

Errata
ANSI Z223.1
***National Fuel Gas Code* ®**
2018 Edition

Reference: Various
Errata Z223.1-2018-1

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National Fuel Gas Code user:

The American Gas Association (AGA) notes the following errors in the 2018 edition of ANSI Z223.1, *National Fuel Gas Code*. The first printing of the code by AGA contains these errors. AGA's later code printings are revised to include these corrections. To determine if you have a later printing, look for "Second (or later) Printing" located on the inside front cover of the code. AGA and NFPA separately print the code. Please visit the NFPA website at www.nfpa.org for any issued errata on NFPA 54.

Notes on using the errata:

Each erratum is numbered which includes the impacted section, table, or figure designation, along with the page number where it would appear in the published code. Underscored material denotes those items or wording that are to be added and strike through material denotes those items or wording that are to be deleted. Shading is provided where necessary to identify hard-to-see revisions. AGA provides the attached replacement code pages that can be inserted into the printed code. The replacement pdf files can be downloaded from www.aga.org/nfgc.

Additional Information:

For additional information on the errata, the code or National Fuel Gas Code Committee, please contact Mr. Paul Cabot, AGA, 202.824.7312, pcabot@aga.org. Also visit AGA's National Fuel Gas Code webpages at www.aga.org/nfgc for additional code information.



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**Errata Z223.1-2018-1
AGA Printed Version**

NOTE: The following errata apply to the American Gas Association's first printing of ANSI Z223.1-2018.

Errata Z223.1-2018-1: 12.6.1.3 (2); Page 93; printed code; correct typo:

(2) A chimney lining system listed and labeled in accordance with ANSI/UL 1777, Chimney Liners

Errata Z223.1-2018-1: 12.6.5.1; Page 94; printed code; correct typo:

12.6.5.1 An appliance shall not be connected to a chimney ~~fuel~~flue serving a separate appliance designed to burn solid fuel.

Errata Z223.1-2018-1: 12.6.7; Page 94; printed code; restore missing section:

12.6.7 Cleanouts. Where a chimney that formerly carried flue products from liquid or solid fuel-burning appliances is used with an appliance using fuel gas, an accessible cleanout shall be provided. The cleanout shall have a tight-fitting cover and be installed so its upper edge is at least 6 in. (150 mm) below the lower edge of the lowest chimney inlet opening.

Errata Z223.1-2018-1: C.3 (1) (b); Page 142; pdf file; correct typo:

(b) Attach an in-line flow meter between the meter outlet and piping system inlet prior to the ~~first~~first regulator in the piping system. Slowly turn on the gas supply and observe the metering device. If flow does not drop to zero, leakage is indicated.

Table 12.5.1 Type of Venting System to Be Used.

Appliances	Type of Venting System	Location of Requirements
Listed Category I appliances	Type B gas vent	12.7
Listed appliances equipped with draft hood	Chimney	12.6
Appliances listed for use with Type B gas vent	Single-wall metal pipe	12.8
	Listed Chimney lining system for gas venting	12.6.1.3
	Special Gas Vent listed for these appliances	12.5.4
Listed vented wall furnaces	Type B-W gas vent	12.7, 10.26
Category II, Category III, and Category IV appliances	As specified or furnished by manufacturers of listed appliances	12.5.2, 12.5.4
Incinerators	In accordance with NFPA 82	
Appliances that can be converted to use of solid fuel	Chimney	12.6
Unlisted combination gas and oil-burning appliances		
Combination gas- and solid fuel-burning appliances		
Appliances listed for use with chimneys only		
Unlisted appliances		
Listed combination gas- and oil-burning appliances	Type L vent	12.7
	Chimney	12.6
Decorative appliance in vented fireplace	Chimney	10.6.2
Gas-fired toilets	Single-wall metal pipe	12.8, 10.24.3
Direct vent appliances		12.3.5
Appliances with integral vent		12.3.6

12.6 Masonry, Metal, and Factory-Built Chimneys

12.6.1 Listing or Construction.

12.6.1.1 Factory-built chimneys shall be listed in accordance with ANSI/UL 103, *Chimneys, Factory-Built, Residential Type and Building Heating Appliances*; ANSI/UL 959, *Medium Heat Appliance Factory-Built Chimneys*; or ANSI/UL 2561, *1400 Degree Fahrenheit Factory-Built Chimneys*. Factory-built chimneys shall be installed in accordance with the manufacturer’s installation instructions. Factory-built chimneys used to vent appliances that operate at positive vent pressure shall be listed for such application.

12.6.1.2 Metal chimneys shall be built and installed in accordance with NFPA 211.

12.6.1.3* Masonry chimneys shall be built and installed in accordance with NFPA 211 and lined with one of the following:

- (1) Approved clay flue lining
- (2) A chimney lining system listed and labeled in accordance with ANSI/UL 1777, *Chimney Liners*
- (3) Other approved material that resists corrosion, erosion, softening, or cracking from vent gases at temperatures up to 1,800°F (982°C).

Exception: Masonry chimney flues lined with a chimney lining system specifically listed for use with listed appliances with draft hoods, Category I appliances, and other appliances listed for use with Type B vents shall be permitted. The liner shall be installed in accordance with the liner manufacturer’s installation instructions. A permanent identifying label shall be attached at the point where the connection is to be made to the liner. The label shall read “This chimney liner is for appliances that burn gas only. Do not connect to solid or liquid fuel-burning appliances or incinerators.”

12.6.2 Termination.

12.6.2.1* A chimney for residential-type or low-heat appliances shall extend at least 3 ft (0.9 m) above the highest point where it passes through a roof of a building and at least 2 ft (0.6 m) higher than any portion of a building within a horizontal distance of 10 ft (3 m).

12.6.2.2 A chimney for medium-heat appliances shall extend at least 10 ft (3 m) higher than any portion of any building within 25 ft (7.6 m).

12.6.2.3 A chimney shall extend at least 5 ft (1.5 m) above the highest connected appliance draft hood outlet or flue collar.

12.6.2.4 Decorative shrouds shall not be installed at the termination of factory-built chimneys except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed in accordance with manufacturers' installation instructions.

12.6.3 Size of Chimneys.

12.6.3.1 The effective area of a chimney venting system serving listed appliances with draft hoods, Category I appliances, and other appliances listed for use with Type B vents shall be in accordance with one of the following methods:

- (1) Those listed in Chapter 13
- (2) For sizing an individual chimney venting system for a single appliance with a draft hood, the effective areas of the vent connector and chimney flue shall be not less than the area of the appliance flue collar or draft hood outlet or greater than seven times the draft hood outlet area.
- (3) For sizing a chimney venting system connected to two appliances with draft hoods, the effective area of the chimney flue shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet or greater than seven times the smallest draft hood outlet area.
- (4) Chimney venting systems using mechanical draft shall be sized in accordance with approved engineering methods.
- (5) Other approved engineering methods.

12.6.4 Inspection of Chimneys.

12.6.4.1 Before replacing an existing appliance or connecting a vent connector to a chimney, the chimney passageway shall be examined to ascertain that it is clear and free of obstructions and shall be cleaned if previously used for venting solid or liquid fuel-burning appliances or fireplaces.

12.6.4.2 Chimneys shall be lined in accordance with NFPA 211.

Exception: Existing chimneys shall be permitted to have their use continued when an appliance is replaced by an appliance of similar type, input rating, and efficiency where the chimney complies with 12.6.4 and the sizing of the chimney is in accordance with 12.6.3.

12.6.4.3 Cleanouts shall be examined and where they do not remain tightly closed when not in use, they shall be repaired or replaced.

12.6.4.4 When inspection reveals that an existing chimney is not safe for the intended application, it shall be repaired, rebuilt, lined, relined, or replaced with a vent or chimney to conform to NFPA 211 and shall be suitable for the appliances to be attached.

12.6.5 Chimney Serving Appliances Burning Other Fuels

12.6.5.1 An appliance shall not be connected to a chimney flue serving a separate appliance designed to burn solid fuel.

12.6.5.2 Where one chimney serves gas appliances and liquid fuel-burning appliances, the appliances shall be connected through separate openings or connected through a single opening where joined by a suitable fitting located as close as practical to the chimney. Where two or more openings are provided into one chimney flue, they shall be at

different levels. Where the gas appliance is automatically controlled, it shall be equipped with a safety shutoff device.

12.6.5.3* A listed combination gas- and solid fuel-burning appliance connected to a single chimney flue shall be equipped with a manual reset device to shut off gas to the main burner in the event of sustained backdraft or flue gas spillage. The chimney flue shall be sized to properly vent the appliance.

12.6.5.4 A single chimney flue serving a listed combination gas- and oil-burning appliance shall be sized in accordance with the appliance manufacturer's instructions.

12.6.6 Support of Chimneys. All portions of chimneys shall be supported for the design and weight of the materials employed. Listed factory-built chimneys shall be supported and spaced in accordance with the manufacturer's installation instructions.

12.6.7 Cleanouts. Where a chimney that formerly carried flue products from liquid or solid fuel-burning appliances is used with an appliance using fuel gas, an accessible cleanout shall be provided. The cleanout shall have a tight-fitting cover and be installed so its upper edge is at least 6 in. (150 mm) below the lower edge of the lowest chimney inlet opening.

12.6.8 Space Surrounding Lining or Vent.

12.6.8.1 The remaining space surrounding a chimney liner, gas vent, special gas vent, or plastic piping installed within a masonry chimney flue shall not be used to vent another appliance.

Exception: The insertion of another liner or vent within the chimney as provided in this code and the liner or vent manufacturer's instructions.

12.6.8.2 The remaining space surrounding a chimney liner, gas vent, special gas vent, or plastic piping installed within a masonry, metal or factory-built chimney, shall not be used to supply combustion air.

Exception: Direct vent appliances designed for installation in a solid fuel-burning fireplace where installed in accordance with the manufacturer's installation instructions.

12.6.9 Insulation Shield. Where a factory-built chimney passes through insulated assemblies, an insulation shield constructed of steel having a minimum thickness of 0.0187 inch (0.4712 mm) (nominal 26 gage) shall be installed to provide clearance between the chimney and the insulation material. The clearance shall not be less than the clearance to combustibles specified by the chimney manufacturer's installation instructions. Where chimneys pass through attic space, the shield shall terminate not less than 2 in. (51 mm) above the installation materials and shall be secured in place to prevent displacement. Insulation shields provided as part of a listed chimney system shall be installed in accordance with the manufacturer's installation instructions.

12.7 Gas Vents

12.7.1 Materials. Type B and Type BW gas vents shall be listed in accordance with ANSI/UL 441, *Gas Vents*. Vents for listed combination gas- and oil-burning appliances shall be listed in accordance with ANSI/UL 641, *Type L Low-Temperature Venting Systems*.

For ¾ in. pipe:

$$\Delta H = \frac{20}{100} \times 1.0 = 0.2 \text{ in.w.c.} \quad \text{B.7.6(4)(b)]}$$

Notice that the pressure drop for 135,000 Btu/hr between 121,000 Btu/hr and 148,000 Btu/hr has been interpolated, but interpolation was not used for the ¾ in. pipe (trivial for 104,000 Btu/hr to 147,000 Btu/hr).

- (5) Section 3 = 30 ft, with 245,000 Btu/hr. Here a choice is available:

For 1 in. pipe:

$$\Delta H = \frac{30}{100} \times 1.0 = 0.3 \text{ in.w.c.} \quad \text{B.7.6(5)(a)]}$$

For 1¼ in. pipe:

$$\Delta H = \frac{30}{100} \times 0.2 = 0.06 \text{ in.w.c.} \quad \text{B.7.6(5)(b)]}$$

Notice that interpolation was not used for these options, since the table values are close to the 245,000 Btu/hr carried by that section.

- (6) The total pressure drop is the sum of the section approaching A, Section 1, and Section 3, or either of the following, depending on whether an absolute minimum is required or the larger drop can be accommodated.

Minimum Pressure Drop to farthest appliance:

$$\Delta H = 0.06 + 0.02 + 0.06 = 0.14 \text{ in.w.c.}$$

Larger Pressure Drop to the farthest appliance:

$$\Delta H = 0.06 + 0.06 + 0.3 = 0.42 \text{ in.w.c.}$$

For SI units, 1 Btu/hr = 0.293 W, 1 ft³ = 0.028 m³, 1 ft = 0.305 m, 1 in. w.c. = 249 Pa.

Annex C

Suggested Method for Checking for Leakage

This annex is not a part of the requirements of this code but is included for informational purposes only.

C.1 Use of Lights. Artificial illumination used in connection with a search for gas leakage should be restricted to battery-operated flashlights (preferably of the safety type) or approved safety lamps. In searching for leaks, electric switches should not be operated. If electric lights are already turned on, they should not be turned off.

C.2 Leak Check Using the Gas Meter. Immediately prior to the leak check, it should be determined that the meter is in operating condition and has not been bypassed.

The leak check can be done by carefully watching the test dial of the meter to determine whether gas is passing through the meter. To assist in observing any movement of the test hand, wet a small piece of paper and paste its edge directly over the centerline of the hand as soon as the gas is turned on. This observation should be made with the test hand on the upstroke. Table C.2 can be used for determining the length of observation time.

Table C.2 Observation Times for Various Meter Dials

Dial Styles (ft ³)	Test Time (min.)
¼	5
½	5
1	7
2	10
5	20
10	30

For SI units, 1 ft³ = 0.028 m³

In case careful observation of the test hand for a sufficient length of time reveals no movement, the piping should be purged and a small gas burner turned on and lighted and the hand of the test dial again observed. If the dial hand moves (as it should), it will show that the meter is operating properly. If the test hand does not move or register flow of gas through the meter to the small burner, the meter is defective and the gas should be shut off and the serving gas supplier notified.

C.3 Leak check not Using a Meter. The leak check can be done by one of the following methods:

- (1) *For Any Gas System.*
 - (a) Attach a manometer or pressure gauge between the inlet to the piping system and the first regulator in the piping system, momentarily turn on the gas supply, and observe the gauging device for pressure drop with the gas supply shut off. No discernible drop in pressure should occur during a period of 3 minutes.
 - (b) Attach an in-line flow meter between the meter outlet and piping system inlet prior to the first regulator in the piping system. Slowly turn on the gas supply and observe the metering device. If flow does not drop to zero, leakage is indicated.
- (2) *For Gas Systems Using Undiluted LP-Gas: System Preparation for Propane.* A leak check performed on an LP-Gas system being placed back in service may be performed using one of the following methods:
 - (a) Insert a pressure gauge between the container gas shutoff valve and the first-stage regulator or integral two-stage regulator in the system, admitting full container pressure to the system and then closing the container shutoff valve. Enough gas should then be released from the system to lower the pressure gauge reading by 10 psi (69 kPa). The system should then be allowed to stand for 3 minutes without showing an increase or a decrease in the pressure gauge reading.
 - (b) Insert a gauge/regulator test assembly between the container gas shutoff valve and first-stage regulator or integral two-stage regulator in the system. If a gauge/regulator test assembly with an inches water column gauge is inserted, follow the test requirements in C.3(2)(c); if a gauge/regulator test assembly with a 30 psi gauge is inserted, follow the test requirements in C.3(2)(d).