

1323.0653 SECTION 6.5.3, AIR SYSTEM DESIGN AND CONTROL.

Subpart 1. **Table 6.5.3.1 fan power limitation.** ASHRAE Standard 90.1, Section 6.5.3.1, Table 6.5.3.1, is amended to read:

TABLE 6.5.3.1 Fan Power Limitation

Allowable Brake Motor Power

Supply Air Volume	Constant Volume	Variable Volume
<20,000 cfm	1.2 Bhp/1000 cfm	1.7 Bhp/1000 cfm
≥20,000 cfm	1.1 Bhp/1000 cfm	1.5 Bhp/1000 cfm

Allowable Fan System Power = [Table 6.5.3.1 Fan Power Limitation x (Temperature Ratio) + Pressure Credit + Relief Fan Credit] where

Table 6.5.3.1 Fan Power Limitation = Table Value x $CFM_n/1000$

Temperature Ratio = ($T_{t-stat} - T_S$)/20

Pressure Credit (hp) = Sum of [$CFM_n \times (SP_n - 1.0)/3718$] + Sum of [$CFM_{HR} \times SP_{HR}/3718$]

Relief Fan Credit HP (kW) = $F_R HP$ (kW) x [1 - (CFM_{RF}/CFM_n)]

CFM_n = supply air volume of the unit with the filtering system (cfm)

CFM_{HR} = supply air volume of heat recovery coils or direct evaporative humidifier/cooler (cfm)

CFM_{RF} = relief fan air volume at normal cooling design operation

SP_n = air pressure drop of the filtering system when filters are clean (in. w.g.)

SP_{HR} = air pressure drop of heat recovery coils or direct evaporative humidifier/cooler (in. w.g.)

T_{t-stat} = room thermostat set point

T_S = design supply air temperature for the zone in which the thermostat is located

F_R = relief fan in horse power

Subp. 2. **Part-load fan power limitation.** ASHRAE Standard 90.1, Section 6.5.3.2.1, is amended to read:

6.5.3.2.1 Part-load fan power limitation. Individual VAV fans with motors 7-1/2 hp and larger shall meet one of the following:

(a) The fan shall be driven by a mechanical or electrical variable-speed drive.

- (b) The fan shall be a vane-axial fan with variable-pitch blades.
- (c) The fan shall have other controls and devices that will result in fan motor demand of no more than 30 percent of design wattage at 50 percent of design air volume when static pressure set point equals one-third of the total design static pressure, based on manufacturer's certified fan data.

Subp. 3. Static pressure sensor location. ASHRAE Standard 90.1, Section 6.5.3.2.2, is amended to read:

6.5.3.2.2 Static pressure sensor location. Static pressure sensors used to control variable air volume fans shall be placed in a position such that the controller set point is optimized to maintain the minimum static pressure required for proper system operation throughout its range.

Exception: Systems with zone reset control complying with Section 6.5.3.2.3.

Statutory Authority: *MS s 326B.02; 326B.101; 326B.106; 326B.13*

History: *33 SR 1473*

Published Electronically: *June 17, 2009*