ADDENDA

ANSI/ASHRAE Addendum e to
ANSI/ASHRAE Standard 62.1-2013

Ventilation for Acceptable Indoor Air Quality

Approved by the ASHRAE Standards Committee on January 23, 2016; by the ASHRAE Board of Directors on January 27, 2016; and by the American National Standards Institute on February 24, 2016.

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FOREWORD

This addendum modifies Section 8, "Operation and Maintenance," incorporating calibration requirements for airflow monitoring sensors and systems. The requirements in Table 8.4.1, "Minimum Maintenance Activity and Frequency," were initially based on requirements in ASHRAE/ACCA Standard 180-2012, Standard Practice for Inspection and Maintenance of Commercial-Building HVAC Systems*, although the SSPC has modified some of those requirements.*

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum e to Standard 62.1-2013

Modify Section 8 as shown.

8.1 General

8.1.1 Application. The requirements of this section apply to buildings and their ventilation systems and their components constructed or renovated after the adoption date of this section.

8.1.2 Building Alterations or Change-of-Use. When buildings are altered or when changes in building use, occupant category, significant change in occupant density, or other changes inconsistent with system design assumptions are made, the ventilation ~~Ventilation~~ system design, operation, and maintenance shall be reevaluated and the O&M manual updated as necessary. ~~when changes in building use or occupancy category, significant building alterations, significant changes in occupant density, or other changes inconsistent with system design assumptions are made.~~

8.2 Operations and Maintenance Manual. An Operations and Maintenance (O&M) Manual, either written or electronic, shall be developed and maintained on site or in a centrally accessible location for the working life of the applicable ventilation system equipment or components. This manual shall be updated as necessary. The manual shall include the O&M procedures, ventilation system operating schedules and any changes made thereto, final design drawings, maintenance schedules based on manufacturer's instructions ~~and any changes made thereto~~, and the maintenance requirements and frequencies provided in Table 8.4.1 ~~detailed in Section 8.4~~.

8.3 Ventilation System Operation. Mechanical and natural ventilation systems shall be operated in a manner consistent with the O&M manual. Systems shall be operated such that spaces are ventilated in accordance with Section 6 when they are expected to be occupied.

8.4 Ventilation System Maintenance

~~**8.4.1 Ventilation System Components.** The building ventilation system components shall be maintained in accordance with the O&M manual, or as required by this section and summarized in Table 8.4.1.~~

~~**8.4.1.1 Filters and Air-Cleaning Devices.** All filters and air-cleaning devices shall be replaced or maintained as specified by the O&M manual.~~

~~**8.4.1.2 Outdoor Air Dampers.** At a minimum of once every three months or as specified in the O&M manual, the outdoor air dampers and actuators shall be visually inspected or remotely monitored to verify that they are functioning in accordance with the O&M manual.~~

~~**8.4.1.3 Humidifiers.** Humidifiers shall be cleaned and maintained to limit fouling and microbial growth. Any automatic chemical-dosing equipment shall be calibrated and maintained in accordance with the O&M manual to maintain additive concentrations to comply with Section 5.12.1. These systems shall be inspected at a minimum of once every three months of operation and/or treated in accordance with the O&M manual.~~

~~**8.4.1.4 Dehumidification Coils.** All dehumidifying cooling coils shall be visually inspected for cleanliness and microbial growth regularly when it is likely that dehumidification occurs, but no less than once per year or as specified in the O&M manual, and shall be cleaned when fouling or microbial growth is observed.~~

~~**8.4.1.5 Drain Pans.** Drain pans shall be visually inspected for cleanliness and microbial growth at a minimum of once per year during the cooling season, or as specified in the O&M manual, and shall be cleaned if needed. Areas adjacent to drain pans that were subjected to wetting shall be investigated, cleaned if necessary, and the cause of unintended wetting rectified.~~

~~**8.4.1.6 Outdoor Air Intake Louvers.** Outdoor air intake louvers, bird screens, mist eliminators, and adjacent areas shall be visually inspected for cleanliness and integrity at a minimum of once every six months, or as specified in the O&M manual, and cleaned as needed. When visible debris or visible biological material is observed, it shall be removed. Physical damage to louvers, screens, or mist eliminators shall be repaired if such damage impairs their function in preventing contaminant entry.~~

~~**8.4.1.7 Sensors.** Sensors whose primary function is dynamic minimum outdoor air control, such as flow stations at an air handler and those used for demand control ventilation, shall have their accuracy verified as specified in the O&M manual. This activity shall occur at a minimum of once every six months or periodically in accordance with the O&M manual. A sensor failing to meet the accuracy specified in the O&M manual shall be recalibrated or replaced.~~

~~**8.4.1.8 Outdoor Airflow Verification.** The total quantity of outdoor air to air handlers, except for units under 2000 cfm (1000 L/s) of supply air, shall be measured in minimum outdoor air mode once every five years. If measured minimum airflow rates are less than the design minimum rate (±10% balancing tolerance) documented in the O&M manual, they shall be adjusted or modified to bring them to the minimum~~

~~design rate or evaluated to determine if the measured rates are in compliance with this standard.~~

~~**8.4.1.9 Cooling Towers.** Cooling tower water systems shall be treated to limit the growth of microbiological contaminants including *legionella sp.* in accordance with O & M Manual or the water treatment program.~~

~~**8.4.1.10 Equipment/Component Accessibility.** The space provided for routine maintenance and inspection around ventilation equipment shall be kept clear.~~

~~**8.4.1.11 Floor Drains.** Floor drains located in air plenums or rooms that serve as plenums shall be maintained to prevent transport of contaminants from the floor drain to the plenum.~~

~~**8.4.2 Microbial Contamination.** Visible microbial contamination shall be investigated and rectified.~~

~~**8.4.3 Water Intrusion.** Water intrusion or accumulation in ventilation system components such as ducts, plenums, and air handlers shall be investigated and rectified.~~

Delete Table 8.4.1 and replace with new Table 8.4.1 as shown.

TABLE 8.4.1 Minimum Maintenance Activity and Frequency for Ventilation System Equipment and Associated Components

Inspection/Maintenance Task	Frequency*
a. Investigate system for water intrusion or accumulation. Rectify as necessary.	As necessary
b. Verify that the space provided for routine maintenance and inspection of open cooling tower water systems, closed cooling tower water systems, and evaporative condensers is unobstructed.	Monthly
c. Open cooling tower water systems, closed cooling tower water systems, and evaporative condensers shall be treated to limit the growth of microbiological contaminants, including *legionella sp.*	Monthly
d. Verify that the space provided for routine maintenance and inspection of equipment and components is unobstructed.	Quarterly
e. Check pressure drop and scheduled replacement date of filters and air-cleaning devices. Clean or replace as necessary to ensure proper operation.	Quarterly
f. Check ultraviolet lamp. Clean or replace as needed to ensure proper operation.	Quarterly
g. Visually inspect dehumidification and humidification devices. Clean and maintain to limit fouling and microbial growth. Measure relative humidity and adjust system controls as necessary.	Quarterly
h. Maintain floor drains and trap primer located in air plenums or rooms that serve as air plenums to prevent transport of contaminants from the floor drain to the plenum.	Semiannually
i. Check ventilation and indoor air quality related control systems and devices for proper operation. Clean, lubricate, repair, adjust, or replace as needed to ensure proper operation.	Semiannually
j. Check P-traps in floor drains located in plenums or rooms that serve as air plenums. Prime as needed to ensure proper operation.	Semiannually
k. Check fan belt tension. Check for belt wear and replace if necessary to ensure proper operation. Check sheaves for evidence of improper alignment or evidence of wear and correct as needed.	Semiannually
l. Check variable-frequency drive for proper operation. Correct as needed.	Semiannually
m. Check for proper operation of cooling or heating coil for damage or evidence of leaks. Clean, restore, or replace as required.	Semiannually
n. Visually inspect outdoor air intake louvers, bird screens, mist eliminators, and adjacent areas for cleanliness and integrity; clean as needed; remove all visible debris or visible biological material observed and repair physical damage to louvers, screens, or mist eliminators if such damage impairs the item from providing the required outdoor air entry.	Semiannually
o. Visually inspect natural ventilation openings and adjacent areas for cleanliness and integrity; clean as needed. Remove all visible debris or visible biological material observed and repair physical damage to louvers, and screens if such damage impairs the item from providing the required outdoor air entry. Manual and/or automatic opening apparatus shall be physically tested for proper operation and repaired or replaced as necessary.	Semiannually
p. Verify the operation of the outdoor air ventilation system and any dynamic minimum outdoor air controls.	Annually
q. Check air filter fit and housing seal integrity. Correct as needed.	Annually
r. Check control box for dirt, debris, and/or loose terminations. Clean and tighten as needed.	Annually

* Minimum frequencies may be increased or decreased if indicated in the O&M manual.
** National Institute of Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD.

TABLE 8.4.1 Minimum Maintenance Activity and Frequency for (Continued)
Ventilation System Equipment and Associated Components

Inspection/Maintenance Task	Frequency*
s. Check motor contactor for pitting or other signs of damage. Repair or replace as needed.	Annually
t. Check fan blades and fan housing. Clean, repair, or replace as needed to ensure proper operation.	Annually
u. Check integrity of all panels on equipment. Replace fasteners as needed to ensure proper integrity and fit/finish of equipment.	Annually
v. Assess field serviceable bearings. Lubricate if necessary.	Annually
w. Check drain pans, drain lines, and coils for biological growth. Check adjacent areas for evidence of unintended wetting. Repair and clean as needed.	Annually
x. Check for evidence of buildup or fouling on heat exchange surfaces. Restore as needed to ensure proper operation.	Annually
y. Inspect unit for evidence of moisture carryover from cooling coils beyond the drain pan. Make corrections or repairs as necessary.	Annually
z. Check for proper damper operation. Clean, lubricate, repair, replace, or adjust as needed to ensure proper operation.	Annually
aa. Visually inspect areas of moisture accumulation for biological growth. If present, clean or disinfect as needed.	Annually
ab. Check condensate pump. Clean or replace as needed.	Annually
ac. Visually inspect exposed ductwork and external piping for insulation and vapor barrier for integrity. Correct as needed.	Annually
ad. Verify the accuracy of permanently mounted sensors whose primary function is outdoor air delivery monitoring, outdoor air delivery verification, or dynamic minimum outdoor air control, such as flow stations at an air handler and those used for demand-control ventilation. A sensor failing to meet the accuracy specified in the O&M manual shall be recalibrated or replaced. Performance verification shall include output comparison to a measurement reference standard consistent with those specified for similar devices in ASHRAE Standard 41.2 or ASHRAE Standard 111 [16].	5 years
ae. Verify the total quantity of outdoor air delivered by air handlers set to minimum outdoor air mode. If measured minimum airflow rates are less than the design minimum rate documented in the O&M manual, ± a 10 % balancing tolerance, (1) confirm the measured rate does not conform with the provisions of this standard and (2) adjust or modify the air-handler components to correct the airflow deficiency. Ventilation systems shall be balanced in accordance with ASHRAE Standard 111 [16] or its equivalent, at least to the extent necessary to verify conformance with the total outdoor airflow and space supply airflow requirements of this standard. **Exception:** Units under 2000 cfm (1000 L/s) of supply air are exempt from this requirement.	5 years

* Minimum frequencies may be increased or decreased if indicated in the O&M manual.
** National Institute of Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD.

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ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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