



**Addendum z to
ASHRAE Guideline 36-2018**

Public Review Draft

Proposed Addendum z to Guideline 36-2018, High-Performance Sequences of Operation for HVAC Systems

**First Public Review (November 2020)
(Draft shows Proposed Changes to Current Guideline)**

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FOREWORD

This addendum is to allow cooling-only terminal units to provide heating in occupied, warm-up, and setback modes if the air handling unit supply air temperature is greater than room temperature.

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. Only these changes are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed substantive changes.

Addendum z to Guideline 36-2018

(IP and SI Units)

Revise Paragraph 3.1.2.1 as follows:

3.1.2.1 VAV Cooling-Only Terminal Unit

- a. Zone maximum cooling airflow set point ($V_{cool-max}$)
- b. Zone maximum heating airflow setpoint ($V_{heat-max}$)

Cooling-only terminal units can provide when the AHU supply air temperature is more than 3°C (5°F) above the room temperature. The zone maximum heating airflow setpoint should be set to no more than the zone maximum cooling airflow setpoint.

- c. Zone minimum airflow set point (V_{min}). This is an optional entry. If no value is scheduled, or a value of “AUTO” is scheduled, V_{min} will be calculated automatically and dynamically to meet ventilation requirements.

In most cases, V_{min} should be allowed to be automatically calculated. This ensures compliance with Standard 62.1 and Standard 90.1 prescriptive requirements and with California’s Title 24 Energy Standards requirements, and it results in the lowest energy costs.

Revise Paragraph 5.5.3 as follows:

- 5.5.3 See Section ~~03-1.2.1~~ for zone minimum airflow set point V_{min} , ~~and zone cooling-maximum cooling design~~ airflow set point $V_{cool-max}$ and zone maximum heating airflow setpoint $V_{heat-max}$.

If the minimum ventilation rate is more than 25% or so of the cooling maximum, or DCV is used, a reheat box is recommended to avoid overcooling. DCV logic is not provided for

cooling-only boxes, because doing so results in periods of overcooling, as the CO₂ levels due to occupants rises much faster than the cooling load due to occupants because of thermal mass.

Cooling-only terminal units can provide heating only when the AHU supply air temperature is more than 3°C (5°F) above the room temperature.

Revise Paragraph 5.5.4 as follows:

5.5.4 Active endpoints used in the control logic depicted in Figure 5.5.5 shall vary depending on the mode of the zone group the zone is a part of (see Table 5.5.4).

Table 5.5.4 Endpoints as a Function of Zone Group Mode

Endpoint	Occupied	Cooldown	Setup	Warm-Up	Setback	Unoccupied
Cooling maximum	V _{cool-max}	V _{cool-max}	V _{cool-max}	0	0	0
Minimum	V _{min} *	0	0	0	0	0
Heating maximum	V_{min} *V _{heat} <u>-max</u>	0	0	0V _{cool-max}	0V _{cool-max}	0

Revise Paragraph 5.5.5 as follows:

5.5.5 Control logic is depicted schematically in Figure 5.5.5 and described in the following subsections.

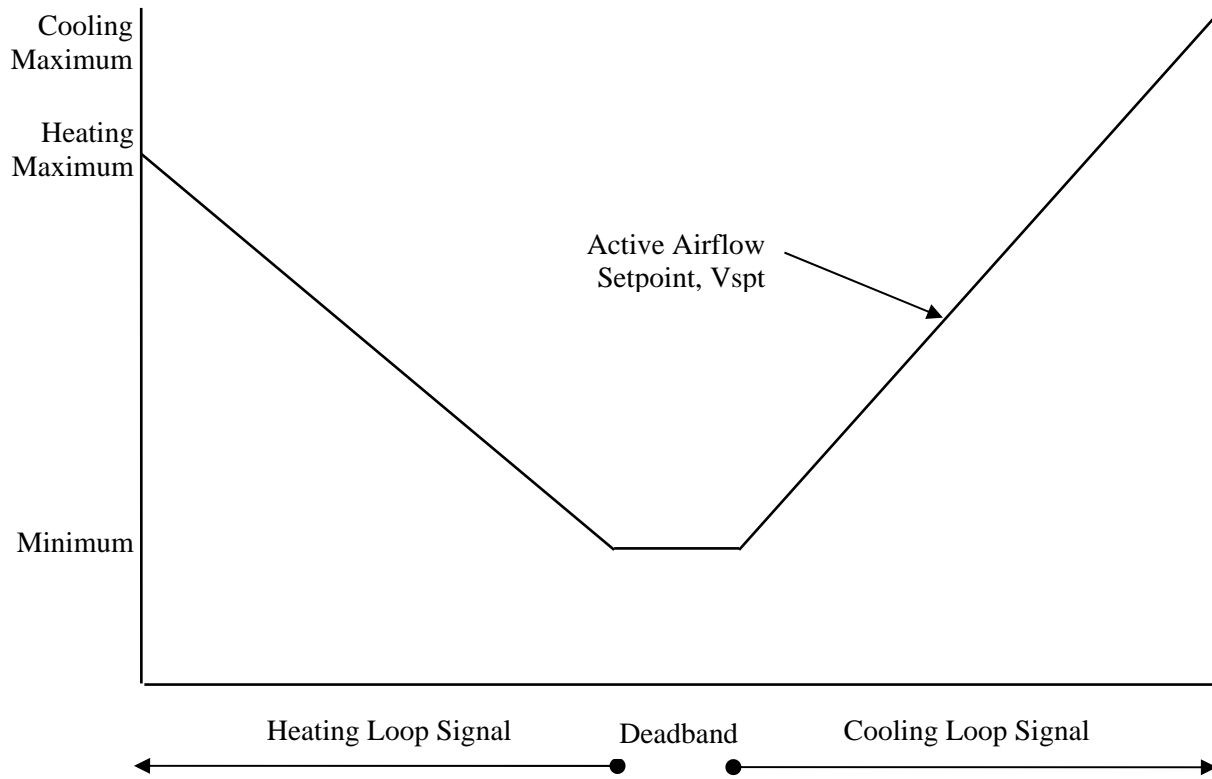


Figure 5.5.5 Control logic for cooling-only VAV zone.

- 5.5.5.1 When the zone state is cooling, the cooling-loop output shall be mapped to the active airflow set point from the minimum endpoint to the cooling maximum endpoint.
- d. If supply air temperature from the air handler is greater than room temperature, the active airflow set point shall be no higher than the minimum endpoint.
- 5.5.5.2 When the zone state is deadband, the active airflow set point shall be the minimum endpoint.
- 5.5.5.3 When the zone state is heating, the heating loop output shall be mapped to the active airflow setpoint from active airflow set point shall be the minimum endpoint to the heating maximum endpoint.
- a. If supply air temperature from the air handler is less than 3°C (5°F) above the room temperature, the active airflow setpoint shall be no higher than the minimum endpoint.
- 5.5.5.4 The VAV damper shall be modulated by a control loop to maintain the measured airflow at the active set point.