

Capture Hood Guidebook

TABmaster Model 6710



TAB with the new Kanomax Capture Hood

Testing, Adjusting and Balancing (or TAB), is a process that's used to measure and adjust the effectiveness of indoor air systems such as air conditioning and heating. By following the TAB procedure a contractor or technician can maximize the comfort of a building's residents or workers as well as the efficiency and life of HVAC equipment. The process involves a lengthy series of steps but can be summarized briefly by the following definitions published by NEBB:

Testing is the use of specialized and calibrated instruments to measure temperatures, pressures, rotational speeds, electrical characteristics, velocities and air and water quantities for an evaluation of equipment and system performance.

Adjusting is the final setting of balancing devices such as dampers and valves, adjusting fan speeds and pump impeller sizes, in addition to automatic control devices such as thermostats and pressure controllers to achieve maximum specified system performance and efficiency during normal operation.

Balancing is the methodical regulation of system fluid flows (air or water) through the use of acceptable procedures to achieve the desired or specified airflow or water flow.

* **Reference:** *Procedural Standards for Testing Adjusting Balancing of Environmental Systems*, sixth edition, 1998, Published by NEBB

When does TAB need to be performed?

The amount of testing, adjusting and balancing a particular building needs may vary based on the equipment and complexity of the HVAC system, but there are some general guidelines that can help a contractor or technician determine if TAB is necessary.

- When a new HVAC system is installed it will need to undergo the TAB process to ensure it is functioning as intended.
- Any time a building undergoes significant changes due to renovation, construction or a change in purpose (example: warehouse space is now going to be used for manufacturing).
- Seasonal changes may also prompt a TAB check-up, such as when switching from heat to air conditioning or vice versa.

Why is the TAB process important?

The testing, adjusting and balancing process is important for several reasons. It ensures that HVAC equipment is performing according to specification. It reduces costs by ensuring that heating and cooling are being performed efficiently, which in turn extends equipment lifetime. It can help a building comply with local energy conservation requirements. It also ensures the building's occupants stay comfortable which can increase worker productivity in a work environment.

What tools are available to help a technician or contractor with the TAB process?

There are many instruments that can be used to measure air flow, temperature and humidity such as anemometers, thermo hygrometers, or IAQ monitors. The Capture Hood is a popular tool for TAB work because it can measure the direct air volume rate from a supply or return duct quickly and easily. Hoods come in many sizes making it easy to choose one that matches the size of the access point the measurement will be performed at.

The following formula can be used to determine how many air changes are occurring per hour:

Number of Air Changes = (60 x Volumetric flow rate of air in cubic feet per minute) / Volume of the given space (length x width x height)

Once the number of air changes is known the amount of fresh air being supplied can be determined by multiplying it by the percentage of outside air (calculated separately). The following chart is from ASHRAE Standard 62, and lists the recommended volume of fresh air that is needed for many common indoor environments:

Application	cfm/person (outdoor air)		Application	cfm/person (outdoor air)
Dining areas	20		School classroom	12
Kitchens	15		School laboratories	20
Hotel/motel rooms	15		Auditoriums/theaters or Libraries	15
Parking garages	1.5 cfm/ft ²		Patient rooms	25
Offices	20		Health procedure & recovery rooms	15
Conference rooms	20		Operating rooms	30
Public rest rooms	50		Residential living areas	15
Smoking areas	60		Residential kitchens	25
Retail stores (typical)	15		Residential bath	20
Gymnasium	20		Residential garage	100 cfm/vehicle

Kanomax's TABmaster™ Capture Hood Model 6710

Kanomax's Capture Hood 6710 is the perfect tool for the TAB process; it's lightweight and easy to handle. The full color screen can be tilted so it's at the optimal viewing angle at any height. It simultaneously measures and displays air flow, temperature and humidity with a competitive economic price with professional-grade features:



TABmaster
Model 6710

- 23 to 2500 cfm (40-4250 m³/h) range.
- Displays the direction of the airflow as well as the velocity.
- Onboard datalogging records up to 3,000 measurements.
- Advanced storage feature allows you to store multiple measurements under a single ID#.
- Five hood sizes make it easy to pick one that fits your duct size.
- Built-in back pressure compensation ensures accuracy for large volumetric flow measurements.
- Temperature compensation sensor increases accuracy for all airflow measurements.
- A see-through transparent window allows you to view the duct while measuring.