged by the cleaning mechanism, resulting in a reduced gas flow and an increased pressure drop across the media. Once enough material has built up, airflow is severely restricted and the bags have to be cleaned or replaced.

Bridging
Material handling problem characterized by the particulate forming a cavity over the discharge or opening of a hopper or storage vessel. Also, the accumulation of collected dust between two or more filter bags.

Can Velocity
In a dust collector with the filter elements suspended from the tubesheet (pulse-jet), "can velocity" is the upward air stream speed calculated by dividing the open cross sectional area of the baghouse (less the area of the filter bags disc bottom) into the full volume of the exhaust fan ($ACFM/Ft^2$ = Feet per Minute). *(See Interstertial Velocity)*

Clean Air Plenum
The baghouse area through which gases are directed, located on the clean side of the filter bags.

Collection Efficiency
The measure of a dust collector's ability to remove particulate from the inlet gas, typically expressed in percent or emission rate (grains per cubic foot).

Dewpoint
The temperature at which condensation begins to form as the gas is cooled.

Diaphragm Valve
A compressed air valve operated by a solenoid valve that opens to allow a pulse to a row of bags.

Dirty Air Plenum
The baghouse area through which gases are directed, located on the dirty side of the filter bags.

Differential Pressure
The change in pressure or the pressure drop across a device (baghouse) located within an airstream. The difference between static pressures measured at the inlet and outlet of a device. *(See Pressure Drop)*

Dust Cake
A dust buildup on the filter bags that increases the efficiency of the filter media.

Dust Collector (See Baghouse)

Dust Loading
The weight of solid particulate suspended in an air stream, usually expressed in grains per cubic foot (or grams per cubic meter).

Emissions
Particulate that escapes through or around a baghouse into the atmosphere.

Fan
A device for moving air and dust through a ventilation system. If the fan is on the dirty air side of the baghouse, it is called a positive system. If the fan is on the clean air side of a baghouse, it is called a negative system.

Filter Media
The permeable barrier utilized in a fabric style dust collector on which the dust cake is supported (bag).

Hopper
The section of a dust collector located below the filter bag housing utilized for the accumulation and discharge of the collected dust.

Impingement
The physical contact of a dust laden gas flow against a filter media. Typically referred to the abrasive wear caused by this impact.

Inches of Water
A unit of pressure equal to the pressure exerted by a column of water one inch high at standard conditions (70°F @ sea level), usually expressed as inches water gauge ("w.g.) or inches water column ("w.c.).

Interstices
The openings or voids in a filter media.

Interstertial Velocity
Velocity of a gas as it passes between a compartment of filter bags calculated at its highest value. *(See "Can Velocity" for formula)*

Magnehelic® Gauge
An instrument used to measure the differential pressure drop in a baghouse.

Manometer
A U-shaped tube filled with a specific liquid. The difference in height between the liquid in each leg of the tube gives the difference in pressure on each leg of the tube. Used to monitor differential pressure.

Micron (μm)
A unit of length, 1/1000 of one millimeter (1/24,000 of an inch).

Negative Pressure Baghouse
A system where the fan is located after the baghouse on the clean air side, pulling air through the system.

OEM
Original Equipment Manufacturer.

Particulate
Any airborne solid material.

Permeability
A measure of fabric porosity of openness, expressed in cubic feet of air per minute per square foot of fabric at a 0.5" w.c. pressure differential.

Photohelic® Gauge
An instrument used to measure the differential pressure drop in a baghouse and to initiate the cleaning system by means of adjustable "high" and "low" set points for automatic actuation of a sequential timer.

Positive Pressure Baghouse
A system with a fan located prior to a baghouse on the dirty side, pushing air through the system.

Precoat
Material added to the air stream at start-up to aid in establishing the initial dust cake on the filter bags.

Pressure Drop
A measure of the resistance the gas stream encounters as it flows through the baghouse. It may refer to pressure differential across the media, across the baghouse, or the pressure drop across the entire system, depending upon the points of measurement.

Pulse Cycle
The interval of time between pulsing one row of bags and pulsing that same row again.

Pulse Duration (On-Time)
The length of time a pulse lasts, generally described as the length of time the electrical signal holds the solenoid pilot valve open.

Pulse Delay (Off-Time)
Elapsed time between pulses in a dust collector cleaning system.

Pulse Clean Baghouse
A baghouse using short intermittent pulses of compressed dry air to clean dust from the filter bags.

Re-entrainment
The phenomenon where dust is collected from an air stream and is then returned to the air stream. This occurs when dust is dislodged from a filter bag during cleaning and is again captured by the same or an adjacent filter bag.

Reverse Air Baghouse
A dust collector where cleaning is accomplished by mechanically, and temporarily, preventing the dirty gas flow into a compartment or group of filter bags while blowing low pressure cleaning air through these "off-line" bags in the opposite direction of typical air flow, to dislodge the accumulated dust cake.

Rotary Airlock Valve
Device having a star wheel (rotor) designed to provide an air tight seal between the negative or positive pressures of the collector and the outside atmosphere.

Screw Conveyor
A revolving screw operating in a fixed trough for conveying material from one point to another. Note: Should a screw conveyor be used in a dust collector system, an airlock is still required to ensure ventilation air does not bypass through the conveyor.

SCFM
Standard cubic feet per minute. The volume of gas flow per minute at standard temperature and pressure conditions (70°F @ sea level).

Shaker Baghouse
A dust collector where cleaning is accomplished by manually or automatically shaking the bags to dislodge the accumulated dust cake. Typically, the airstream within the baghouse is in a static condition during the shaker cleaning cycle.

Solenoid Valve
An electromechanical plunger device that is either "normally open" or "normally closed". In use with a baghouse, it is for the relief of air pressure to activate a compressed air device such as a diaphragm valve.

Timer, Sequential
An electrical mechanism that activates a dust collector's cleaning system.

Tubesheet (Dust Wall)
A steel plate to which the open end of the filter bags are connected. This wall separates the clean air and dirty air plenums of the baghouse.

Venturi
A cone-shaped device located at the top of a tubular filter bag in a pulse-jet dust collector which creates a negative pressure at the top of the venturi for pulling additional air down into the filter elements during pulsing.

Weight (Media)
The average weight per square yard of fabric.

sheet #_______

Inspection Log --- TubeJet® Dust Collector

Baghouse #________________________ *Model No. ________________________*

Date					
Time					
Inspector					
Daily					
Record Differential Pressure (dP)	"wc	"wc	"wc	"wc	"wc
Is timer sequencing, row by row?	Y / N	Y / N	Y / N	Y / N	Y / N
Are solenoids operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Are diaphragm valves firing?	Y / N	Y / N	Y / N	Y / N	Y / N
*Hopper discharge device operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Any visible stack emissions?	Y / N	Y / N	Y / N	Y / N	Y / N
Weekly					
Record compressed air pressure.	PSIG	PSIG	PSIG	PSIG	PSIG
Clean compressed air filter trap.	( )	( )	( )	( )	( )
Check tubesheet for bag leaks.	( )	( )	( )	( )	( )
Check that hopper is empty.	( )	( )	( )	( )	( )
Monthly					
Are there leaks in access doors?	Y / N	Y / N	Y / N	Y / N	Y / N
Check door seals for deterioration.	( )	( )	( )	( )	( )
Check air lines & fittings for leaks.	( )	( )	( )	( )	( )
Blow out dP gauge lines.	( )	( )	( )	( )	( )
Semi-Annually					
Record pulse duration.					
Record pulse delay.					
Check bag condition (dirty side).	( )	( )	( )	( )	( )
Check pulse pipe alignment.	( )	( )	( )	( )	( )
*Check fan, belt tension, etc.	( )	( )	( )	( )	( )
Annually					
Check case/support for corrosion.	( )	( )	( )	( )	( )
Check all bolts and welds.	( )	( )	( )	( )	( )
Check ductwork for build up of dust.	( )	( )	( )	( )	( )
Bag dye penetrant test.	( )	( )	( )	( )	( )

*Lubrication of bearings, reducers, etc. should be done periodically and per specific Manufacturer's O & M manuals recommendation. Schedule maintenance and/or repair of any malfunctioning components, excessive corrosion or parts' replacement.

Notes/Comments: ____

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Inspection Log --- Pactecon® "PC" Collector

Baghouse #________________________ *Model No. ________________________*

Date					
Time					
Inspector					
Daily					
Record Differential Pressure (dP)	"wc	"wc	"wc	"wc	"wc
Is timer sequencing, row by row?	Y / N	Y / N	Y / N	Y / N	Y / N
Are solenoids operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Are diaphragm valves firing?	Y / N	Y / N	Y / N	Y / N	Y / N
*Hopper discharge device operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Any visible stack emissions?	Y / N	Y / N	Y / N	Y / N	Y / N
Weekly					
Record compressed air pressure.	PSIG	PSIG	PSIG	PSIG	PSIG
Clean compressed air filter trap.	( )	( )	( )	( )	( )
Check clean air plenum for bag leaks.	( )	( )	( )	( )	( )
Check that hopper is empty.	( )	( )	( )	( )	( )
Monthly					
Are there leaks in access doors?	Y / N	Y / N	Y / N	Y / N	Y / N
Check door seals for deterioration.	( )	( )	( )	( )	( )
Check air lines & fittings for leaks.	( )	( )	( )	( )	( )
Blow out dP gauge lines.	( )	( )	( )	( )	( )
Semi-Annually					
Record pulse duration.					
Record pulse delay.					
Record number of pulses per row.					
Check bag condition (dirty side).	( )	( )	( )	( )	( )
Check pulse pipe alignment.	( )	( )	( )	( )	( )
*Check fan, belt tension, etc.	( )	( )	( )	( )	( )
Annually					
Check case/support for corrosion.	( )	( )	( )	( )	( )
Check all bolts and welds.	( )	( )	( )	( )	( )
Check ductwork for build up of dust.	( )	( )	( )	( )	( )
Bag dye penetrant test.	( )	( )	( )	( )	( )

*Lubrication of bearings, reducers, etc. should be done periodically and per specific Manufacturer's O & M manuals recommendation. Schedule maintenance and/or repair of any malfunctioning components, excessive corrosion or parts' replacement.

Notes/Comments: ____

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Inspection Log --- PleatJet™ Dust Collector

Baghouse #________________________ *Model No. ________________________*

Date					
Time					
Inspector					
Daily					
Record Differential Pressure (dP)	"wc	"wc	"wc	"wc	"wc
Is timer sequencing, row by row?	Y / N	Y / N	Y / N	Y / N	Y / N
Are solenoids operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Are diaphragm valves firing?	Y / N	Y / N	Y / N	Y / N	Y / N
*Hopper discharge device operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Any visible stack emissions?	Y / N	Y / N	Y / N	Y / N	Y / N
Weekly					
Record compressed air pressure.	PSIG	PSIG	PSIG	PSIG	PSIG
Clean compressed air filter trap.	( )	( )	( )	( )	( )
Check tubesheet for bag leaks.	( )	( )	( )	( )	( )
Check that hopper is empty.	( )	( )	( )	( )	( )
Monthly					
Are there leaks in access doors?	Y / N	Y / N	Y / N	Y / N	Y / N
Check door seals for deterioration.	( )	( )	( )	( )	( )
Check air lines & fittings for leaks.	( )	( )	( )	( )	( )
Blow out dP gauge lines.	( )	( )	( )	( )	( )
Semi-Annually					
Record pulse duration.					
Record pulse delay.					
Check cartridge condition (dirty side).	( )	( )	( )	( )	( )
Check pulse pipe alignment.	( )	( )	( )	( )	( )
*Check fan, belt tension, etc.	( )	( )	( )	( )	( )
Annually					
Check case/support for corrosion.	( )	( )	( )	( )	( )
Check all bolts and welds.	( )	( )	( )	( )	( )
Check ductwork for build up of dust.	( )	( )	( )	( )	( )
Bag dye penetrant test.	( )	( )	( )	( )	( )

*Lubrication of bearings, reducers, etc. should be done periodically and per specific Manufacturer's O & M manuals recommendation. Schedule maintenance and/or repair of any malfunctioning components, excessive corrosion or parts' replacement.

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Inspection Log --- Dynaclone® Dust Collector

Baghouse #________________________ *Model No. ________________________*

Date					
Time					
Inspector					
Daily					
Record Differential Pressure (dP)	"wc	"wc	"wc	"wc	"wc
*Hopper discharge device operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Any visible stack emissions?	Y / N	Y / N	Y / N	Y / N	Y / N
Weekly					
*Check traveler drive mechanism.	( )	( )	( )	( )	( )
Check clean air side for bag leaks.	( )	( )	( )	( )	( )
Check that hopper is empty.	( )	( )	( )	( )	( )
Monthly					
Are there leaks in access doors?	Y / N	Y / N	Y / N	Y / N	Y / N
Check door seals for deterioration.	( )	( )	( )	( )	( )
Check Spiratube connections & wear	( )	( )	( )	( )	( )
Blow out dP gauge lines.	( )	( )	( )	( )	( )
Semi-Annually					
Check wiper blade wear.	( )	( )	( )	( )	( )
Check bag condition (dirty side).	( )	( )	( )	( )	( )
Check tension on bag springs.	( )	( )	( )	( )	( )
*Check fan, belt tension, etc.	( )	( )	( )	( )	( )
Annually					
Check case/support for corrosion.	( )	( )	( )	( )	( )
Check all bolts and welds.	( )	( )	( )	( )	( )
Check ductwork for build up of dust.	( )	( )	( )	( )	( )
Bag dye penetrant test.	( )	( )	( )	( )	( )

*Lubrication of bearings, reducers, etc. should be done periodically and per specific Manufacturer's O & M manuals recommendation.
Schedule maintenance and/or repair of any malfunctioning components, excessive corrosion or parts' replacement.

Notes/Comments: ____

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Inspection Log --- Shaker Dust Collector

Baghouse #________________________ *Model No. ________________________*

Date					
Time					
Inspector					
Daily					
Record Differential Pressure (dP)	"wc	"wc	"wc	"wc	"wc
*Hopper discharge device operating?	Y / N	Y / N	Y / N	Y / N	Y / N
Any visible stack emissions?	Y / N	Y / N	Y / N	Y / N	Y / N
Weekly					
*Check shaker/eccentric mechanism.	( )	( )	( )	( )	( )
Check clean air side for bag leaks.	( )	( )	( )	( )	( )
Check that hopper is empty.	( )	( )	( )	( )	( )
Monthly					
Are there leaks in access doors?	Y / N	Y / N	Y / N	Y / N	Y / N
Check door seals for deterioration.	( )	( )	( )	( )	( )
Blow out dP gauge lines.	( )	( )	( )	( )	( )
Semi-Annually					
Check dust bellows.	( )	( )	( )	( )	( )
Check bag condition (dirty side).	( )	( )	( )	( )	( )
Check bag spring tension.	( )	( )	( )	( )	( )
*Check fan, belt tension, etc.	( )	( )	( )	( )	( )
Annually					
Check case/support for corrosion.	( )	( )	( )	( )	( )
Check all bolts and welds.	( )	( )	( )	( )	( )
Check ductwork for build up of dust.	( )	( )	( )	( )	( )
Bag dye penetrant test.	( )	( )	( )	( )	( )

*Lubrication of bearings, reducers, etc. should be done periodically and per specific Manufacturer's O & M manuals recommendation. Schedule maintenance and/or repair of any malfunctioning components, excessive corrosion or parts' replacement.

Notes/Comments: ____

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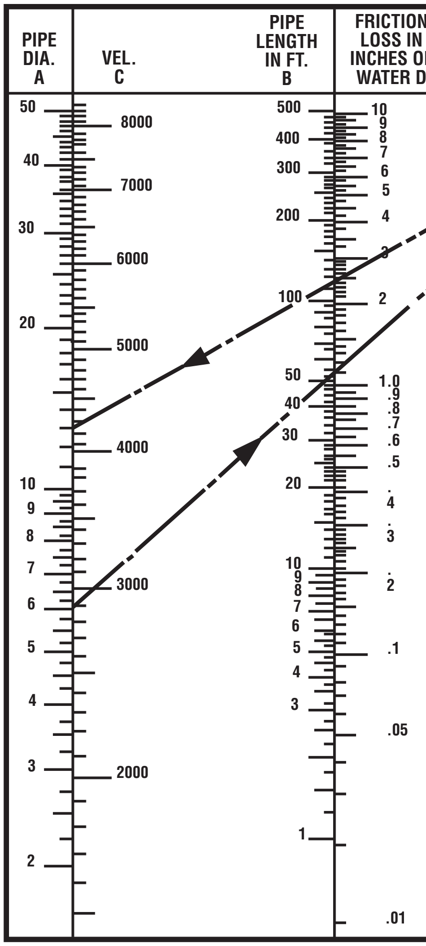
For Parts/Service, call Sly Inc. (1-800-200-9530)

Duct Sizing & Static Pressure Loss

Friction Loss Chart



How To Use Friction Loss Chart:

To find the friction loss in a pipe of given diameter (A) and length (B) with air moving at a given velocity (C):

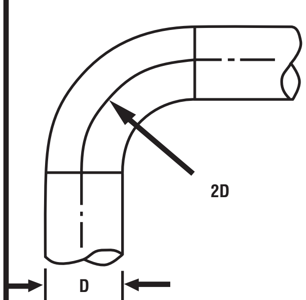
1. Connect A and B to a point on line R.
2. Connect point on line R with C.
3. Read loss on line D.

Example: As indicated by dot and dash lines, a 6" pipe (A) 53 feet long (B) with velocity of 4250 FPM (C) will have a loss of 2.4 inches (D).

Air Volumes in Pipe Lines at Various Velocities and Corresponding Velocity Heads in Inches of Water

PIPE DIAMETER (INCHES)	PIPE AREA (SQ. FT.)	VELOCITY FPM (FEET PER MINUTE) 3000 FT.	3500 FT.	4000 FT.	4500 FT.	5000 FT.
		VELOCITY PRESSURE, INCHES W.G. .561 IN.	.764 IN.	.998 IN.	1.262 IN.	1.558 IN.
3	.049	147	171	196	220	245
4	.087	262	306	349	393	436
5	.136	409	478	546	614	682
6	.196	589	687	786	884	982
7	.267	802	936	1,069	1,202	1,337
8	.349	1,047	1,222	1,396	1,570	1,746
9	.442	1,325	1,546	1,767	1,988	2,209
10	.545	1,636	1,909	2,182	2,454	2,727
11	.660	1,980	2,310	2,640	2,970	3,300
12	.785	2,356	2,749	3,142	3,534	3,927
13	.922	2,765	3,226	3,687	4,148	4,609
14	1.069	3,207	3,742	4,276	4,811	5,345
15	1.227	3,682	4,295	4,909	5,522	6,136
16	1.396	4,189	4,887	5,585	6,283	6,982
17	1.576	4,729	5,517	6,305	7,093	7,882
18	1.767	5,301	6,185	7,068	7,952	8,836
19	1.969	5,907	6,892	7,876	8,861	9,845
20	2.182	6,545	7,636	8,727	9,818	10,908
21	2.405	7,216	8,419	9,621	10,824	12,027
22	2.640	7,919	9,239	10,559	11,879	13,199
23	2.885	8,656	10,098	11,541	12,983	14,426
24	3.142	9,425	10,996	12,566	14,137	15,708
25	3.409	10,226	11,931	13,635	15,340	17,044
26	3.687	11,061	12,905	14,748	16,592	18,435
27	3.976	11,928	13,916	15,904	17,892	19,880
28	4.276	12,828	14,966	17,104	19,242	21,381
29	4.587	13,761	16,054	18,348	20,641	22,935
30	4.909	14,726	17,180	19,635	22,089	24,544
31	5.241	15,724	18,345	20,966	23,486	26,207
32	5.585	16,655	19,548	22,340	25,133	27,925
33	5.940	17,819	20,787	23,758	26,728	29,698
34	6.305	18,915	22,068	25,220	28,373	31,525
35	6.681	20,044	23,385	26,727	30,066	33,407
36	7.069	21,206	24,740	28,274	31,809	35,343
37	7.467	22,400	26,133	29,867	33,600	37,434
38	7.876	23,627	27,565	31,503	35,441	39,379
39	8.296	24,887	29,035	33,183	37,331	41,479
40	8.727	26,180	30,543	34,906	39,270	43,633
42	9.621	28,863	33,674	38,484	43,295	48,106
44	10.56	31,676	36,955	42,234	47,513	52,793
46	11.54	34,623	40,394	46,164	51,935	57,705
48	12.57	37,699	43,982	50,266	56,549	62,850

Equivalent Resistance In Feet of Straight Pipe



DIA.OF PIPE	90° ELBOW*
3"	3 FT.
4"	4 FT.
5"	6 FT.
6"	7 FT.
7"	9 FT.
8"	10 FT.
10"	14 FT.
12"	17 FT.
14"	21 FT.
16"	24 FT.
18"	28 FT.
20"	32 FT.
24"	40 FT.
30"	51 FT.
36"	64 FT.
40"	72 FT.
48"	89 FT.

* For 60° elbow, multiply by 0.67.
For 45° elbow, multiply by 0.50.

Inlet Losses

Estimated inlet losses for standard conditions may be calculated by the following formula:

$$\left[\frac{\left(\frac{\text{Velocity}}{.75}\right)}{4005}\right]^2 = \text{Inlet Loss}$$

Typical Inlet Losses

(To maintain suction at ventilation point)

3000 FPM ....1.00 in.
3500 FPM ....1.36 in.
4000 FPM ....1.77 in.
4500 FPM ....2.24 in.
5000 FPM ....2.77 in.

$$\left[\frac{\left(\frac{4000}{.75}\right)}{4005}\right]^2 = 1.77"$$

Fan Static Pressure

Total fan static pressure = Inlet loss + Friction loss in piping + Loss through filter equipment + Loss through fan exhaust stack or weather cap

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