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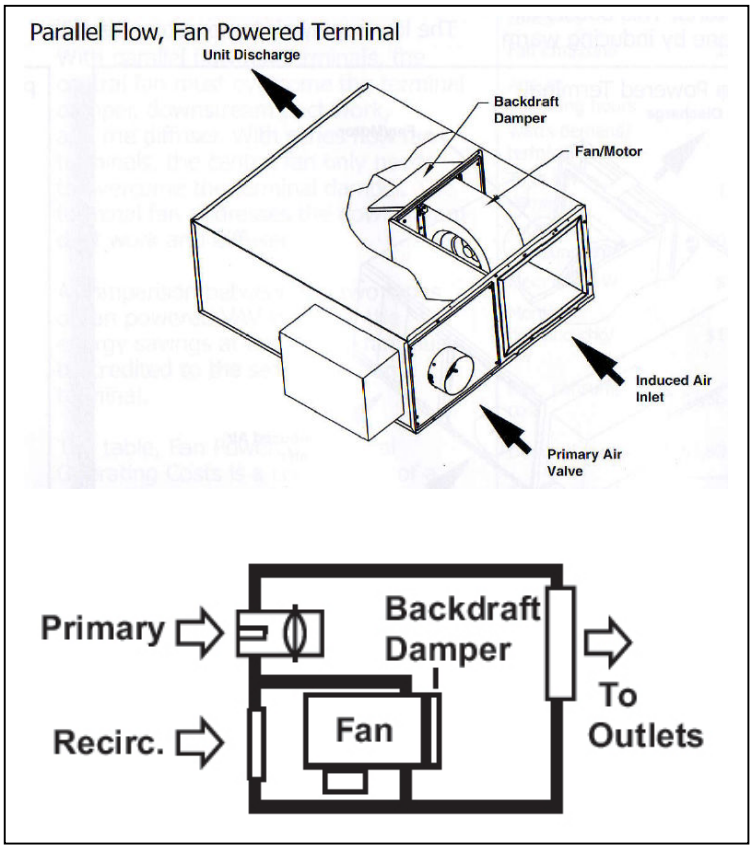
TEST & BALANCE PROCEDURE FOR: PARALLEL FAN POWERED TERMINAL UNIT SYSTEMS



1. Verify that the related Air Handling Unit is operational, running at design RPM, and not exceeding the motor nameplate amperage.
2. Verify that there are no adverse system effects such as closed isolation and\or fire dampers.
3. Verify that all fire damper inspection panels in the related ductwork have been closed.
4. Verify that there is no obvious duct leakage.
5. All manual volume dampers shall be verified as full open before the balancing begins.
6. Verify that the HVAC controls are installed and fully operational.
7. Visually inspect and document the primary air inlet size (box size)
8. Verify that the DDC control application has been populated with the following:
    a. Verify the correct primary air inlet size (box size) has been entered into the program
    b. Verify CFM values for heating, cooling, minimums and maximums as spelled out in the mechanical schedule have been entered into the program
9. Command the primary air valve to 100% closed, command the TU controller to full heating (this will start the fan) measure all the related ceiling diffusers and adjust the fan speed to the scheduled FAN CFM values.
10. Once the FAN CFM has been adjusted to design flow, command the primary air valve to 100% cooling (this will turn off the fan), then traverse the primary air duct to verify and record the initial flow.

11. After the 100% cooling traverse reading has been verified, the VAV controller shall be calibrated by noting the displayed CFM value vs. the actual value read. For example; with the Siemens control system, the formula is (Read CFM / DDC Display CFM) x the Current DDC Display FC (flow coefficient)

    a. Siemens DDC Example: (1250cfm / 1000cfm) x 0.70 FC = 0.88 FC

12. After the DDC controller has been calibrated, read all diffusers and verify total is correct and matches the design total.

13. Command the primary air valve to minimum flow, traverse the primary air duct and record the actual primary minimum flow.

14. Command the TU maximum heating mode and measure all outlets. In this condition the fan will be delivering the scheduled fan cfm and the primary air valve will be delivering the scheduled minimum primary air. The total measured flow in this condition should equal the scheduled "heating" cfm.

15. Proportionately balance the related system. The outlets and\or inlets will be adjusted to within the specification tolerances with a calibrated balancing flow hood or another calibrated airflow measuring instrument.

16. At the completion of the balancing at least one inlet damper on each branch must be fully open and at least one branch damper in the system must be fully open.

17. A final reading will then be taken on all related outlets.

18. The total air system then will be set to maintain a Supply discharge differential pressure setpoint (STPT).

    a. Command all related VAV components to the maximum cooling setpoint.
    b. With the help of the control contractor, interrogate the system to find all primary air valve dampers that are operating at 100%
    c. Increase or decrease the STPT to allow 1 to 2 primary air dampers to track between 90-100% open while meeting design flow.

19. The related Air Handling Unit will not be allowed to operate above the motor's nameplate amperage.

20. After final balance is complete, minimum OSA will be set and final AHU operating data will be taken. Final data includes, but is not limited to, fan RPM, static pressures, voltage, amperage, sheave data, motor nameplate data, and fan nameplate data.

21. It should be noted that the actual instrument that will be used is dependent on the actual field conditions, system requirements, and instrumentation limitations.

Note:
This procedure applies to variable air volume supply and\or exhaust systems with DDC controlled primary air valves.