

THE BAKER COMPANY

161 Gatehouse Rd., Sanford, Maine 04073 USA

“Creating Immaculate Atmospheres”

DESIGN AND VERIFICATION OF BUILDING EXHAUST SYSTEMS USED ON BAKER SterilchemGARD, NCB & ChemoSHIELD CABINETS

Bakers SterilchemGARD, NCB and ChemoSHIELD cabinets are designed to provide customers with product, personnel, and environmental protection. A critical element of providing that protection is the operation of the building exhaust system that is hard ducted to the cabinet. If the exhaust ducting doesn't deliver the negative static pressure and airflow requirements for the cabinet, then the cabinet cannot perform as designed.

Baker recommends that the building exhaust system be designed with some way of controlling the airflow such as a blower speed control, Constant Airflow Volume(CAV) valve, and/or damper in the ducting. This can greatly help balance the negative static pressure and airflow at the connection to the cabinet.

Before any cabinet is shipped Baker balances its airflow and records the results in a factory test report located in the back of your Operators Manual. Exhaust static pressure and airflow measurements are included in the report. The static pressure is measured at the cabinets exhaust collar connection. The exhaust airflow is measured in our building exhaust ducting.

IMPORTANT

Before you connect a cabinet to the building exhaust ducting you need to verify that the building exhaust system can deliver the maximum negative static pressure at the airflow stated in our general arrangement drawing or product literature. This will insure that the cabinet can continue to perform properly as its exhaust filter loads up with particulate.

Verification equipment needed:

- Magnehelic or digital pressure reading instrument with tubing and pressure probe that can read up to -2.5" water column.
- Two 14" square pieces of tile. (Cardboard or thin plywood/masonite will also work)
- Thermal anemometer probe (Hot-wire) or pitot tube. (For velocity duct traverse)

Verification steps:

1. The static pressure reading should be taken near the end of the ducting where it will be connected to the cabinet (NSF recommends two duct diameters). Position the two tiles to block the exhaust duct inlet opening leaving a gap between the tiles for air to enter the duct. This will create resistance in the duct system. [Reference Figure 1]
2. Measure the negative static pressure and compare this reading to the required maximum static reading stated in our general arrangement drawing or product literature.

- If your reading is slightly greater than (more negative) or equal to the maximum required, proceed to step 3
 - If your reading is less than (less negative) the maximum required, you need to rebalance the building exhaust until a static reading is obtained that is slightly greater than (more negative) or equal to the maximum required.
3. Next, in accordance with ASHRAE Standard for air velocity measurements in a duct or with the Industrial Ventilation Manual, measure & calculate the exhaust volume. The air flow needs to be within the range specified in the Factory Test Report or on the cabinet data plate.
 4. With the exhaust airflow and static pressure within the range specified in the factory test report, the cabinet can then be connected and balanced.

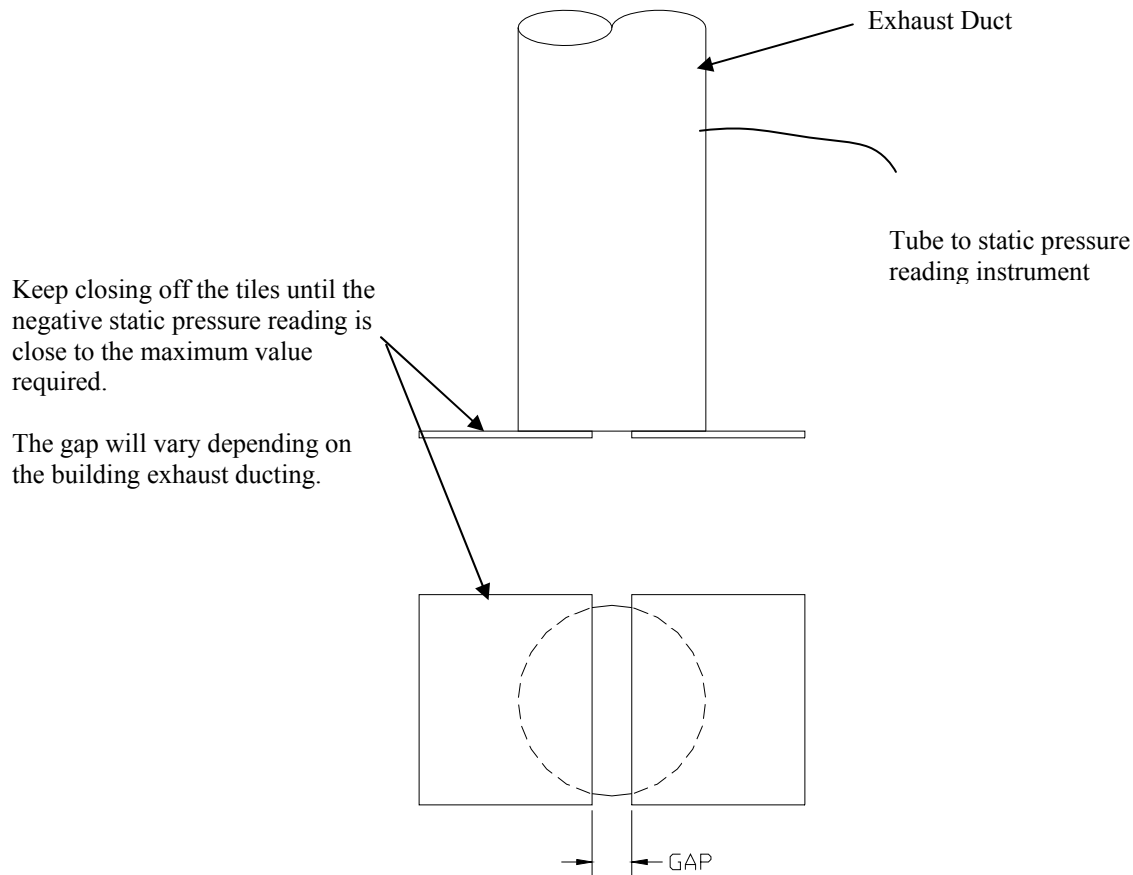


Figure 1: Blocking exhaust duct opening to verify static pressure & airflow

IMPORTANT

It is recommended that each BSC have its own (dedicated) exhaust system. For more information please refer to Annex E “Recommendations for Installation” in NSF/ANSI Standard 49 2007.

If multiple cabinets are sharing the same building exhaust ductwork, verify that controls are in place, such as a Constant Air Volume (CAV) valve, so that each cabinet will maintain its static and airflow balance individually and as a collective group. [Reference Figure 2] A great source of information for airflow control applications in biological laboratories can be found at www.phoenixcontrols.com.

ATD – Air Tight Damper can be used as a flow-throttling valve for balancing cabinet exhaust airflow. It also can be closed during decontamination of the cabinet.

* = If CAV valves are not installed, a duct traverse should be used to verify Exhaust Airflow. Standard Operating Procedures are strongly recommended to ensure the required exhaust is maintained for each of the BSCs.

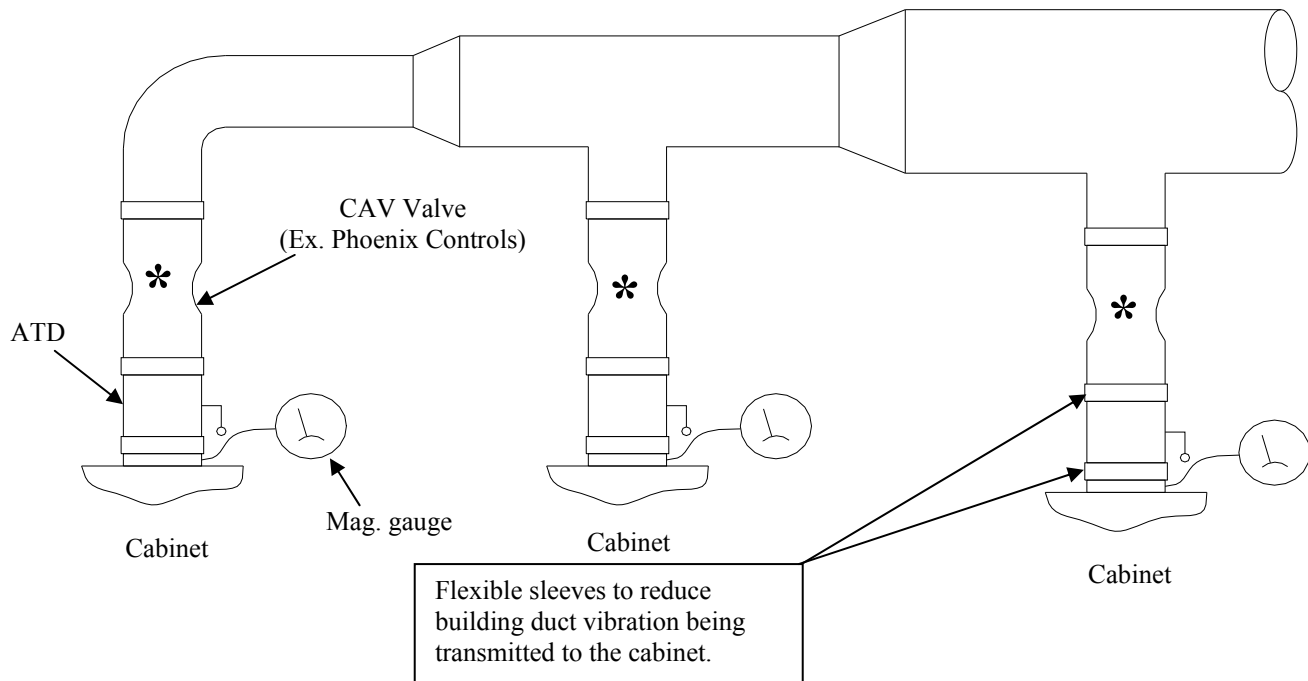


Figure 2: Multiple cabinets sharing the same exhaust ducting