

PRODUCT OVERVIEW

- Biological Containment
Housing constructed of 11 and 14GA T304 Stainless Steel
- Pressure boundary is 100% seal welded for operational pressures up to +/- 20" WG
- Encases HEPA filters in either gasket or gel seal with 99.97% or 99.99% efficiencies
- May incorporate multiple filters in series with Optional 2", 4", or 6" pre-filter section, 12" intermediate and high efficiency gas adsorbers.
- Robust Gasket or Gel Seal Locking mechanisms to secure seal between filter and sealingsurface housing.
- Flanged for installation to ductwork
- Designed to meet end user application specific requirements
- Ideal for use in
 - Healthcare
 - Biomedical
 - Pharmaceutical
 - Nuclear



HEPA SEAL BAG IN/BAG OUT HOUSING

WHY SPECIFY THE AEROSTAR HEPA SEAL BAG-IN-BAG-OUT HOUSING?

- Single or multistage unit designed to hold HEPA filters in 99.97% and 99.99% efficiency at 0.3-micron size particles with either a gasket or gel seal
- Standard housing depth is 24" for housing with HEPA filters only and 36 1/2" for 2", 4" or 6" pre- filters. Other depth/configurations are available to suit application requirements
- The HEPA Seal BIBO design provides a consistent compression over the perimeters of the filters, assuring a leak free seal between the filter and sealing surface for duration of the installation cycle
- Each door opening has ribbed bagging ring for containment bag attachment. When changing filters the containment bag creates a barrier seal between the operator and the contaminated filter.
- Removable retrieval rods ease both the installation and removal of filters.
- Housing is constructed with 11 & 14 gauge T304 stainless steel and the locking trays in 12 gauge T304 stainless steel.
- The housing components are seam welded to reinforce joint strength and to prevent collection of contaminants and air leakage.
- For the safety of the operator the locking tray is on the downstream side of the HEPA filters, protecting from contaminants at filter change.
- The strength and versatility of the HEPA Seal BIBO design make it ideal for all applications. Hand torqued door latches provide a positive seal between the housing and the gasketing on the door.
- The housing has a flange for easy installation and custom flanges are available.



HEPA SEAL BAG IN/BAG OUT HOUSING

PERFORMANCE DATA

FILTER HOUSING CAPACITY (CFM)*								
HEIGHT	WIDTH							
	.5	1	1.5	2	2.5	3	3.5	4
.5	—	1000	—	2000	—	3000	—	4000
1	1000	2000	3000	4000	5000	6000	7000	8000
1.5	—	3000	4500	6000	7500	9000	10500	12000
2	2000	4000	6000	8000	10000	12000	14000	16000
2.5	—	5000	7500	10000	12500	15000	17500	20000
3	3000	6000	9000	12000	15000	18000	21000	24000

TO DETERMINE HOUSING SIZE: Find the cfm you are filtering and go to the left to the height column. Write down the number. Then go from the cfm up to the width row and write down that number. Example 12000 cfm = 3 x 2. Note there may be more than one size for most cfm; choose the one that will best fit your space.

TO DETERMINE NUMBER OF FILTERS:

Example housing is 3 h x 2 w. First determine number of filters in a row (width). Example: Width = 2 is 2 - 24 x 24 x 2 HEPA filters. Second, multiply each size by the number of rows (height).

Example: Height = 3. There are 6-24 x 24 x 11 HEPA filters in this configuration.

OPTIONS

- Inlet and Outlet Test Sections
- Downstream Isokinetic Scan Section
- BT Isolation Dampers Round or Dish Style
- Dampers fitted with manual, pneumatic or electric actuators
- Decontamination valves
- Weatherproofing
- Aluminized steel construction
- Double wall insulation
- Containment Bag Banding Kit and Filter Change out Shelf
- T316 Stainless Steel
- Vertical flow application
- Static port(s) and DOP port(s)
- Magnehelic and Photohelic gauge
- High temperature gasket
- Lifting lugs
- Duct Transitions

ENGINEERING SPECIFICATIONS

1.0 General

- 1.1 HEPA filter housing basis of design shall be HEPA Seal BIBO Housing as provided by Filtration Group Inc. Housing shall be factory assembled and shall be tested in accordance with ANSI/ANSE-N510-1995 for operation between +/- 10" w.g. The housing shall be able to create a positive seal with filters having a gasket seal.

2.0 Construction

- 2.1 Housing shall be constructed in 11 and 14-gauge T304 stainless steel. To hinder contaminations and air by-pass, the housing shall be fully seam welded with a broken channel for the filters instead of aluminum extrusion. Welds shall be ground smooth. Welders and weld procedures shall meet or exceed the ASME Boiler and Pressure Vessel Code Section IX and be visually inspected following the workmanship acceptance criteria described in "Specification for welding of sheet metal" section 5 and 6 of ANSI/AWS D9.1-1990. There shall be a 1-1/2" flange around the air entering and leaving sides to accommodate connection to ductwork and air handling equipment. No holes shall be drilled or punched, assuring leak-free field installation. Upstream and down stream transitions to dampers or duct work shall be fully welded to the housing. All hardware on the housing and mechanical components of the filter clamping mechanism shall be 300 Series Stainless Steel except for the threaded nuts that shall be brass and the access door knobs that shall be aluminum and designed to prevent galling of threads.

3.0 Locking Mechanism

- 3.1 The filter locking mechanism shall generate a leak free seal between gasket filters and housing sealing surface by an evenly distribute pressure of 1,400 lbs. The mechanism shall be on the downstream side of the HEPA filters, protected from contaminants and shall be constructed in 12-gauge stainless steel. The locking mechanism shall be operated from the outside of the housing. Each tier of filters shall have a locking mechanism. Filter removal rods shall be standard for multi-wide housings and be operated from within the filter change out bag.

4.0 Doors and Containment

- 4.1 Doors shall be 14-gauge stainless steel and mounted to the housing for ease of filter removal. Housings shall be provided with individual separate access doors for the prefilter and HEPA filter. There shall be a bagging collar around the filter door that will allow for a containment bag to be installed. The ring shall have a hemmed outer edge to prevent the collar from tearing the containment bag. The collar shall have 2-raised ridges as a holding device for the bag. Each access door shall have a PVC containment bag that is 8 mils thick and has a 1/4" diameter elastic shock cord hemmed within the mouth of the bag so that when stretched around the collar it provides a secure snug fit. A nylon security strap shall be provided to fasten the containment bag to the bagging collar. Hand torque aluminum door knobs shall provide a positive seal between the bagging collar and the gasket on the access door.

5.0 Gages

- 5.1 Provide differential pressure gages across each filter section. Gages shall be Dwyer Series 2000 or equivalent.

6.0 BT Isolation Dampers

- 6.1 The damper shall be a flat blade isolation damper. The damper shall be adequately reinforced to withstand a negative or positive pressure of 10" water gage. The damper body shall be manufactured from 12 ga. T-304 stainless steel sheet metal. The damper body shall be cylindrical, and have two (2) 12 ga. T-304 stainless steel plates with a dense silicone gasket between them. Blade seal shall occur when the silicone gasket seats against the inside of the 12 ga. housing wall. Damper shall have a 1 1/2" wide X 3/16" thick bolting flange on the inlet and outlet. Damper shall have a factory drilled bolt hole pattern (7/16" diameter bolt holes), and shall be no more than 4" apart, as recommended in ERDA 76-21, "Nuclear Air Cleaning Handbook".

7.0 Welding and Cleaning

- 7.2 All "pressure retaining" weld joints and seams shall be continuously welded with no porosities allowed. Joints and seams requiring only intermittent welds, such as reinforcement members, shall be intermittently welded. Damper will be free of all burrs, and sharp edges. All weld joints and seams that are a portion of any gasket setting surface, (duct connection flanges and filter sealing surfaces), shall be ground smooth and flush with adjacent base metals. All welding procedures, welders, and welder operators shall be qualified in accordance with ASME Boiler and Pressure Vessel Code, Section IX. All welded joints and seams shall be wire brushed to remove heat discoloration.

8.0 Actuator

- 8.1 Damper shall be factory equipped with a manual actuator with a hand wheel and quarter turn manual worm gear. Actuator shall be a Dynatorque model DT2. The actuator housing and cover are aluminum. Rated output torque shall be 2,000 inch pounds with a gear ratio of 30:1. Actuator shall be fully lubricated and self-locking to hold in any position.

9.0 Factory Testing And Quality Assurance

- 9.1 The damper blade shall be tested in the closed position at +10" w.g. and shall be bubble-tight when tested in accordance with ASME N510-1995 Reaffirmed, "Testing of Nuclear Air Cleaning Systems". The complete damper pressure boundary shall be leak tested at +20" water gage and have a maximum leak rate of 0.0005 cfm per cu ft of damper volume.

10.0 Prefilters

- 10.1 The prefilter shall be high capacity Series 400 as manufactured by Filtration Group.
1. Filter media shall be a moisture resistant 100% synthetic media.
2. Media support shall be continuously laminated to an expanded metal grid on the air leaving side.
3. Design shall be an extended surface pleat with tapered radial configuration.
4. Media frame shall be constructed from heavy-duty, moisture-resistant, high strength die cut board. The frame shall be designed with diagonal and horizontal support members bonded to the media on the air entering and leaving sides.
5. Filters shall be classified U.L. 900 Classified
6. Filters shall have a Minimum Efficiency Reporting Value (MERV) 10 per ASHRAE Std 52.2.

11.0 Intermediate Filters

- 11.1 The intermediate shall be GEO Pleat MERV 14 as manufactured by Filtration Group
1. Filter media shall be a moisture resistant 100% synthetic media.
2. Media shall be pleated with the use of a thermos plastic resin separator to maintain spacing of adjacent pleats and pack stability.
3. Filter frame shall be constructed of high impact plastic that is impervious to moisture. The media pack shall be bonded to all four sides of the frame interior to prevent air bypass.
5. Filters shall be classified U.L. 900 Classified
6. Filters shall have a Minimum Efficiency Reporting Value (MERV) 14 per ASHRAE Std 52.2.

12.0 HEPA Filters

- 12.1 HEPA filters shall be High Capacity designed filters as manufactured by Filtration Group.
1. Filter media shall be a moisture resistant wet laid glass fiber nonwoven.
2. The filter media shall be folded on corrugated aluminum separators and sealed with polyurethane the filter frame.
3. The filter frame shall be galvanized steel with an upstream polyurethane foam gasket.
4. There shall be a minimum of 280 sq. ft. of total filter media within the filter.
5. The minimum filter efficiency shall be 99.99% when tested with either thermally generated PAO or DOP aerosol at mass mean diameter of 0.3 micron.