



ADDENDA

**ASHRAE Addendum w to
ASHRAE Guideline 36-2021**

High-Performance Sequences of Operation for HVAC Systems

Approved by ASHRAE and the American National Standards Institute on February 29, 2024.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

The latest edition of an ASHRAE Standard may be purchased on the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 180 Technology Parkway, Peachtree Corners, GA 30092. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

© 2024 ASHRAE

ISSN 1041-2336



ASHRAE Standing Guideline Project Committee 36

Cognizant TC: 1.4, Control Theory and Application

SPLS Liaison: Jennifer A. Isenbeck

Xiaohui Zhou*, <i>Chair</i>	James J. Coogan	Bryan Lang*	Joseph M. Ruggiero*
Christopher R. Amundson	Clark R. Denson	Kevin Li*	John R. Rundell
Jeffrey G. Boldt*	Brent R. Eubanks*	Christopher McGowan	Brian W. Russell
Ian Bonadeo	Richard A. Farmer	Mark F. Miller	Steven C. Sill
JoeDon Breda*	Michael Galler*	Kevin Ng	Jonathan Smith
Barry B. Bridges	Ken Gilbert	Aaron Opatz*	Ryan Soo*
Ronald Bristol*	Christopher S. Gosline	Gwelen Paliaga*	Raf Sowacki
Lance Brown*	Siddharth Goyal	Chirag D. Parikh*	Henry F. Stehmeyer, IV*
Anthony Bruno	Milica Grahovac	James Parker	Steven T. Taylor
Jayson F. Bursill*	David W. Guelfo	Michael A. Pouchak*	Meziane Touati
Cynthia A. Callaway*	Kyle W. Hasenkox	David J. Pritchard	Daniel W. Tyson
Yan Chen*	Reece Kiriu*	Paul Raftery*	Chariti A. Young*
C. Hwakong Cheng	Eric Koeppel*	Eric Rehn	Bei Zhang
Gregory Cmar*	Jean-Francois Landry	Michael J. Reimer*	

* Denotes members of voting status when the document was approved for publication

ASHRAE STANDARDS COMMITTEE 2023–2024

Jonathan Humble, <i>Chair</i>	Phillip A. Johnson	Kenneth A. Monroe	Christopher J. Seeton
Douglas D. Fick, <i>Vice-Chair</i>	Gerald J. Kettler	Daniel H. Nall	Paolo M. Tronville
Kelley P. Cramm	Jay A. Kohler	Philip J. Naughton	Douglas Tucker
Abdel K. Darwich	Paul A. Lindahl, Jr.	Kathleen Owen	William F. Walter
Drake H. Erbe	James D. Lutz	Gwelen Paliaga	Susanna S. Hanson, <i>BOD ExO</i>
Patricia Graef	Julie Majurin	Karl L. Peterman	Ashish Rakheja, <i>CO</i>
Jaap Hogeling	Lawrence C. Markel	Justin M. Prosser	
Jennifer A. Isenbeck	Margaret M. Mathison	David Robin	

Ryan Shanley, *Senior Manager of Standards*

SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus Standard developed under the auspices of ASHRAE. *Consensus* is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this Standard as an ANS, as “substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution.” Compliance with this Standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Senior Manager of Standards of ASHRAE should be contacted for

- interpretation of the contents of this Standard,
- participation in the next review of the Standard,
- offering constructive criticism for improving the Standard, or
- permission to reprint portions of the Standard.

DISCLAIMER

ASHRAE uses its best efforts to promulgate Standards and Guidelines for the benefit of the public in light of available information and accepted industry practices. However, ASHRAE does not guarantee, certify, or assure the safety or performance of any products, components, or systems tested, installed, or operated in accordance with ASHRAE's Standards or Guidelines or that any tests conducted under its Standards or Guidelines will be nonhazardous or free from risk.

ASHRAE INDUSTRIAL ADVERTISING POLICY ON STANDARDS

ASHRAE Standards and Guidelines are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing equipment, by providing proper definitions of this equipment, and by providing other information that may serve to guide the industry. The creation of ASHRAE Standards and Guidelines is determined by the need for them, and conformance to them is completely voluntary.

In referring to this Standard or Guideline and in marking of equipment and in advertising, no claim shall be made, either stated or implied, that the product has been approved by ASHRAE.

(This foreword is not part of this guideline. It is merely informative and does not contain requirements necessary for conformance to the guideline. It has not been processed according to the ANSI requirements for a guideline and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

This addendum removes the need to update the list of all parameters and setpoints referenced in the chilled water and hot water plant paragraphs 5.20.1 and 5.21.1 based on selected options. All other parameter and setpoint references for other equipment are also updated to maintain consistent style throughout the document.

This addendum also adds a reference to the generic thermal zones alarms section for the General Constant Speed Exhaust Fan sequence.

Note: In this addendum, changes to the current guideline 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 w to Guideline 36-2021

(IP and SI Units)

Revise Sections 5.5.3 as follows:

- 5.5.3. See Sections 3.1.1 and 3.1.2.1 for ~~zone minimum airflow setpoint V_{min} , zone maximum cooling airflow setpoint $V_{cool\ max}$, and zone maximum heating airflow setpoint $V_{heat\ max}$~~ operating parameters and setpoints.

Revise Section 5.6.3 as follows:

- 5.6.3. See Sections 3.1.1 and 3.1.2.2 for ~~zone minimum airflow setpoints V_{min} , zone maximum cooling airflow setpoint $V_{cool\ max}$, zone maximum heating airflow setpoint $V_{heat\ max}$, zone minimum heating airflow setpoint $V_{heat\ min}$, and the maximum DAT rise above heating setpoint $Max\Delta T$~~ operating parameters and setpoints.

Revise Section 2 5.7.3 as follows:

- 5.7.3. See Sections 3.1.1 and 3.1.2.3 for ~~zone minimum airflow setpoint V_{min} , zone maximum cooling airflow setpoint $V_{cool\ max}$, and the maximum DAT rise above heating setpoint $Max\Delta T$~~ operating parameters and setpoints.

Revise Section 5.8.3 as follows:

- 5.8.3. See Sections 3.1.1 and 3.1.2.4 for ~~zone minimum airflow setpoint V_{min} , zone maximum cooling airflow setpoint $V_{cool\ max}$, the parallel fan maximum heating airflow setpoint $P_{fan\ htg\ max}$, and the maximum DAT rise above heating setpoint $Max\Delta T$~~ operating parameters and setpoints.

Revise Section 5.9.3 as follows:

- 5.9.3. See Sections 3.1.1 and 3.1.2.5 for ~~zone minimum airflow setpoints V_{min} , zone maximum cooling airflow setpoint V_{cool_max} , and the maximum DAT rise above heating setpoint $Max\Delta T$~~ operating parameters and setpoints.

Revise Sections 5.10.3 as follows:

- 5.10.3. See Sections 3.1.1 and 3.1.2.6 for ~~zone minimum airflow setpoint V_{min} , zone maximum cooling airflow setpoint V_{cool_max} , the series fan maximum heating airflow S_{fan_htgmax} , and the maximum DAT rise above heating setpoint $Max\Delta T$~~ operating parameters and setpoints.

Revise Section 5.11.3 as follows:

- 5.11.3. See Sections 3.1.1 and 3.1.2.7 for ~~zone minimum airflow setpoint V_{min} , maximum cooling airflow setpoint V_{cool_max} , and the zone maximum heating airflow setpoint V_{heat_max}~~ operating parameters and setpoints.

Revise Section 5.12.3 as follows:

- 5.12.3. See Sections 3.1.1 and 3.1.2.7 for ~~zone minimum airflow setpoint V_{min} , zone maximum cooling airflow setpoint V_{cool_max} , and the zone maximum heating airflow setpoint V_{heat_max}~~ operating parameters and setpoints.

Revise Section 5.13.3 as follows:

- 5.13.3. See Sections 3.1.1 and 3.1.2.7 for ~~zone minimum airflow setpoint V_{min} , zone maximum cooling airflow setpoint V_{cool_max} , and the zone maximum heating airflow setpoint V_{heat_max}~~ operating parameters and setpoints.

Revise Section 5.14.3 as follows:

- 5.14.3. See Sections 3.1.1 and 3.1.2.7 for ~~zone minimum airflow setpoint V_{min} , zone maximum cooling airflow setpoint V_{cool_max} , and the zone maximum heating airflow setpoint V_{heat_max}~~ operating parameters and setpoints.

Revise Sections 5.18.2 and 5.18.3 as follows:

- 5.18.2. See Sections 3.1.6 and 3.2.23-1.6.1 for Cool_SAT, Heat_SAT, and MaxDPToperating parameters and setpoints.
- 5.18.3. See Section 3.2.2 for MinSpeed, MaxHeatSpeed, MaxCoolSpeed, MinPosMin, MinPosMax, DesPosMin, DesPosMax, MinRelief, MaxRelief, and S-R-DIFFNot Used.

Add Paragraph 5.19.2.3 as follows:

Retain the following paragraph if the exhaust fan is to be cycled to maintain room temperature. Delete otherwise

- 5.19.2.3. See Section 5.3.6 for zone temperature alarms.

Revise Section 5.20.1 as follows:

Retain the applicable variables listed in Sections 3.1.7 and 3.2.3. Delete variables that are not applicable.

- 5.20.1. See Sections 3.1.7 for ~~CHWSTminX, CWRTdesX, CWSTdesX, CH LOT, CHW MinFlowX, CHW DesFlowX, LIFTminX, LIFTmaxX, QehX, PCHWFdesign, SCHWFdesign, MinUnloadCapX, DA_{HX}, DT_{WB}, DA_{CT}, HXFdesign, and HX_{DP-Design}~~. See Section and 3.2.3 for CHW DPmax, LocalCHW DPmax, Cw DesPumpSpdStage, MinCWVlvPos, MinCWPspeed, HxPumpDesSpd, Ch MaxPriPumpSpdStage, and CH MinPriPumpSpdStage operating parameters and setpoints.

Revise Section 5.21.1 as follows:

Retain the applicable variables from Sections 3.1.8 and 3.2.4. Delete variables that are not applicable.

- 5.21.1. See Sections 3.1.8 for ~~HWSTmax, HW LOT, HW MinFlowX, HW DesFlowX, QbX, B FiringMinX, PHWFdesign, and SHWFdesign~~. See Section and 3.2.4 for HW DPmax, LocalHW DPmax, and B MinPriPumpSpdStage operating parameters and setpoints.

Revise Sections 5.22.2 and 5.22.3 as follows:

- 5.22.2. See Sections 3.1.7 and 3.2.3 for Cool_SAT, Heat_SAT, and DP100 operating parameters and setpoints.
- 5.22.3. ~~See Section 3.2.3 for MinSpeed, DeadbandSpeed, MaxHeatSpeed, and MaxCoolSpeed.~~ Not Used.

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

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.

ASHRAE · 180 Technology Parkway · Peachtree Corners, GA 30092 · www.ashrae.org

About ASHRAE

Founded in 1894, ASHRAE is a global professional society committed to serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration, and their allied fields.

As an industry leader in research, standards writing, publishing, certification, and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries.

To stay current with this and other ASHRAE Standards and Guidelines, visit www.ashrae.org/standards, and connect on LinkedIn, Facebook, Twitter, and YouTube.

Visit the ASHRAE Bookstore

ASHRAE offers its Standards and Guidelines in print, as immediately downloadable PDFs, and via ASHRAE Digital Collections, which provides online access with automatic updates as well as historical versions of publications. Selected Standards and Guidelines are also offered in redline versions that indicate the changes made between the active Standard or Guideline and its previous version. For more information, visit the Standards and Guidelines section of the ASHRAE Bookstore at www.ashrae.org/bookstore.

IMPORTANT NOTICES ABOUT THIS STANDARD

To ensure that you have all of the approved addenda, errata, and interpretations for this Standard, visit www.ashrae.org/standards to download them free of charge.

Addenda, errata, and interpretations for ASHRAE Standards and Guidelines are no longer distributed with copies of the Standards and Guidelines. ASHRAE provides these addenda, errata, and interpretations only in electronic form to promote more sustainable use of resources.