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ADDENDA

ANSI/ASHRAE Addendum a to ANSI/ASHRAE Standard 41.7-2021

Standard Methods for Gas Flow Measurement

Approved by ASHRAE and the American National Standards Institute on January 31, 2023.

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).

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FOREWORD

Addendum a to Standard 41.7-2021

a. makes it easier for the higher-tier ASHRAE standards to adopt this standard by reference,
b. updates the uncertainty requirements, and
c. updates the steady-state criteria sections.

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 a to Standard 41.7-2021

Modify Section 3 as shown.

accuracy: ~~the degree of conformity of an indicated value to the corresponding true value.~~the difference between the observed value of the measurand and its corresponding true value.

post-test uncertainty: an analysis to establish the uncertainty of a test result after conducting the test.

pretest uncertainty: an analysis to establish the expected uncertainty interval for a test result before conducting the test.

steady-state criteria: the criteria that establish negligible change of gas flow with time.

uncertainty: ~~a measure of the potential error in a measurement that reflects the lack of confidence in the result to a specified level.~~ the limits of error within which the true value lies.

Modify Section 5.1 as shown.

5.1 Test Plan. ~~A test plan shall specify the gaseous mass flow rate measurement system accuracy. The test plan shall also include the test points, targeted set points, and corresponding operating tolerances to be performed.~~ The test plan shall be one of the following options:

a. A document provided by the person or the organization that authorized the tests and calculations to be performed
b. A method of test standard
c. A rating standard
d. A regulation or code
e. Any combination of items (a) through (d)

The test plan shall specify the following:

a. The maximum allowable value for either the accuracy or the measurement uncertainty of the gas flow measurement system
b. The values to be determined and recorded, selected from this list: gas mass flow, pretest gas mass flow measurement uncertainty, post-test gas mass flow measurement uncertainty, gas volumetric flow, pretest gas volumetric flow measurement uncertainty, and post-test gas flow measurement uncertainty, gas density, gas density pretest uncertainty, and gas density post-test uncertainty
c. Any combination of test points and targeted set points to be performed together with operating tolerances

Modify Section 5.2 as shown to make it easier for MOT/MOR standards to adopt this standard by reference.

5.2 Values to be Determined and Reported. If specified in the test plan in Section 5.1, the ~~The~~ test values to be determined and reported shall be as shown in Table 1. Use the unit of measure in the Table 1 unless otherwise specified in the test plan in Section 5.1.

Modify Section 5.3.1 as shown.

5.3.1 Accuracy or Measurement Uncertainty. A selected gas flowmeter shall meet or exceed the ~~required gas flow measurement system accuracy~~ maximum allowable value for either the accuracy or the

Table 1 Measurement Values and Units of Measure

Quantity	~~Units of Measure~~ SI	I-P	~~Note~~
Gas mass flow rate ~~and uncertainty~~ Gas mass flow rate uncertainty	Kilograms per second (kg/s)	Pound (avoirdupois) per second (lb_m/min)	~~No notes apply~~
Gas volumetric flow rate ~~and uncertainty~~ Gas volumetric flow rate uncertainty	Cubic metres per second (m^3/s)	Cubic foot per minute (cfm)	~~Only if specified in test plan in Section 5.1~~
Gas density ~~and uncertainty~~ Gas density uncertainty	Kilograms per cubic metre (kg/m^3)	Pound (avoirdupois) per cubic foot (lb_m/ft^3)	~~Only if specified in test plan in Section 5.1~~

measurement uncertainty of the gas flow rate measurement specified in the test plan in Section 5.1 over the full range of operating conditions.

Replace Section 5.3.2 and add new Section 5.3.3.

~~**5.3.2 Uncertainty.** The uncertainty in each gas flow measurement shall be calculated using the method in Section 8 for each test point, unless otherwise stated in the test plan in Section 5.1. Alternatively, the worst-case uncertainty for all test points shall be estimated and the same value reported for each test point.~~

5.3.2 Pretest Uncertainty Analysis. If required by the test plan in Section 5.1, perform an uncertainty analysis to establish the expected uncertainty for each gas flow rate test point prior to the conduct of that test in accordance with the pretest uncertainty analysis procedures in ASME PTC 19.1[1].

5.3.3 Post-Test Uncertainty Analysis. If required by the test plan in Section 5.1, perform an uncertainty analysis to establish the gas flow rate measurement uncertainty for each gas flow test point in accordance with the post-test uncertainty analysis procedures in ASME PTC 19.1[1]. Alternatively, if specified in the test plan, the worst-case uncertainty for all test points shall be estimated and the same value reported for each test point.

Renumber and modify existing Section 5.3.3 as shown to define the steady-state criteria requirements under laboratory and field test conditions.

~~**5.3.3**~~**5.3.4 Steady-State Test Criteria for Gas Mass Flow Rate Measurements.** Gas mass flow rate test data shall be recorded at steady-state conditions ~~unless otherwise~~ if specified in the test plan in Section 5.1. ~~If the test plan requires gas mass flow rate test data points to be recorded at steady-state test conditions and provides the operating condition tolerance but does not specify the steady-state criteria, then determine that steady-state test conditions have been achieved using one of the following methods:~~

~~a. Apply the steady-state criteria in Section 5.3.3.1 if the test plan provides test points for gas mass flow rate measurement.~~
~~b. Apply the steady-state criteria in Section 5.3.3.2 if the test plan provides targeted set points for gas mass flow rate measurement.~~

5.3.4.1 Steady-State Test Criteria for Gas Mass Flow Rate Measurements Under Laboratory Test Conditions. If the test plan requires gas flow test data points to be recorded at steady-state test conditions, and provides the operating condition tolerance but does not specify the steady-state criteria, then determine that steady-state test conditions have been achieved using one of the following methods:

a. Apply the steady-state criteria in Section 5.3.4.3 if the test plan provides test points for gas mass flow rate measurement.
b. Apply the steady-state criteria in Section 5.3.4.4 if the test plan provides targeted set points for gas mass flow rate measurement.

5.3.4.2 Steady-State Test Criteria for Gas Mass Flow Rate Measurements Under Field Test Conditions. If the test plan requires gas flow test data points to be recorded at steady-state test conditions, and provides the operating condition tolerance but does not specify the steady-state criteria, the methods in Section 5.3.4.1 are optional.

(***Informative Note:*** The steady-state methods in Section 5.3.4.1 are likely to be impractical under field test conditions. Under these circumstances, the user may want to select another method to determine the conditions for field test data to be recorded.)

Renumber and modify existing Section 5.3.3.1 and replace Figure 1 as shown.

~~5.3.3.1~~5.3.4.3 Steady-State Gas Mass Flow Rate Criteria for Test Points

[. . .]

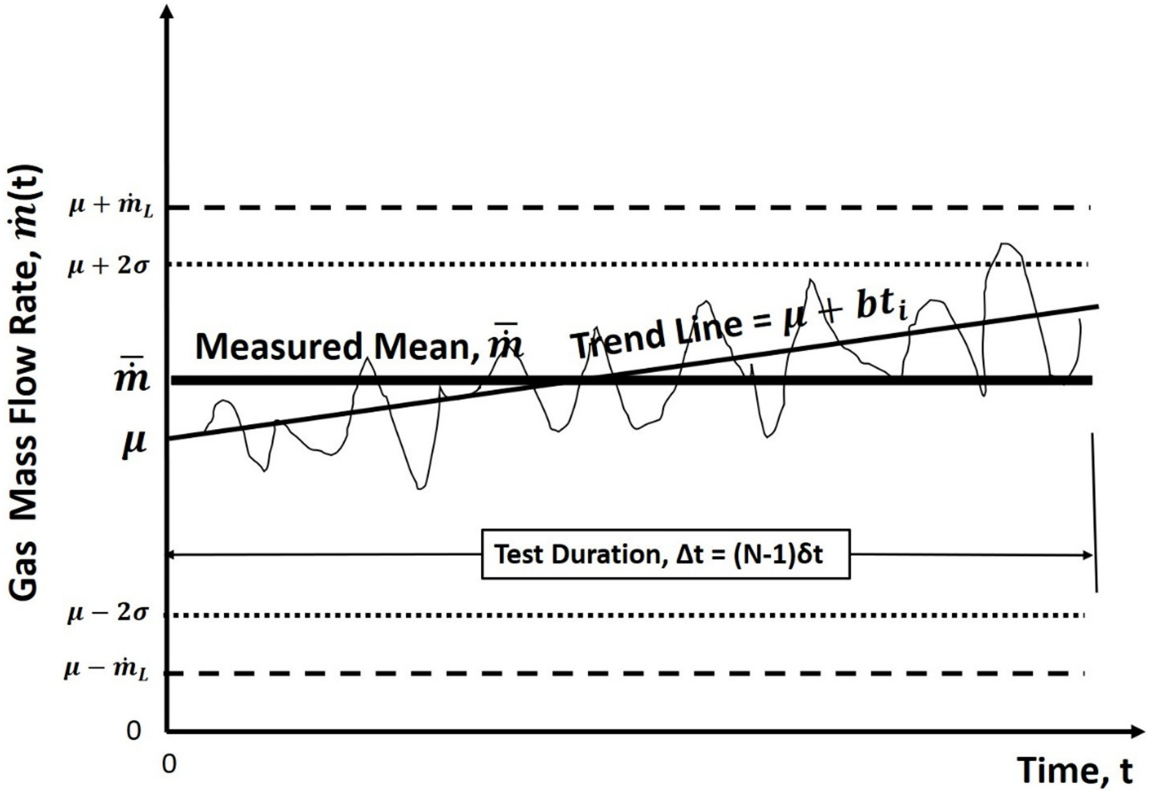

Figure 1 Graphical illustration of the method for determining the steady-state gas mass flow rate criteria for test points.

[. . .]

$\bar{\dot{m}}$, as determined by Equation 5-5, represents the steady-state mean gas mass flow rate provided that one of the following criteria is satisfied:

a. Apply Equation 5-6 if $2\sigma \geq \dot{m}_L$, where $\dot{m}_L$ is the specified operating tolerance limit for gas mass flow rate, and if Equation 5-6 is satisfied by not less than 95% of the sampled gas mass flow rates.

$$|\dot{m}_i - \mu| \leq 2\sigma \qquad \text{kg/s (lb}_m\text{/min)} \tag{5-6}$$

The horizontal dotted lines that are located 2σ above and below μ are the boundaries of the 95% sampled gas mass flow rate scatter envelope.

b. Apply Equation 5-7 if $\dot{m}_L \geq 2\sigma$, where $\dot{m}_L$ is the specified operating tolerance limit for gas mass flow rate, and if Equation 5-7 is satisfied by not less than 95% of the sampled gas mass flow rates.

$$|\dot{m}_i - \mu| \leq \dot{m}_L \qquad \text{kg/s (lb}_m\text{/min)} \tag{5-7}$$

The horizontal dashed lines that are located $\dot{m}_L$ above and below μ are the boundaries of the 95% sampled gas mass flow rate scatter envelope.

Renumber and modify existing Section 5.3.3.2 and replace Figure 2 as shown.

~~5.3.3.2~~5.3.4.4 Steady-State Gas Mass Flow Rate Criteria for Targeted Set Points

[. . .]

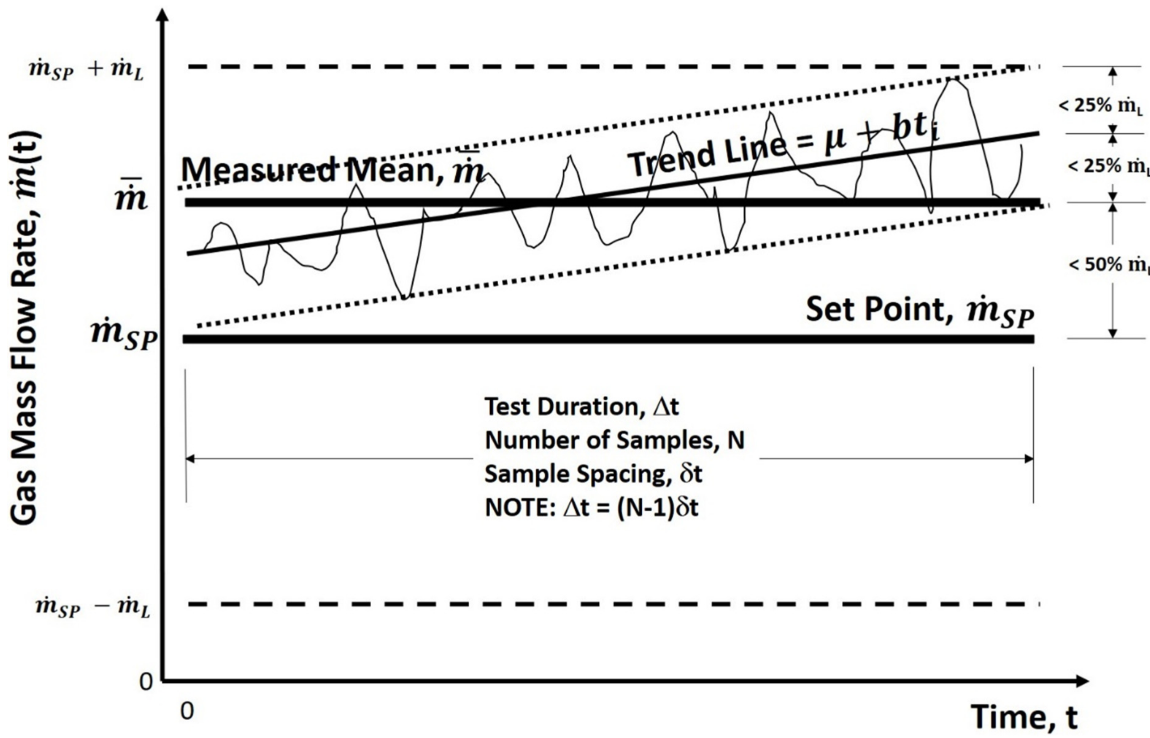

Figure 2 Graphical illustration of the method for determining the steady-state gas mass flow rate criteria for targeted set points.

[. . .]

$$\cancel{b\Delta t \le 0.50\dot{m}_L \quad \text{kg/s (lb}_m\text{/min)}} \qquad \cancel{(5\text{-}16)}$$

$$\underline{|b\Delta t| \le 0.50\dot{m}_L \quad \text{kg/s (lb}_m\text{/min)}} \qquad \underline{(5\text{-}16)}$$

[. . .]

Renumber and modify existing Section 5.3.5 as shown to define the steady-state criteria requirements under laboratory and field test conditions.

~~5.3.5~~5.3.6 Steady-State Test Criteria for Gas Volumetric Flow Rate Measurements. Gas volumetric flow rate test data shall be recorded at steady-state conditions ~~unless otherwise~~ if specified in the test plan in Section 5.1. ~~If the test plan requires gas volumetric flow rate test data points to be recorded at steady-state test conditions and provides the operating condition tolerance but does not specify the steady-state criteria, then determine that steady-state test conditions have been achieved using one of the following methods:~~

~~a. Apply the steady-state criteria in Section 5.3.5.1 if the test plan provides test points for gas volumetric flow rate measurement.~~
~~b. Apply the steady-state criteria in Section 5.3.5.2 if the test plan provides targeted set points for gas volumetric flow rate measurement.~~

5.3.6.1 Steady-State Test Criteria for Gas Volumetric Flow Rate Measurements Under Laboratory Test Conditions. If the test plan requires gas flow test data points to be recorded at steady-state test conditions, and provides the operating condition tolerance but does not specify the steady-state criteria, then determine that steady-state test conditions have been achieved using one of the following methods:

a. Apply the steady-state criteria in Section 5.3.6.3 if the test plan provides test points for gas volumetric flow rate measurement.
b. Apply the steady-state criteria in Section 5.3.6.4 if the test plan provides targeted set points for gas volumetric flow rate measurement.

5.3.6.2 Steady-State Test Criteria for Gas Volumetric Flow Rate Measurements Under Field Test Conditions. If the test plan requires gas flow test data points to be recorded at steady-state test conditions, and provides the operating condition tolerance but does not specify the steady-state criteria, the methods in Section 5.3.6.1 are optional.

(***Informative Note:*** The steady-state methods in Section 5.3.6.1 are likely to be impractical under field test conditions. Under these circumstances, the user may want to select another method to determine the conditions for field test data to be recorded.)

Renumber and modify existing Section 5.3.5.1, and replace Figure 3 as shown.

~~5.3.5.1~~5.3.6.3 Steady-State Gas Volumetric Flow Rate Criteria for Test Points

[. . .]

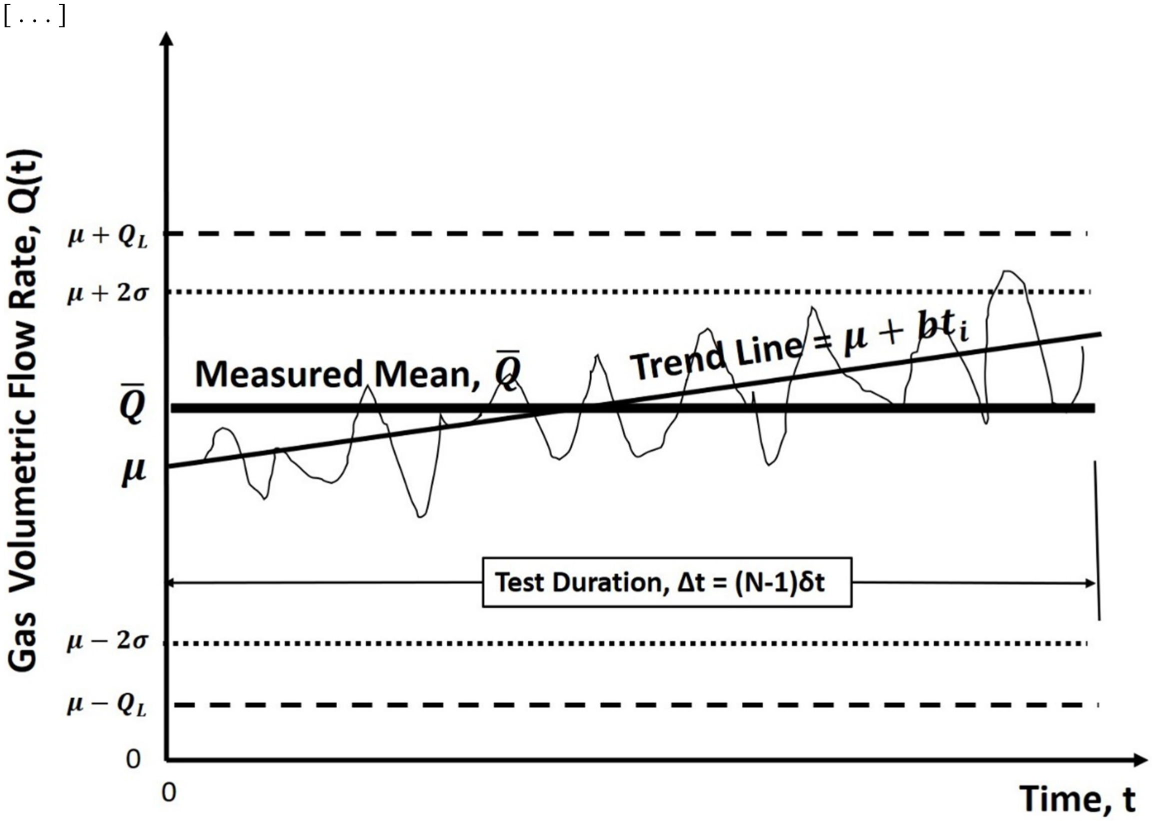

Figure 3 Graphical illustration of the method for determining the steady-state gas volumetric flow rate criteria for test points.

[. . .]

$\overline{Q}$, as determined by Equation 5-21, represents the steady-state mean gas volumetric flow rate provided that one of the following criteria is satisfied:

a. Apply Equation 5-22 if $2\sigma \geq Q_L$, where Q_L is the specified operating tolerance limit for gas volumetric flow rate, and if Equation 5-22 is satisfied by not less than 95% of the sampled gas volumetric flow rates.

$$|Q_i - \mu| \leq 2\sigma] \qquad \text{m}^3\text{/s (cfm)} \qquad (5\text{-}22)$$

The horizontal dotted lines that are located 2σ above and below μ are the boundaries of the 95% sampled gas volumetric flow rate scatter envelope.

b. Apply Equation 5-23 if $Q_L \geq 2\sigma$, where Q_L is the specified operating tolerance limit for gas volumetric flow rate, and if Equation 5-23 is satisfied by not less than 95% of the sampled gas volumetric flow rates.

$$|Q_i - \mu| \leq Q_L] \qquad \text{m}^3\text{/s (cfm)} \qquad (5\text{-}23)$$

The horizontal dashed lines that are located Q_L above and below μ are the boundaries of the 95% sampled gas volumetric flow rate scatter envelope.

Renumber and modify existing Section 5.3.5.2, and replace Figure 4 as shown.

~~5.3.5.2~~5.3.6.4 Steady-State Gas Volumetric Flow Rate Criteria for Targeted Test Points

[. . .]

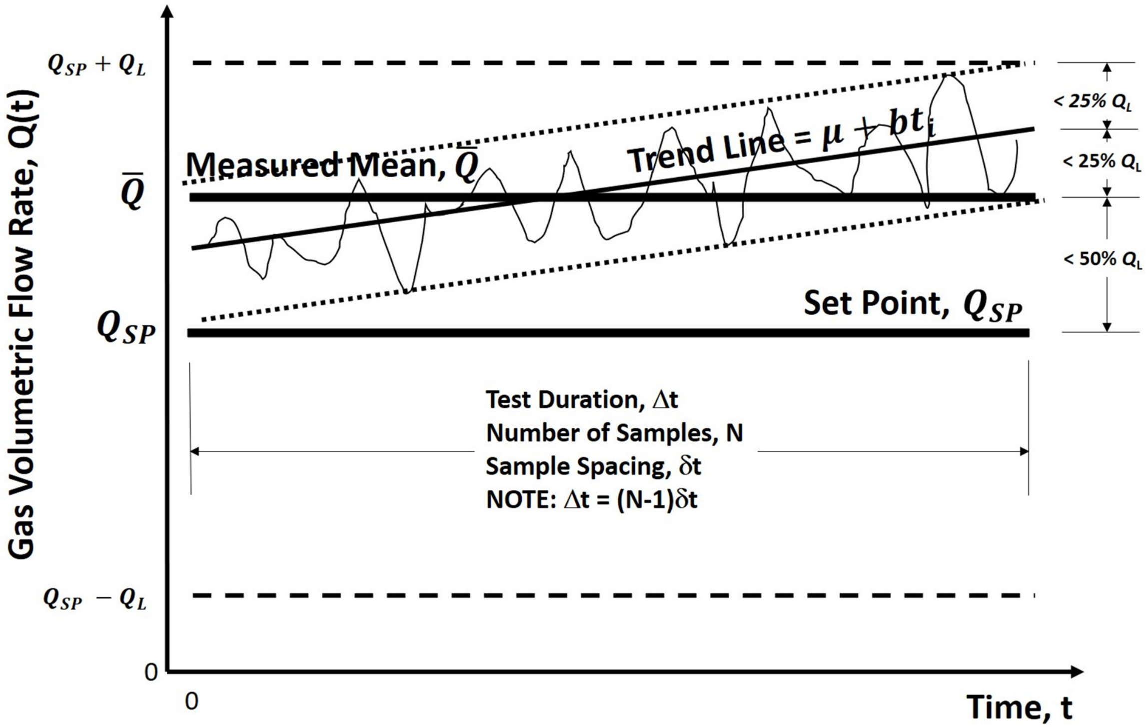

Figure 4 Graphical illustration of the method for determining the steady-state gas volumetric flow rate criteria for targeted set points.

[. . .]

$$\cancel{b\Delta t \le 0.50 Q_L \quad \text{m}^3\text{/s (cfm)}} \qquad \cancel{(5\text{-}24)}$$

$$\underline{|b\Delta t| \le 0.50 Q_L \quad \text{m}^3\text{/s (cfm)}} \qquad \underline{(5\text{-}24)}$$

[. . .]

Modify Section 7.1 as shown.

7.1 Constraint on All Gas Flow Rate Measurement Methods. A selected gas flow measurement plane shall exceed 7.5 inside pipe diameters ~~geometrically equivalent diameters~~ downstream of an obstruction or any change in the gas flow ~~airflow~~ direction and shall exceed 3 inside pipe diameters ~~geometrically equivalent diameters~~ upstream of an obstruction or change in the gas flow direction unless otherwise specified by the gas flow ~~airflow~~ measurement instrument manufacturer. ~~For a rectangular duct with interior width and height dimensions equal to *a* and *b* respectively, the geometrically equivalent diameter shall be obtained from Equation 7-1. For a round duct, the geometrically equivalent diameter D_E is equal to the interior diameter *D*.~~

$$\cancel{D_E = \sqrt{\frac{4ab}{\pi}}} \qquad \cancel{(7\text{-}1)}$$

~~where~~

~~D_E = geometrically equivalent diameter, m (ft)~~

~~*a* = interior width, m (ft)~~

~~*b* = interior height, m (ft)~~

Modify Section 7.4.2.1 as shown.

7.4.2.1 Measurements. Measurements required for this nozzle gas flow shall be as follows:

a. Inlet pipe inside diameter *D* ~~duct geometrically equivalent diameter D_E that is defined in Equation 7-1~~, m (ft)
b. Nozzle throat diameter *d*, m (ft)
c. Nozzle inlet absolute pressure p_1, Pa ~~(in. of water)~~ (psia)

d. Nozzle throat absolute pressure p_2, Pa ~~(in. of water)~~ (psia)
e. Nozzle differential pressure $\Delta p = (p_1 - p_2)$, Pa ~~(in. of water)~~ (psid)
f. Nozzle inlet temperature t_1, °C (°F)

Delete Section 7.4.2.2 as shown.

~~**7.4.2.2 Nozzle Inlet Duct Hydraulic Diameter.** Nozzle inlet duct hydraulic diameter D_h shall be obtained from dimensional measurements. For a round duct D_h is equal to the interior inlet diameter. For a rectangular duct, the hydraulic diameter shall be obtained from Equation 7-3.~~

$$\cancel{D_h = \frac{2ab}{(a+b)}} \tag{7-3}$$

~~where~~

~~D_h = hydraulic diameter, dimensionless~~
~~a = interior width, m (ft)~~
~~b = interior height, m (ft)~~

Modify Section 7.4.2.3 as shown.

7.4.2.3 Nozzle Limits for Use and Reynolds Number. Limits for the use for long radius nozzle <u>and Reynolds number</u> are as follows:

a. 50 mm (2 in.) $\le D \le$ 630 mm (25 in.)
b. $R_a/D \le 3.2\ (10^{-4})$, where R_a is the mean of the surface roughness in the upstream duct
c. $1\ (10^4) \le \mathrm{Re}_D \le 1000\ (10^7)$, where Re_D is defined in Equation 7-4

$$\cancel{\mathrm{Re}_D = \frac{\rho_1 V D_h}{\mu}} \tag{7-4}$$

$$\underline{\mathrm{Re}_D = \frac{\rho_1 V D}{\mu}} \tag{7-4}$$

where

ρ_1 = gas density, kg/m^3 (lb$_m$/ft^3)
~~V = average gas velocity $(4\dot{m}/\rho_1 \pi D_h^2)$, m/s (ft/s)~~
~~D_h = nozzle inlet hydraulic diameter, m (ft)~~
<u>D = inlet pipe inside diameter, m (ft)</u>
μ = dynamic viscosity, Ns/m^2 (lb$_m$/s·ft)

Modify Section 7.4.2.4 as shown.

7.4.2.4 Nozzle Beta Ratio. The nozzle beta ratio shall be obtained from Equation 7-5. If gas flow operating temperatures are not within ±6ºC (±10ºF) of the ambient temperature during the dimensional measurements, parameters d, ~~D_h~~ <u>D</u>, and β shall be corrected to account for thermal expansion in compliance with ASME PTC 19.5[7] Section 3-10.

$$\cancel{\beta = \left(\frac{d}{D_h}\right)\text{, dimensionless}} \tag{7-5}$$

$$\underline{\beta = \left(\frac{d}{D}\right)\text{, dimensionless}} \tag{7-5}$$

Modify Section 7.4.2.6 as shown.

7.4.2.6 Nozzle Gas Volumetric Flow Rates. Nozzle gas volumetric flow rates shall be calculated from Equation 7-6 in SI units or Equation 7-7 in I-P units.

In SI units:

$$Q = C\varepsilon\left(\frac{\pi}{4}\right)d^2 K_1 \sqrt{\frac{2(\Delta p)}{\rho_1(1 - E\beta^4)}} \tag{7-6}$$

where

Q = nozzle gas volumetric flow rate, m^3/s

C = nozzle discharge coefficient, dimensionless

ε = nozzle expansibility factor, dimensionless

d = nozzle throat diameter, m

K_1 = nozzle calibration coefficient, dimensionless

ρ_1 = nozzle inlet gas density, kg/m^3

Δp = nozzle differential pressure, Pa

~~E = flow kinetic energy coefficient = 1.043[6]~~

E = flow kinetic energy coefficient = 1.043 (See Section 10, Reference 7.)

β = d/D_h, dimensionless

~~In I-P units:~~

$$\cancel{Q = 1097.8 C\varepsilon\left(\frac{\pi}{4}\right)d^2K_1\sqrt{\frac{2(\Delta p)}{\rho_1(1-E\beta^4)}}} \qquad \cancel{(7\text{-}7)}$$

~~where~~

~~Q = nozzle gas volumetric flow rate, cfm~~

~~C = nozzle discharge coefficient, dimensionless~~

~~ε = nozzle expansibility factor, dimensionless~~

~~d = nozzle throat diameter, ft~~

~~K_2 = nozzle calibration coefficient, dimensionless~~

~~ρ_1 = nozzle inlet gas density, lb_m/ft^3~~

~~Δp = nozzle differential pressure, in. of water~~

~~E = flow kinetic energy coefficient = 1.043[6]~~

~~β = d/D_h, dimensionless~~

In I-P units:

$$Q = 0.47268 \times C_\varepsilon\left(\frac{\pi}{4}\right)d^2K_1\sqrt{\frac{2(\Delta p)}{\rho_1(1-E\beta^4)}} \qquad (7\text{-}7)$$

where

Q = nozzle gas volumetric flow rate, cfm

C = nozzle discharge coefficient, dimensionless

ε = nozzle expansibility factor, dimensionless

d = nozzle throat diameter, ft

K_1 = nozzle calibration coefficient, dimensionless

ρ_1 = nozzle inlet gas density, lb_m/ft^3

E = flow kinetic energy coefficient = 1.043, dimensionless (See Section 10, Reference 7.)

Δp = nozzle differential pressure, psid

β = d/D_h, dimensionless

0.47268 = units conversion coefficient, $\sqrt{\frac{(lb_m - ft^3)}{(psid - in.^4 - s^2)}}$

Modify Section 8.1 as shown to make it easier for MOT/MOR standards to adopt this standard by reference.

8.1 Post-Test Uncertainty ~~Estimate~~ Analysis. If required by the test plan in Section 5.1, a post-test analysis ~~An estimate~~ of the measurement uncertainty performed in accordance with ASME PTC 19.1[~~6~~1] shall accompany each gas flow measurement

(*Informative Note:* Informative Appendix B contains an example of uncertainty calculations.)

Modify Section 9.6 as shown.

9.6 Test Results. If specified in the test plan in Section 5.1, report the following test results.

9.6.1 Gas Mass Flow Rate ~~**(unless otherwise specified by the test plan)**~~

a. Gas mass flow rate, kg/s (lb_m/min)
b. Pretest uncertainty~~Uncertainty~~ in gas mass flow rate, kg/s (lb_m/min)
c. Post-test uncertainty in gas mass flow rate, kg/s (lb_m/min)

9.6.2 Gas Volumetric Flow Rate ~~(if required by the test plan)~~

a. Gas volumetric flow rate, m^3/s (cfm)
b. Pretest uncertainty~~Uncertainty~~ in gas volumetric flow rate, m^3/s (cfm)
c. Post-test uncertainty in gas volumetric flow rate, m^3/s (cfm)

9.6.3 Density ~~(if required by the test plan)~~

a. Density, kg/m^3 (lb_m/ft^3)
b. Pretest uncertainty~~Uncertainty~~ in density, kg/m^3 (lb_m/ft^3)
c. Post-test uncertainty in density, kg/m^3 (lb_m/ft^3)

Update Section 10 as shown.

10. REFERENCES

~~1. NIST Standard Reference Database 23: *NIST Reference Fluid Thermodynamic and Transport Properties Database (REFPROP) Version 10,* National Institute of Standards and Technology, Gaithersburg, MD.~~
~~2. ANSI/ASHRAE Standard 41.1-2020, *Standard Methods for Temperature Measurement*. ASHRAE, Atlanta, GA. See Note 1.~~
~~3. ANSI/ASHRAE Standard 41.3-2014*, Standard Methods for Pressure Measurement*. ASHRAE, Atlanta, GA. See Note 2~~
~~4. ANSI/ASME PTC 19.5-2004 (R2013)*, Flow Measurement.* ASME, New York, NY. (See Note 3.)~~
~~5. ANSI/ASME MFC-3M-2004 (R2017), *Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi*. ASME, New York, NY. See Note 3.~~
~~6. ASME PTC 19.1-2018, *Test Uncertainty*, ASME, New York, NY.~~
1. ASME. 2018. ASME PTC 19.1, *Test Uncertainty*. New York: American Society of Mechanical Engineers.
2. NIST. 2018. *NIST Reference Fluid Thermodynamic and Transport Properties Database (REFPROP): Version 10.* Gaithersburg, MD: National Institute of Standards and Technology.
3. ASHRAE. 2020. ANSI/ASHRAE Standard 41.1, *Standard Methods for Temperature Measurement*. Peachtree Corners, GA: ASHRAE. (See Note 1.)
4. ASHRAE. 2022. ANSI/ASHRAE Standard 41.3*, Standard Methods for Pressure Measurement*. Peachtree Corners, GA: ASHRAE. (See Note 2.)
5. ASME. 2013. ANSI/ASME PTC 19.5-2004 (R2013), *Flow Measurement.* New York: American Society of Mechanical Engineers. (See Note 3.)
6. ASME. 2017. ANSI/ASME MFC-3M-2004 (R2017), *Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi*. New York: American Society of Mechanical Engineers. (See Note 3.)
7. Bohanon, H.R. 1975. Fan single- or multiple-nozzle chamber-nozzle coefficients. *ASHRAE Transactions* 2334:104–122. (See Note 3.)

(***Informative Notes:***
1. Reference ~~2~~3 is not required if there are no temperature measurements.
2. Reference ~~3~~4 is not required if there are no pressure measurements.
3. References ~~4 and~~ 5, 6, and 7 are only required if using an Orifice, Flow Nozzle, or Venturi Tube.

Modify Appendix B as shown.

[. . .]

Follow the step-by-step procedures outlined in Section 9 of ASME PTC 19.1[7], to estimate the uncertainty in SI units in Section B1 or in I-P units in Section B2. Note that, in general, using a commercial equation solver software, such as MATLAB or EES, significantly reduces the time and effort required to complete an uncertainty analysis.

[. . .]

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.

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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.

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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.

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