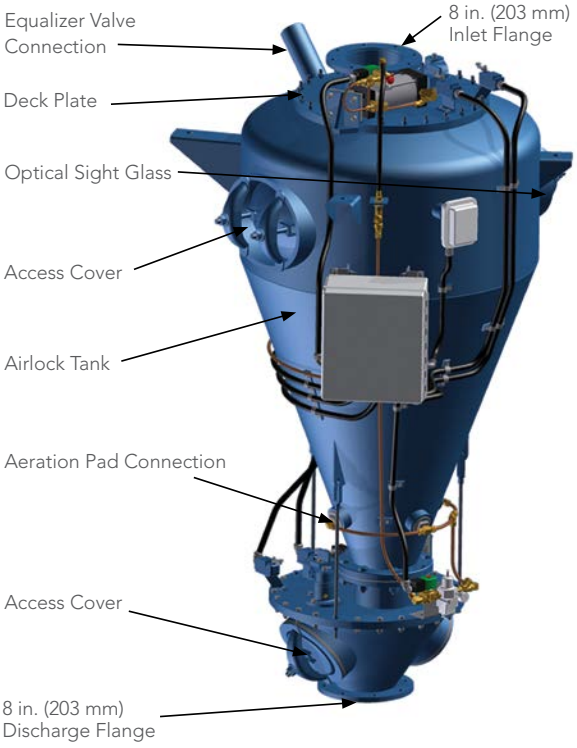
Allen-Sherman-Hoff® Airlock Style IV for Pneumatic Material Handling Systems

The Allen-Sherman-Hoff® airlock, provided by Babcock & Wilcox (B&W), is used primarily for the transfer, by gravity, of fly ash or other dry, free-flowing, granular solids from one pressure zone into another pressure zone. Thousands of these airlocks are in successful operation worldwide. In a *pressure conveying system*, solids are transferred from an overhead collection point into a receiving chamber by utilizing a set of isolation gates above and below the chamber. As the upper gate opens, the chamber is allowed to fill with material. After a pre-determined fill period, the upper gate closes and the lower gate opens to discharge the material into the pressure transport line.

Alternatively, our pneumatic *vacuum conveying systems* also utilize the A-S-H® airlock design to discharge the ash from the filter collector located above the ash storage silo. The A-S-H airlock adjusts the pressure zones between the filter collector and the silo without requiring a break in the vacuum level for continuous operation.

A-S-H airlocks are designed to operate where significant pressure differentials exist between the ash collection points and the transport system. The key to this operation is the Style III equalizer valve which is part of each airlock application. The conveying transport air is supplied from independent blowers or compressors. The dry, clean compressed air (required for the operation of the valves and aeration of the receiving chamber) is typically supplied by the plant's compressed air system.



The straight-through design of the Style IV airlock maximizes material flow into the pipeline.

Benefits

- Self-lapping gate and seat operation for self-cleaning and reduction of material build-up on the gate and seat surfaces
- Large gate opening is ideal for coarse material (e.g., economizer ash) and high-capacity conveying systems
- Straight-through design with minimal aeration to assist gravity feed into the transport pipe line
- Completely assembled airlock units for less field assembly
- Flexible control settings to meet site requirements (timed sequence or chamber level indicator operation)
- Chamber access door provides ease of inspection and maintenance
- Lowest headroom requirement of any competitive design in the industry

Features

- Machined deck
- Replaceable, Ni-Hard heat treated to 600 BHN gate and seat
- Gate closed position limit switches
- Horizontal gates capable of shearing through a standing column of material
- Carbon steel chambers designed per ASME and supplied as coded vessels for systems over 15 psi (103 kPa)
- Temperature operation up to 750F (399C)
- Available in various sizes and capacities

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Reliable Operation

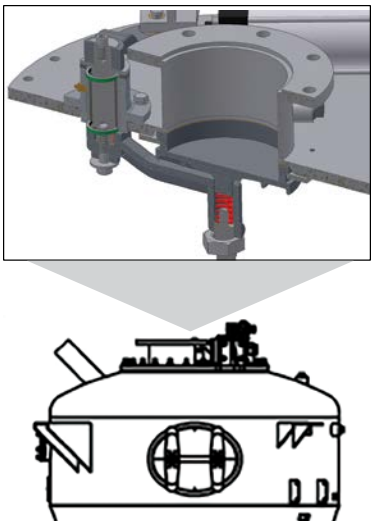
The Allen-Sherman-Hoff airlock is a pneumatically operated, solenoid valve controlled materials transfer unit. The upper and lower gates are actuated by means of cylinder operators requiring air at 80 to 100 psig (552 to 689 kPa).

The upper and lower gates of the Style IV airlock have an 8 in. (203 mm) full port inlet and outlet.

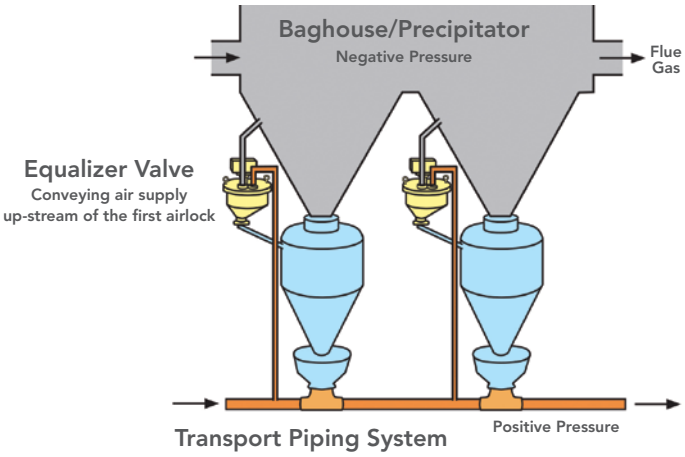
The gates and seats are constructed of wear-resistant Ni-Hard material. The special airlock slide gate is equipped with a coil spring to maintain intimate contact between the gate and seat, resulting in a reliable seal to maximize wear life. The self-lapping feature also minimizes build-up of ash that can accumulate on valve components. This design permits the gate to cut through a flowing column of dust while the airlock is filling, providing a positive shearing cut-off of the dust flow. This arrangement is more durable and effective than a flap-type or track-guided style gate.

Optional aeration pads mounted near the outlet are available to allow free flow of the ash from the airlock. The aeration requires dry instrument air at a higher pressure than the pressure in the conveying system.

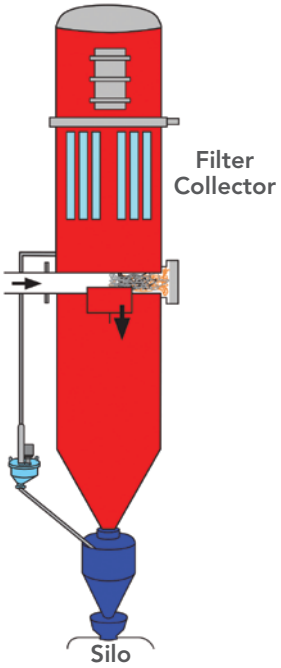
Each airlock valve is designed to operate in conjunction with an A-S-H three-way cylinder-operated Style III equalizer/vent valve. The valve provides for venting and equalizing pressure in the upper chamber of the airlock. This valve is designed for similar mechanical operation as the air lock valve, to reduce potential ash build-up by providing a self-lapping operation between gate and seat.



Typical view of the upper and lower gates with the self-lapping design



Pressure System Application



Vacuum System Application

Babcock & Wilcox
20 South Van Buren Avenue
Barberton, Ohio, U.S.A. 44203
Phone: +1 888.ASH.PARTS
Fax: +1 484.875.1600

www.babcock.com

Babcock & Wilcox supplies Diamond Power boiler cleaning and Allen-Sherman-Hoff ash handling equipment and systems.

ENERGY | ENVIRONMENTAL

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