AESCO/MADSEN®

"High Ratio" Series

Portable & Stationary Baghouses

"HRB" Series
High Ratio Baghouses

AESCO/MADSEN's High Ratio line of portable and stationary baghouses can operate at air to cloth ratios as high as 10:1. Never seen before in the asphalt industry, this **new** technology provides for a more compact collector at substantially lower initial cost. It also offers fewer bags and cages to maintain, less wear and tear of the filter media, lower pressure drops, and reduced energy consumption.

Exclusive Design Features Include:

•High side, air entry eliminates upward air movement or can velocity—a true down flow design.

•Built-in, knockout chamber drops out larger dust particles before bag section.

•Baffled air inlet to protect bags from abrasion and aid in even air distribution.

•Uniform dust cake builds up along entire length of bag, increasing filtering efficiency and lowering pressure drop.

•Wider bag spacing eliminates dust re-entrainment on adjacent bag.

•High velocity nozzles increase the supersonic energy of the cleaning air jet pulse for better cleaning, which lowers pressure drop.

•Greater volume of cleaning air is induced during pulse.

•Elimination of flow restricting venturis reduces pressure drop and lowers cleaned air velocity out of bags.

Features and Benefits of AESCO/ MADSEN's Baghouse

Venturis are eliminated above the bags. These are obstructions to airflow during the filtration mode, causing higher pressure drops, which requires more horsepower. Venturis are needed on other designs to develop the necessary velocities for cleaning the bags.

This drives the dust to adjacent bags creating more re-entrainment. The filtered air velocity is 3-6 times slower in the **AESCO/MADSEN** design than with a venturi system. The energy required to overcome the high filtered air velocity in the venturi system is not available to clean the dust cake off the bag. This also increases bag wear and an uneven dust cake build-up on the bag, which increases pressure drop and dust bleed through during the cleaning cycle. To properly clean a bag, we use four to six times the rated filtration air volume. This cleans the bag very effectively. The air leaves the nozzle at 1750 fps. This velocity induces the surrounding air to move in the same direction of the jet to backflush the bag. Momentum of the air is measured in mass and velocity (M=mv). As the air velocity gets slower and closer to the top of the bag, the mass or volume increases. With high volumes of low velocity air, the air pores of the bags are cleaned. This relates directly to pressure drop and the amount of air that can be successfully filtered by a specific size of baghouse.

Cyclones

The cyclones are mounted on the inlet end of the baghouse and connected to the baghouse via the ductwork. The fines collected from the cyclone are augured back to the asphalt plant. The dust from the cyclone can be combined with the baghouse dust and also conveyed or pneumatically convyed back to the plant.

Supersonic Nozzles

Use of supersonic nozzles creates a more efficient release of compressed air. The use of high volumes of low velocity cleaning air, provides four to five times the rated filtration volume. This back flushes the bag without driving the dust particles into adjacent bags. **AESCO/MADSEN** uses a patented, supersonic converging/diverging nozzle to generate the cleaning air jet. The diverging section of the nozzle accelerates the air jet exit velocity. A much greater volume of secondary cleaning air is induced by this increased air jet when compared to venturi based systems.

Exhaust Fans

AESCO/MADSEN uses a backward curved exhaust fan. These fans operate using less horsepower, are quieter and are more compact. The exhaust fans come with an outlet damper to provide linear airflow through the entire output range of the exhaust fan. Automatic damper controls can be supplied to provide maximum efficiency for the drying process.

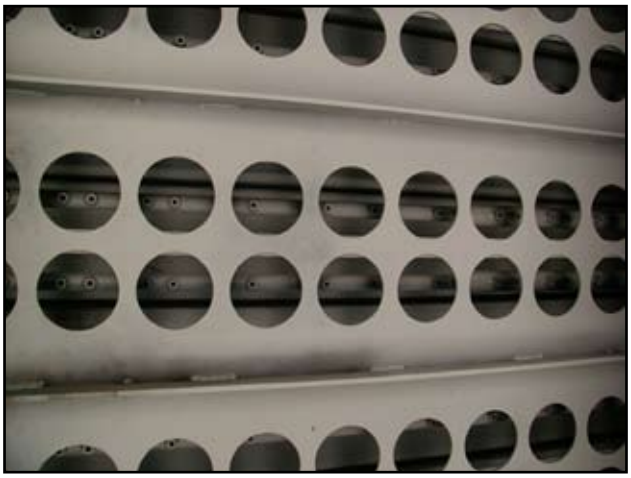
Fines Return Systems

The fines from the baghouse can be sent back to a rotary mixer, drum mixer or counterflow dryer by using a pneumatic blower or an auger system. Optional fines silos and dust pods can be provided to meter material back to the process.

Eliminates rising airflows

•High side inlet entry of air, the airflow is horizontal and downward rather than upward. This eliminates rising airflows, which can prevent dust from falling into the hopper. Dust naturally falls down out of the air stream, unless the airflow is upward as in other baghouse designs. Re-entrainment is the biggest problem with the very fine dust particles. The baghouse inlet is engineered to provide optimum "dirty air" velocity at baghouse rated capacity.

•Air entrance plenum extends the whole length of the baghouse. The air decelerates in the knockout chamber. Internal baffles protect the bags as the air turns 90 degrees into the bag section, which causes further material dropout. This feature allows the heavier dust particles to fall out and into the hopper and reduces the amount of dust carried to the bag section.



•Wide bag spacing keeps air velocities between rows lower. This is an essential design factor to greatly reduce re-entrainment of the dust particles which plug the bags.

Portable Units

DIMENSIONS

MODEL	OVERALL LENGTH
HRB-544	53′
HRB-680	59′-2″
HRB-816	69′-7″
HRB-1054	81′-10″

Width and height for all portables are 13 Feet by 10 Feet overall
***add 4′-3″ for cyclone**

WEIGHTS

MODEL	KING PIN	AXLE LOAD/#AXLES	TOTAL*
HRB-544	26,000	29,400 (2)	55,400
HRB-680	30,000	38,000 (2)	68,000
HRB-816	35,000	44,000 (3)	79,000
HRB-1054	43,100	52,800 (3)	95,900

***add 8,000 lbs. for cyclone**

AIRFLOW

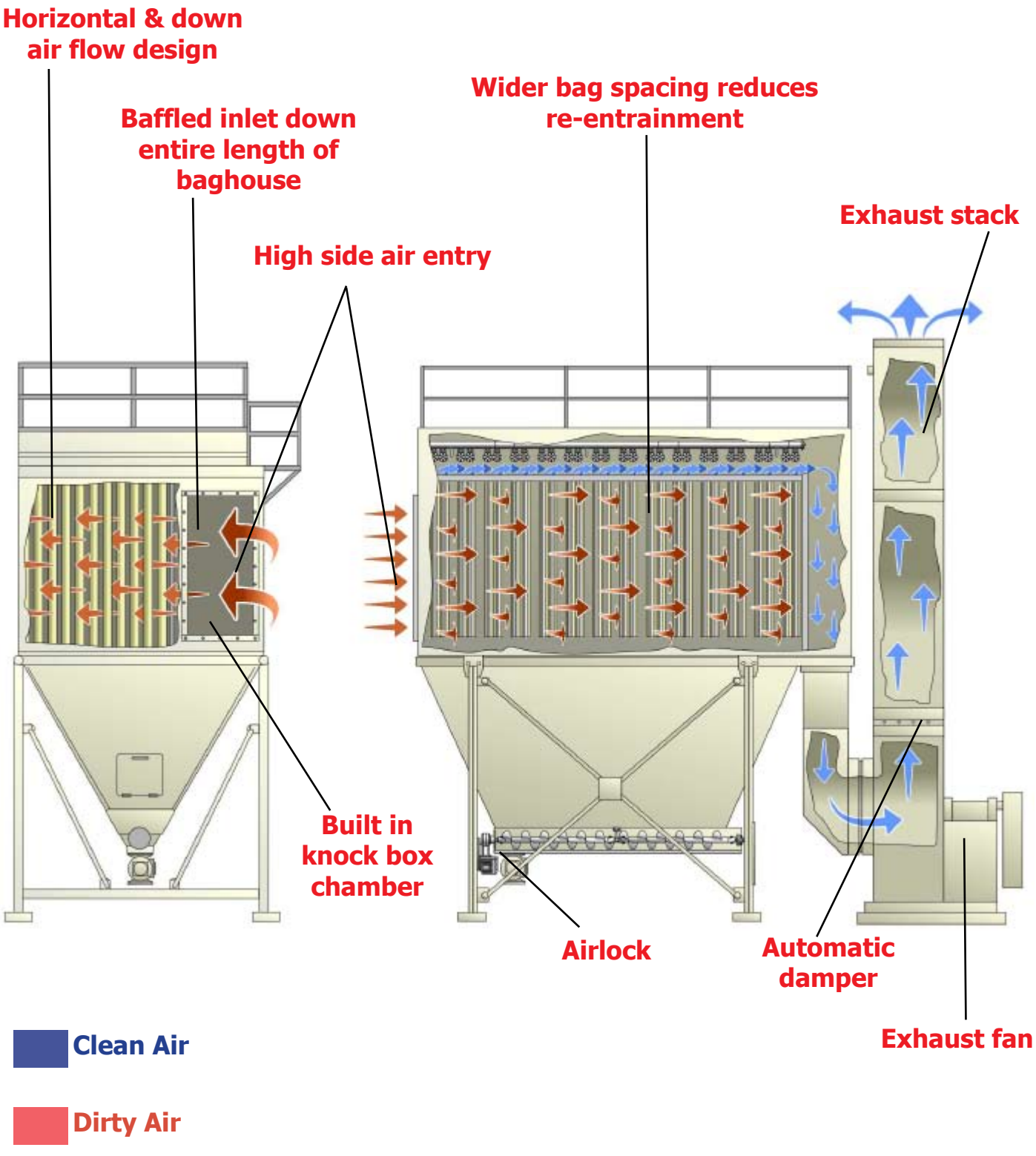
MODEL	CFM
HRB-544	45,000
HRB-680	55,000
HRB-816	65,000
HRB-1054	75,000

Stationary Units

MODEL	CFM	DIMENSIONS*
HRB-168	30,000	14′ long
HRB-216	40,000	17′ long
HRB-312	55,000	23′ long
HRB-384	65,000	27.5′ long
HRB-432	75,000	30.5′ long
HRB-480	85,000	33.5′ long

All stationary baghouses are 13′ x 4′ wide.
*overall height to top of handrails is 37′-4″
*top of baghouse 34′-2″

AESCO/MADSEN
High Ratio Baghouses



Dust cake is more even and it is less densely packed providing higher filtering efficiencies at lower pressure drops. AESCO/MADSEN makes better use of the available filtering media.

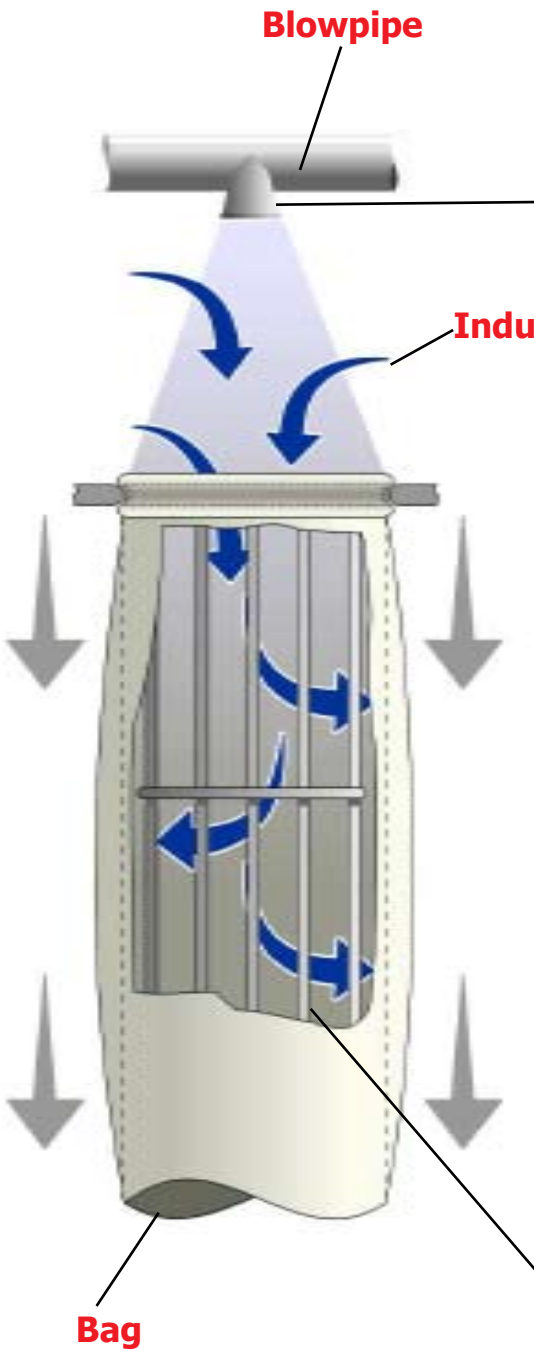
High Ratio Cleaning System

AESCO/MADSEN uses a supersonic converging/diverging nozzle to generate the cleaning air jet. More secondary air is induced by the higher velocity air jet. More energy is available for cleaning.

Lower throat velocity at the inlet of the bag reduces the negative pressure on the outside of the bag.

AESCO/MADSEN stops the expansion of the air jet by using the whole open area of the bag mouth. A lower air jet velocity can be used because the filtered air velocity through the bag opening is lower.

Bag opening limits air jet expansion. Less chance for dust cake blow out to occur since the cleaning air jet is already expanded to the full diameter of the bag.



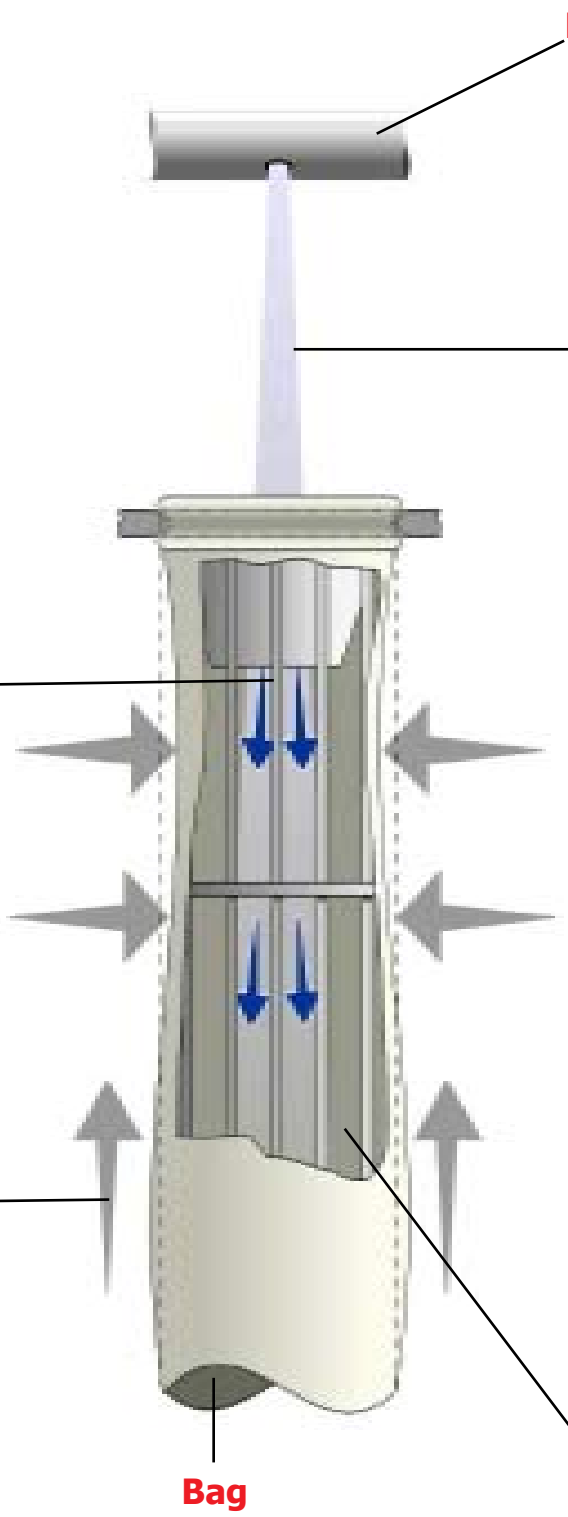
The velocity of the cleaning air going into the bag must be great enough to overcome the velocity of the filtered air coming out of the bag. Lower velocity and more induced secondary air can be used. Venturi systems limit the amount of induced air and higher velocities of cleaning air needed.

Even bag inflation reduces wear and cleans more efficiently.

Dust cake is more even and less densely packed, providing higher filtering efficiencies at lower pressure drops.

AESCO/MADSEN's supersonic nozzles increases the speed and energy of the air jet pulse inducing a greater volume of cleaning air. Greater cleaning energy with less shock allows AESCO/MADSEN to clean the filters more efficiently. Less filter area is required because the bag is cleaned better. A more even dust cake builds along the entire length of the bag. This increases the filtering efficiency and reduces the filtered air pressure drop. This is true even with only half the cloth area required in the venturi style systems.

Typical Venturi Based Cleaning System



The high velocity of the cleaning air at the discharge of the venturi creates negative pressure at the top of the bag. Dust clings to the top of the bag, blinding the bag in this area and reducing the effective filter area of the bag.

Venturi based systems start with a low velocity air jet located close to the bag opening. This limits the induction of cleaning air.

Flow restricting venturis create a high filtered air velocity out of the bag that must be overcome by the cleaning air jet, robbing it of energy to clean the bag.

A high, negative pressure is created at the exit of the venturi causing fine dust particles to embed into the filter cloth. The strong shock produced by the cleaning air increases bag wear—resulting in "puffing" as dust is sucked through the cloth.

Uneven dust cake lowers filter efficiency and increases pressure dro**p.**

AESCO/MADSEN'S High Ratio Baghouse is Based on Proven Theory and Engineering Principles Not Seen in the Asphalt Industry

- **AESCO/MADSEN** manufactures a complete line of high ratio baghouses. These units incorporate several design features to permit higher airflows per bag. Air to clothratios of up to 10:1 are achievable.

- Both portable and stationary models are available.

- **High Ratio Baghouses** are smaller and more compact.

- The main focus is on reducing re-entrainment of dust and back flushing the bags with more air.

- Lower initial, operating and maintenance costs are realized with **AESCO/MADSEN'S** state-of-the-art **High Ratio Baghouses.**

AESCO SINCE 1980
AESCO MADSEN
MADSEN SINCE 1910

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