



ADDENDA

**ASHRAE Addendum f to
ASHRAE Guideline 36-2024**

High-Performance Sequences of Operation for HVAC Systems

Approved by ASHRAE on September 14, 2026.

This addendum was approved by a Standing Guideline Project Committee (SGPC) 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 guideline. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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(This foreword is not part of this guideline. It is merely informative and does not contain requirements necessary for conformance to the guideline.)

FOREWORD

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.

This addendum fixes a bug in the DCV logic for dual duct boxes using “cold deck minimum” logic. Current DCV logic can result in oversupplying the zone diffusers since hot and cold deck airflows are additive. The logic to limit supply air rate for DCV is the same as that for parallel fan-powered boxes which have the same additivity issue.

Addendum f to Guideline 36-2024

(IP and SI Units)

Revise Section 5.2.1.3.b.5.iv.e as follows:

5.2 Generic Ventilation Zones

5.2.1. Zone Minimum Outdoor Airflow and Minimum Airflow Setpoints

(e) For cooling-only VAV terminal units, reheat VAV terminal units, constant-volume series fan-powered terminal units, dual-duct VAV terminal units with mixing control and inlet airflow sensors, or dual-duct VAV terminal units with mixing control and a discharge airflow sensor, ~~or dual-duct VAV terminal units with cold-duct minimum control~~:

(1) The CO₂ control loop output shall reset both the occupied minimum airflow setpoint (V_{min}^*) and the population component of the required breathing zone outdoor airflow (V_{bz-P}^*) in parallel. V_{min}^* shall be reset from the zone minimum airflow setpoint V_{min} at 0% loop output up to maximum cooling airflow setpoint $V_{cool-max}$ at 100% loop output. V_{bz-P}^* shall be reset from 0 l/s (0 cfm) at 0% loop output up to the V_{bz-P} at 100% loop output. See Figure 5.2.1.3-1.

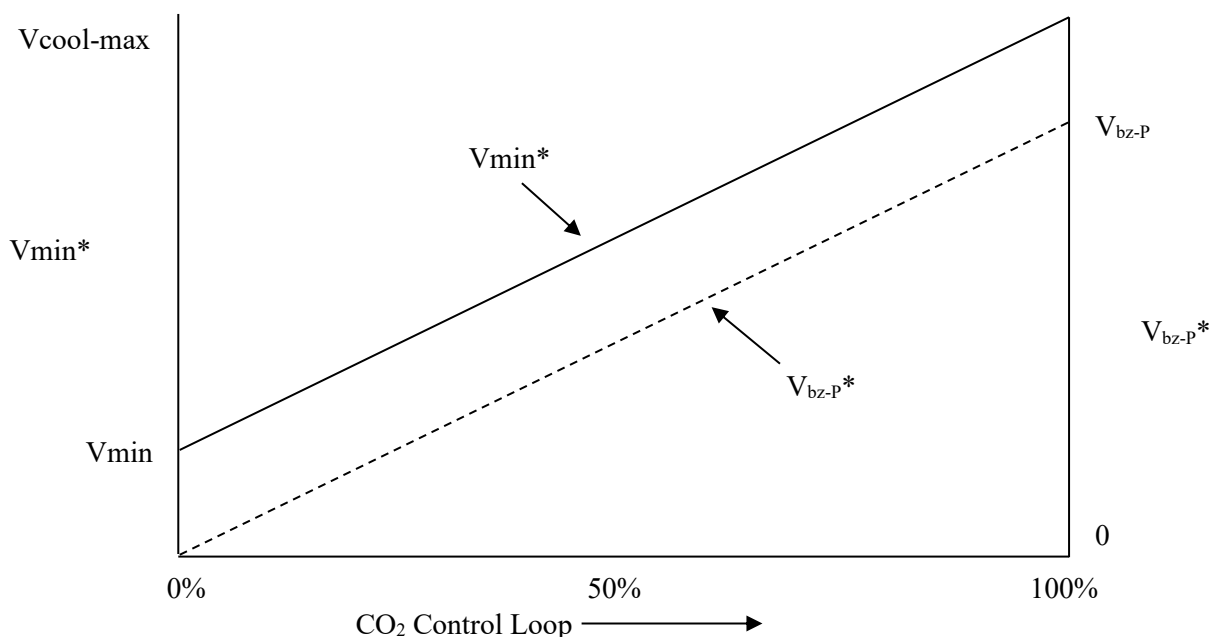


Figure 5.2.1.3-1 V_{min}^* and V_{bz-P}^* reset with CO₂ loop.

The CO₂ control loop graph in Figure 5.2.1.3-1 is provided as a visual representation of the reset logic and is not representative of magnitude of V_{bz-P}^* in relation to V_{bz-A} or V_{min}^* .

(f) For parallel fan-powered terminal units:

- (1) Determine V_{CO_2-max} as follows:
- (2) When the Zone State is cooling, V_{CO_2-max} is equal to the maximum cooling airflow setpoint $V_{cool-max}$.
- (3) When the Zone State is heating or deadband, V_{CO_2-max} is equal to $V_{cool-max}$ minus the parallel fan airflow

This logic prevents the total supply airflow from exceeding $V_{cool-max}$, which could create diffuser noise problems.

- (4) The CO_2 control loop output shall reset both the occupied minimum airflow setpoint V_{min}^* and the population component of the required breathing zone outdoor airflow V_{bz-P}^* in parallel. V_{min}^* shall be reset from the zone minimum airflow setpoint V_{min} at 0% loop output up to maximum cooling airflow setpoint V_{CO_2-max} at 100% loop output. V_{bz-P}^* shall be reset from 0 l/s (0 cfm) at 0% loop output up to the V_{bz-P} at 100% loop output. See Figure 5.2.1.3-2.

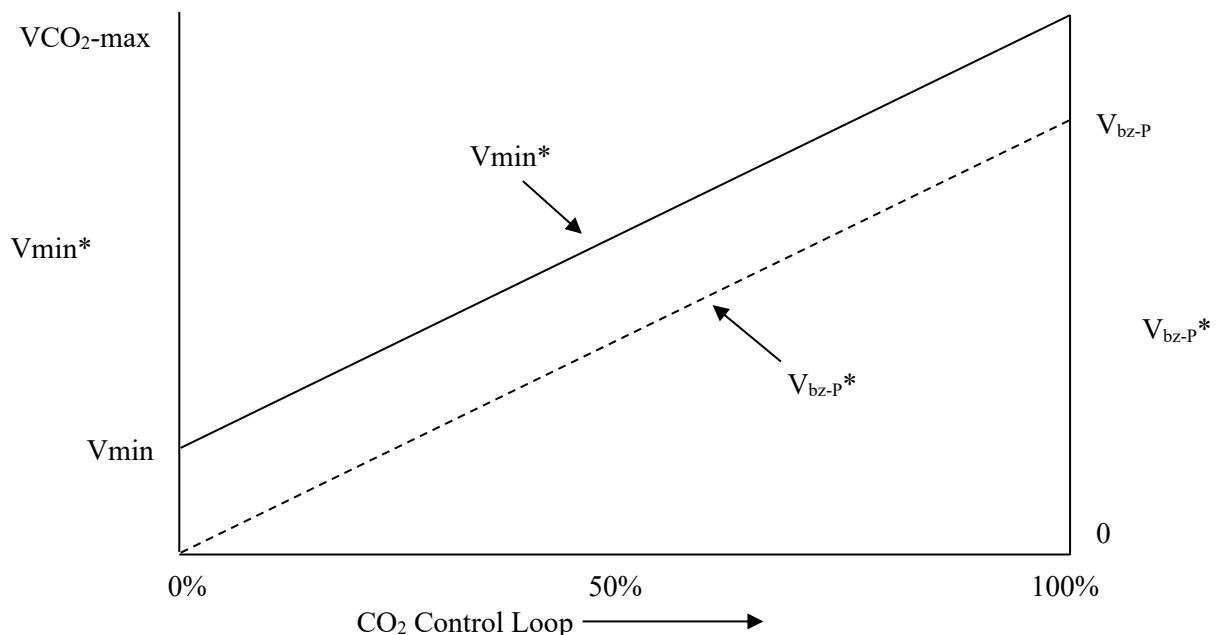


Figure 5.2.1.3-2 V_{min}^* and V_{bz-P}^* reset with CO_2 loop (parallel fan-powered).

The CO_2 control loop graph in Figure 5.2.1.3-2 is provided as a visual representation of the reset logic and is not representative of magnitude of V_{bz-P}^ in relation to V_{bz-A} or V_{min}^* .*

(g) For dual-duct VAV terminal units with cold-duct minimum control:

- (1) Determine V_{CO_2-max} as follows:
- (2) When the Zone State is cooling, V_{CO_2-max} is equal to the maximum cooling airflow setpoint $V_{cool-max}$.
- (3) When the Zone State is heating or deadband, V_{CO_2-max} is equal to $V_{cool-max}$ minus the current zone heating airflow.

This logic prevents the total supply airflow from exceeding $V_{cool-max}$, which could create diffuser noise problems.

- (4) The CO_2 control loop output shall reset both the occupied minimum airflow setpoint V_{min}^* and the population component of the required breathing zone outdoor airflow V_{bz-P}^* in parallel. V_{min}^* shall be reset from the zone minimum airflow setpoint

Vmin at 0% loop output up to maximum cooling airflow setpoint VCO₂-max at 100% loop output. Vbz-P* shall be reset from 0 l/s (0 cfm) at 0% loop output up to the Vbz-P at 100% loop output. See Figure 5.2.1.3-3.

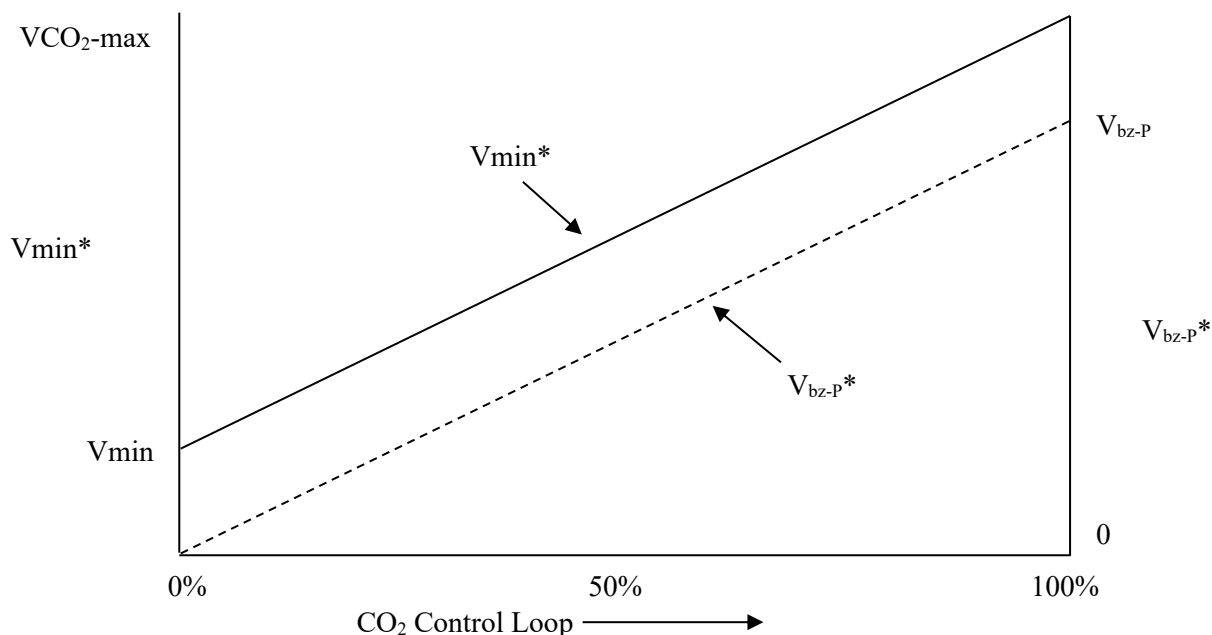


Figure 5.2.1.3-3 Vmin* and Vbz-P* reset with CO₂ loop (dual-duct VAV terminal units with cold-duct minimum control).

The CO₂ control loop graph in Figure 5.2.1.3-3 is provided as a visual representation of the reset logic and is not representative of magnitude of Vbz-P in relation to Vbz-A or Vmin*.*

Revise Section 5.2.1.4.b.5.iii.e as follows:

- (e) For cooling-only VAV terminal units, reheat VAV terminal units, constant-volume series fan-powered terminal units, dual-duct VAV terminal units with mixing control and inlet airflow sensors, or dual-duct VAV terminal units with mixing control and a discharge airflow sensor, ~~or dual-duct VAV terminal units with cold-duct minimum control:~~
 - (1) The CO₂ control loop output shall reset the occupied minimum airflow setpoint Vmin* from the zone minimum airflow setpoint Vmin at 0% up to maximum cooling airflow setpoint Vcool-max at 50%, as shown in Figure 0-1. The loop output from 50% to 100% will be used at the system level to reset minimum outdoor airflow setpoint; see AHU controls.

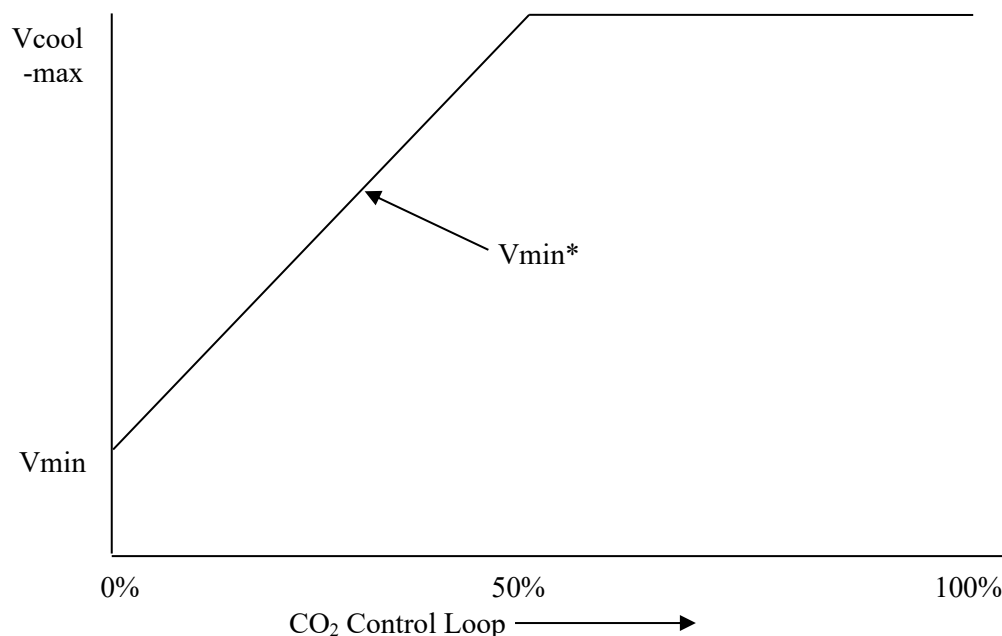


Figure 0-1 V_{min}^* reset with CO₂ loop.

(f) For parallel fan-powered terminal units:

- (1) Determine V_{CO_2-max} as follows:
- (2) When the Zone State is cooling, V_{CO_2-max} is equal to the maximum cooling airflow setpoint $V_{cool-max}$.
- (3) When the Zone State is heating or deadband, V_{CO_2-max} is equal to $V_{cool-max}$ minus the parallel fan airflow

This logic prevents the total supply airflow from exceeding $V_{cool-max}$, which could create diffuser noise problems.

- (4) The CO₂ control loop output shall reset the occupied minimum airflow setpoint V_{min}^* from the zone minimum airflow setpoint V_{min} at 0% up to maximum cooling airflow setpoint V_{CO_2-max} at 50%, as shown in Figure 0-2. The loop output from 50% to 100% will be used at the system level to reset minimum outdoor airflow; see AHU controls.

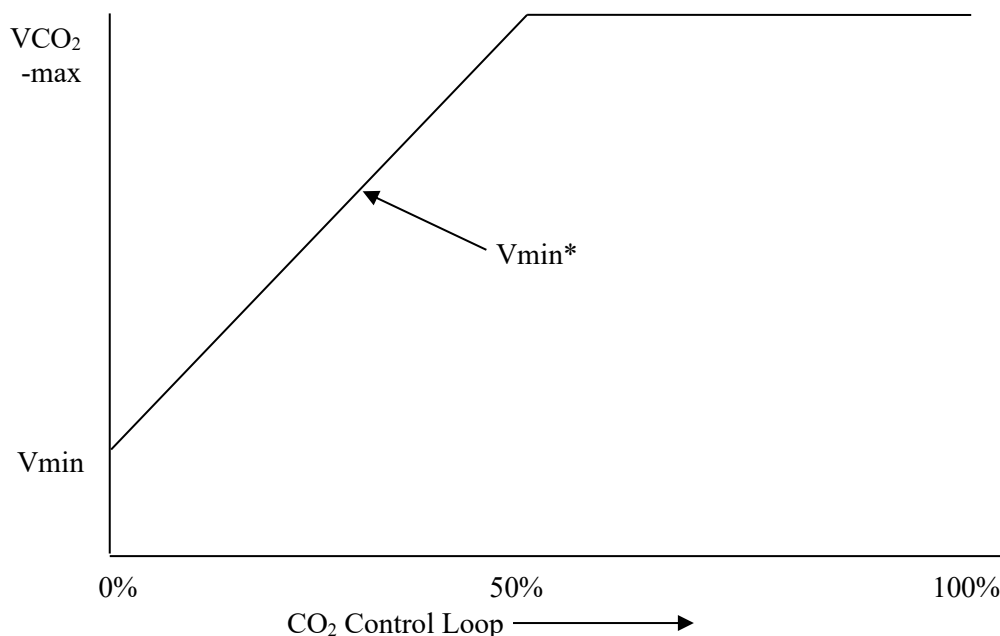


Figure 0-2 Vmin* reset with CO₂ loop (parallel fan-powered).

(g) For dual-duct VAV terminal units with cold-duct minimum control:

- (1) Determine VCO₂-max as follows:
- (2) When the Zone State is cooling, VCO₂-max is equal to the maximum cooling airflow setpoint Vcool-max.
- (3) When the Zone State is heating or deadband, VCO₂-max is equal to Vcool-max minus the current zone heating airflow.

This logic prevents the total supply airflow from exceeding Vcool-max, which could create diffuser noise problems.

- (4) The CO₂ control loop output shall reset the occupied minimum airflow setpoint Vmin* from the zone minimum airflow setpoint Vmin at 0% up to maximum cooling airflow setpoint VCO₂-max at 50%, as shown in Figure 0-3. The loop output from 50% to 100% will be used at the system level to reset minimum outdoor airflow; see AHU controls.

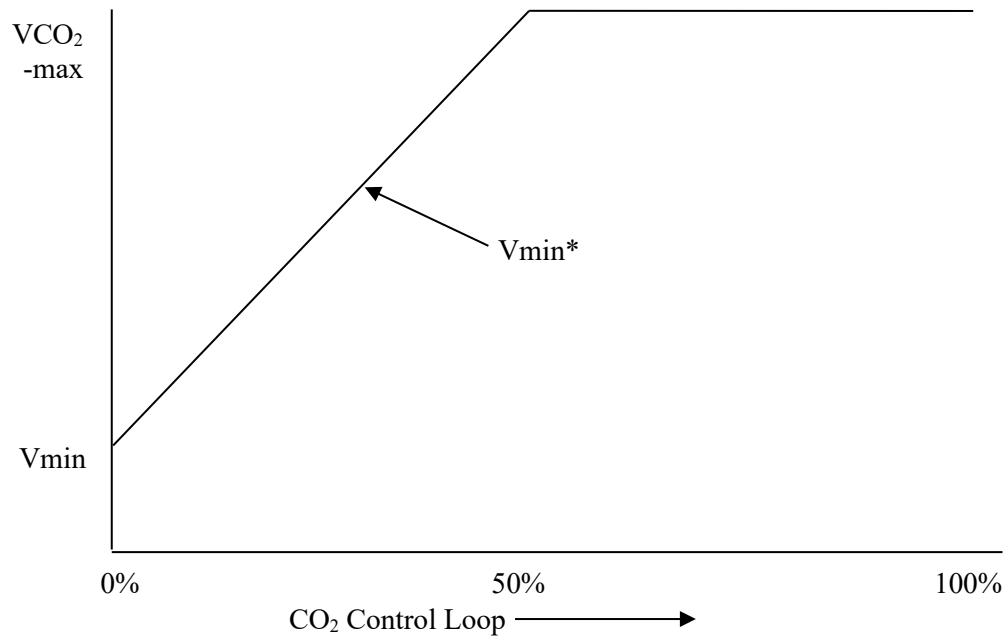


Figure 0-3 V_{min}^* reset with CO₂ loop (dual-duct VAV terminal units with cold-duct minimum control).

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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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