

Model TB - 1000 SC and Model TB - 500 SC

There has been a tremendous increase in the incidence of tuberculosis in the United States. Because much of the transmission can be attributed to the close proximity between patient and hospital staff, the Centers for Disease control (CDC) have issued guidelines [Morbidity and Mortality Weekly Report (CDC) Dec. 7, 1990] for ventilation of isolation rooms and intensive care units (ICUs).

The guidelines recommend that isolation rooms and ICUs have at least six air changes per hour and that both be maintained under negative pressure.

Isolation room air should be exhausted to the outdoors in a way that minimizes any possible exposure to the public. To safely exhaust the air, it should first be properly filtered.

Air in ICUs may be recirculated after it has been passed through a properly designed HEPA filter system.

The guidelines also provide procedures for the safe removal and disposal of the contaminated HEPA filters to prevent further infection.

The proper means of providing ventilation for the isolation rooms and ICUs is to furnish a dedicated filtration system for each room.

Flanders/CSC's self-contained TB systems are designed to address the CDC's guidelines by providing small, high-efficiency filtration systems that provide for the safe change-out of filters by using bag-in/bag-out housings.

The Flanders/CSC TB systems are perfectly suited for removal of the infectious airborne particles including multidrug-resistant (MDR) organisms and other viral and bacterial pathogens.

Typical Applications

- hospital isolation suites
- asbestos abatement
- localized clean-air supply
- exhaust of dirty air from contaminated or hazardous areas and processes



*BF-Series, Gel Seal TB Unit
with optional separate prefilter access door*

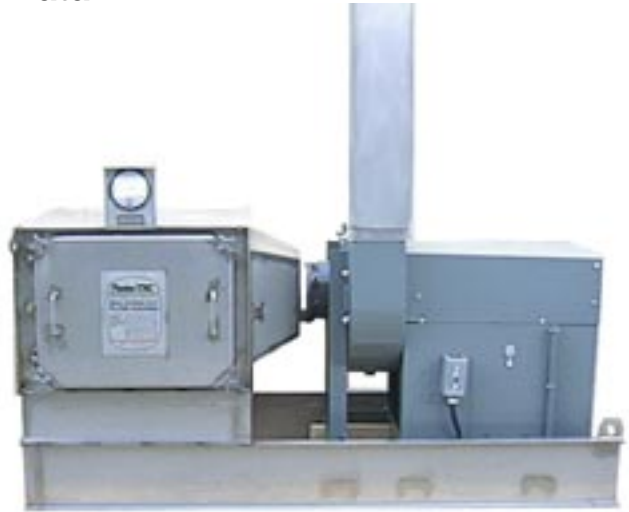


*BG-Series, Gasket Seal TB Unit
with prefilter behind door with primary filter*

System Data



TB-1000-SC Unit



TB-500-SC Unit

Model Number	TB - 1000 SC
CFM	1000
Length (L)	68"
Width (W)	31"
Height (H)	41"
Operating Weight	550 lbs
Prefilter Size (Nom)	24" x 24" x 2"
HEPA Size	24" x 24" x 11 $\frac{1}{2}$ "

Model Number	TB - 500 SC
CFM	500
Length (L)	55"
Width (W)	31"
Height (H)	32"
Operating Weight	350 lbs
Prefilter Size (Nom)	24" x 24" x 2"
HEPA Size	24" x 24" x 11 $\frac{1}{2}$ "

Options

Weather Covers $\frac{3}{4}$ (for housing and fan) $\frac{3}{4}$ Necessary if system is to be installed outdoors.

No-loss Outlet Stack $\frac{3}{4}$ Practical option if system is to be located outdoors without downstream ductwork.

Inlet Isolation Damper $\frac{3}{4}$ For control of airflow, if desired, and for isolation during filter change-out. (Available with manual or automatic actuator.)

Inlet Transition $\frac{3}{4}$ Aids in attachment to ductwork, necessary if damper is to be installed directly upstream of the housing.

Larger Systems $\frac{3}{4}$ Contact Flanders/CSC factory or a representative for complete information.

Fans $\frac{3}{4}$ Other fan sizes and configurations are available, such as direct drive or belt drive. Sound attenuation is also available.

Separate Access Door $\frac{3}{4}$ For prefilter section.

Gel or Gasket Seal Design

Specifications are written for the BF-Series gel seal design, with specific gel seal information written in normal type.

This information also applies to the BG-Series gasket seal design, with exceptions noted by italicized, bold type in parentheses.

Housing $\frac{3}{4}$ The filter housing shall be Flanders/CSC Corporation BF-Series (***BG-Series***) bag-in/bag-out design and shall be manufactured from unpainted 14 and 11 gage type 304 stainless steel. The housing shall be adequately reinforced to withstand a negative or positive pressure of ten (10) inches water gage. The design and filter arrangement shall be a side servicing bank that will allow air to enter and exit the housing without changing directions.

To accommodate gel seal (***gasket seal***) filters, the housing shall incorporate a sealing surface that mates with the face of the filter. Access to the filter shall be on the side of the housing. Each tier of filters shall be fitted with a filter clamping mechanism that is operated from inside the housing. There shall be a safety feature where the filter locking arm and access door shall interface in such a manner that minimizes the possibility of the door being closed until the filters are correctly seated in the housing. (***The filter clamping mechanism shall include independent pressure bars with pre-loaded springs that exert a minimum sealing force of 1400 pounds per full width filter and 1050 pounds per half width filter, applied as an even, uniform load along at least 80% of the top and bottom of each filter frame.***)

If a multi-wide housing is specified, the housings shall be equipped with filter removal rods to draw the filters to the change-out position. The removal rods shall be operated from inside the change-out bag and shall remove the filter by pulling against the top and/or bottom of the filter frame. All change-out operations shall be within the bag so there is a barrier between the worker and the filter at all times.

All pressure retaining weld joints and seams shall be continuously welded with no pores allowed. Joints and seams requiring only intermittent welds, such as reinforcement members, shall not be continuously welded. As a minimum, joints and seams shall be wire brushed and/or buffed to remove heat discoloration, burrs and sharp edges. All weld joints and seams that are a portion of any

gasket sealing surface {e.g. (***filter seal surface***) duct connecting flanges} shall be ground smooth and flush with the adjacent base metal.

The upstream and downstream flanges shall have a $1\frac{1}{2}$ inch minimum flange width. Flanges shall be turned to the outside of the airstream to prevent contamination buildup and allow the customer to connect mating ductwork from outside the housing.

All welding procedures, welders and welder operators shall be qualified in accordance with ASME Boiler and Pressure Vessel Code Section IX. All production welds shall be visually inspected per Flanders/CSC standard procedure number P-122, "Visual Inspection of Welds," which incorporates the workmanship acceptance criteria described in Sections 5 and 6 of ANSI/AWS D9.1-1990, "Specifications for Welding Sheet Metal."

All hardware on the housing and all mechanical components of the filter sealing mechanism shall be 300 series stainless steel, except for the cast aluminum access door knobs and brass pivot blocks in the filter sealing mechanism.

The housing shall have a bagging ring around each filter access port. The bagging ring shall have two (2) continuous ribs to secure the PVC change-out bag. The outer edge of the ring shall be hemmed to prevent the bag from tearing. Each access port and bagging ring shall be covered by a door having an extruded neoprene gasket that is manually replaceable after the door has been removed. When closed, the door shall not press against the bag-out port and PVC bag, thus eliminating the possibility of damage to the bag.

One (1) PVC change-out bag shall be furnished for each filter access port. Each bag shall have a its stock number rolled into the hem. The PVC bag material shall be eight (8) mil thick, yellow in color, with a translucent taffeta texture finish and shall not stick together. For visibility during change-out, the bag shall include approximately sixteen (16) inches of clear PVC at the mouth. Three (3) glove sleeves shall be built into the bag to facilitate handling of the filter during change-out. The PVC bags shall have been tested by an independent laboratory to evaluate their performance at extreme temperature ranges (0°F $\frac{3}{4}$ 130°F). The elastic shock cord shall be hemmed into the mouth of the bag so that it fits

securely when stretched around the bagging ring. To prevent the bag from sliding off the bagging ring during the change-out operation, one (1) nylon security strap shall be provided with each filter access port. A nylon cinching strap shall also be provided with each access port to tie off the slack in the bag while the ventilation system is operating.

The housing shall be tested for filter fit, operation of the filter clamping mechanism, sealing surface and leak tightness before leaving the factory. Both the filter sealing surface and the complete assembly pressure boundary shall be leak tested by the "Pressure Decay Method," in accordance with ASME N510-1995 "Reaffirmed," "Testing of Air Cleaning Systems," Paragraphs 6 and 7. Pressure readings are recorded once a minute for five (5) minutes. There shall be a maximum leak rate of 0.0005 CFM per cubic foot of housing volume at ten (10) inches water gage.

The standard filter housing modules are seismically qualified, based upon comparison to previous shake table testing and by analysis. These housing modules are qualified in accordance with the criteria of the Uniform Building Code (1994 and 1997) up to Seismic Zone 3 levels; higher levels are available.

A minimum of four (4) feet clearance in front of the filter access door is suggested for filter change-out.

Prefilter $\frac{3}{4}$ The prefilter size shall be 24 inches x 24 inches x 2 inches (nominal) for the TB-1000 SC and 12 inch x 24 inch x 2 inch (nominal) for TB-500 SC. The prefilter shall have an average efficiency of 25-30% (ASHRAE 52-76). The standard operating temperature shall be 130°F.

HEPA Filter $\frac{3}{4}$ HEPA size shall be 24 inches x 24 inches x 11 $\frac{1}{2}$ inches for TB-1000 SC and 12 inches x 24 inches x 11 $\frac{1}{2}$ inches for TB-500 SC. HEPA filter shall be individually tested, labeled and certified to have an efficiency of not less than 99.97% on 0.3 micron DOP when tested in

continuous. The prefilter shall be listed as U.L. Class 2. The prefilter shall have an approximate pressure drop of .08" water gage at design flow.

accordance with MIL-STD-282. HEPA filter shall have all glass, waterproof, separatorless media, polyurethane sealant and 16 gage galvaneal frame with a gel-filled channel on one face (**$\frac{1}{4}$ inch thick closed cell neoprene gasket on one face**). The standard operating temperature shall be 130°F with a maximum relative humidity of 100%. HEPA filter shall meet U.L. 586 and U.L. 900 Class 2. HEPA filter shall have an approximate pressure drop of one (1) inch water gage of design flow.

Fan $\frac{3}{4}$ Fan shall be sized to produce approximately four (4) inches static pressure at design flow. The filters, at design flow, will produce a pressure drop of approximately one (1) inch water gage when clean. This will allow approximately three (3) inches water gage external pressure for filter loading, ductwork, etc. Electrical motor shall be supplied with fan. Electrical power and control to be supplied by others.

Complete Assembly $\frac{3}{4}$ In addition to the components specified above, the complete self-contained unit shall also include a differential pressure gage for measuring pressure drop across the filters, drilled inlet flange, lifting lugs, DOP sample port on the upstream side of the housing, and skid. The housing and fan assembly shall be mounted securely to the skid.

Quality Assurance and Factory Testing $\frac{3}{4}$ The filter system shall be manufactured under a Quality Assurance program that meets the requirements of ASME NQA-1. "Quality Assurance program Requirements for Nuclear Facilities." The filter locking mechanism, differential pressure gage, and fan shall all be tested at the factory to ensure that the system functions properly.



FLANDERS/CSC^a CORPORATION

7013 Hwy 92E - PO Box 3, Bath, NC 27808

Tel: 252-923-2911 Fax: 252-923-6931

Email: csc@csc.flanderscorp.com

Web site: www.flanders-csc.com

Representatives of Flanders/CSC^a products are located throughout the world. Your closest representative's office may be found by contacting our manufacturing and sales department.

Represented by:

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