



Division 230593

Testing, Adjusting and

Balancing

DESIGN GUIDE

1 General

1.1 Scope

- A. Testing, adjusting, and balancing of environmental systems including but not limited to air distribution, hydronics, domestic hot water recirculating systems, pure water recirculating systems and other miscellaneous systems, and the equipment and apparatus connected thereto.
- B. The Contractor shall secure the services of an independent Testing, Adjusting and Balancing (TAB) agency for the TAB of the mechanical systems as specified herein. The project TAB Agency shall specialize in the testing, adjusting, and balancing of systems specified in this project and have with a minimum of five (5) years, documented experience. TAB work shall be performed under the field supervision of an AABC Certified Test and Balance Engineer or NEBB Certified Testing, Balancing and Adjusting Supervisor.
- C. Perform total system and equipment balance in accordance with AABC National Standards for Field Measurement and Instrumentation, Total System Balance or NEBB Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems and as indicated herein.
- D. All systems and equipment shall be adjusted to within plus or minus 10 % of design conditions. Rooms with pressure requirements shall have supply, return, and exhaust adjusted accordingly to maintain cfm offset and/or room pressurization where indicated.
- E. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.



- F. Make air quantity measurements in ducts by Pitot tube traverse of entire cross-sectional area of duct. Traverse shall be used for fan total airflow measurement and calibration of airflow measuring stations and terminal units. Branch traverses shall be totalized where a single traverse is not feasible. Any other method of total airflow measurement shall be approved by engineer.
- G. Adjust and set air quantities at air inlets and outlets.
- H. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- I. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.03 to 0.05 inches w.g. positive static pressure near the building entries.
- J. Variable Frequency Drives: For systems with variable frequency drives indicate control pressure and the top 3 critical zones driving the control pressure setpoint.
- K. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
- L. Adjust outside air dampers, outside air, return air, and exhaust dampers for design conditions.
- M. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
- N. Adjust and set water flow at each coil and piece of hydronic equipment.
- O. Record equipment and motor data

1.2 Field Reports

- A. Submit to the Contractor and the Owner's representative when deficiencies in systems prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance. Indicate deficiencies in the report. Submit the same day that items are discovered.



1.3 Preliminary and Final Balance Reports

- A. Record data on AABC National Standards for Total System Balance forms or NEBB forms or an exact reproduction thereof.
- B. Submit draft copy of preliminary balance report to the Owner's representative for review prior to final acceptance of Project.
- C. Make required corrections to the TAB report and final balance report to the Owner's representative for review.
- D. For each piece of equipment include design flows/design conditions as well as actual final measured flows/operating conditions.

