

## CHAPTER 18

# CHIMNEYS AND VENTS

### SECTION M1801 GENERAL

**M1801.1 Venting required.** Fuel-burning appliances shall be vented to the outdoors in accordance with their listing and label and manufacturer's installation instructions except appliances listed and labeled for unvented use. Venting systems shall consist of approved chimneys or vents, or venting assemblies that are integral parts of labeled appliances. Gas-fired appliances shall be vented in accordance with Chapter 24.

**M1801.1.1 Enclosing of venting systems.** Portions of venting systems which extend through occupied spaces or storage spaces shall be enclosed to avoid personal contact with or damage to the vent.

**M1801.2 Draft requirements.** A venting system shall satisfy the draft requirements of the appliance in accordance with the manufacturer's installation instructions, and shall be constructed and installed to develop a positive flow to convey combustion products to the outside atmosphere.

**M1801.3 Existing chimneys and vents.** Where an appliance is permanently disconnected from an existing chimney or vent, or where an appliance is connected to an existing chimney or vent during the process of a new installation, the chimney or vent shall comply with Sections M1801.3.1 through M1801.3.4.

**M1801.3.1 Size.** The chimney or vent shall be resized as necessary to control flue gas condensation in the interior of the chimney or vent and to provide the appliance, or appliances served, with the required draft. For the venting of oil-fired appliances to masonry chimneys, the resizing shall be done in accordance with NFPA 31.

**M1801.3.2 Flue passageways.** The flue gas passageway shall be free of obstructions and combustible deposits and shall be cleaned if previously used for venting a solid- or liquid-fuel-burning appliance or fireplace. The flue liner, chimney inner wall or vent inner wall shall be continuous and free of cracks, gaps, perforations, or other damage or deterioration that would allow the escape of combustion products, including gases, moisture and creosote.

**M1801.3.3 Cleanout.** Masonry chimneys shall be provided with a cleanout opening complying with Section R1001.14.

**M1801.3.4 Clearances.** Chimneys and vents shall have air-space clearance to combustibles in accordance with this code and the chimney or vent manufacturer's installation instructions.

**Exception:** Masonry chimneys equipped with a chimney lining system tested and listed for installation in chimneys in contact with combustibles in accordance with UL 1777, and installed in accordance with the manufacturer's instruction, shall not be required to have a clearance between combustible materials and exterior surfaces of the masonry chimney. Noncombustible

firestopping shall be provided in accordance with this code.

**M1801.4 Space around lining.** The space surrounding a flue lining system or other vent installed within a masonry chimney shall not be used to vent any other appliance. This shall not prevent the installation of a separate flue lining in accordance with the manufacturer's installation instructions and this code.

**M1801.5 Mechanical draft systems.** A mechanical draft system shall be used only with appliances listed and labeled for such use. Provisions shall be made to prevent the flow of fuel to the equipment when the draft system is not operating. Forced draft systems and all portions of induced draft systems under positive pressure during operation shall be designed and installed to prevent leakage of flue gases into a building.

**M1801.6 Direct-vent appliances.** Direct-vent appliances shall be installed in accordance with the manufacturer's installation instructions.

**M1801.7 Support.** Venting systems shall be adequately supported for the weight of the material used.

**M1801.8 Duct penetrations.** Chimneys, vents and vent connectors shall not extend into or through supply and return air ducts or plenums.

**M1801.9 Fireblocking.** Vent and chimney installations shall be fireblocked in accordance with Section R602.8.

**M1801.10 Unused openings.** Unused openings in any venting system shall be closed or capped.

**M1801.11 Multiple-appliance venting systems.** Two or more listed and labeled appliances connected to a common natural draft venting system shall comply with the following requirements:

1. Appliances that are connected to common venting systems shall be located on the same floor of the dwelling.

**Exception:** Engineered systems as provided for in Section G2427.

2. Inlets to common venting systems shall be offset such that no portion of an inlet is opposite another inlet.
3. Connectors serving appliances operating under a natural draft shall not be connected to any portion of a mechanical draft system operating under positive pressure.

**M1801.12 Multiple solid fuel prohibited.** A solid-fuel-burning appliance or fireplace shall not connect to a chimney passageway venting another appliance.

### SECTION M1802 VENT COMPONENTS

**M1802.1 Draft hoods.** Draft hoods shall be located in the same room or space as the combustion air openings for the appliances.

**M1802.2 Vent dampers.** Vent dampers shall comply with Sections M1802.2.1 and M1802.2.2.

**M1802.2.1 Manually operated.** Manually operated dampers shall not be installed except in connectors or chimneys serving solid-fuel-burning appliances.

**M1802.2.2 Automatically operated.** Automatically operated dampers shall conform to UL 17 and be installed in accordance with the terms of their listing and label. The installation shall prevent firing of the burner when the damper is not opened to a safe position.

**M1802.3 Draft regulators.** Draft regulators shall be provided for oil-fired appliances that must be connected to a chimney. Draft regulators provided for solid-fuel-burning appliances to reduce draft intensity shall be installed and set in accordance with the manufacturer’s installation instructions.

**M1802.3.1 Location.** Where required, draft regulators shall be installed in the same room or enclosure as the appliance so that no difference in pressure will exist between the air at the regulator and the combustion air supply.

**SECTION M1803  
CHIMNEY AND VENT CONNECTORS**

**M1803.1 General.** Connectors shall be used to connect fuel-burning appliances to a vertical chimney or vent except where the chimney or vent is attached directly to the appliance.

**M1803.2 Connectors for oil and solid fuel appliances.** Connectors for oil and solid-fuel-burning appliances shall be constructed of factory-built chimney material, Type L vent material or single-wall metal pipe having resistance to corrosion and heat and thickness not less than that of galvanized steel as specified in Table M1803.2.

**TABLE M1803.2  
THICKNESS FOR SINGLE-WALL METAL PIPE CONNECTORS**

DIAMETER OF CONNECTOR (inches)	GALVANIZED SHEET METAL GAGE NUMBER	MINIMUM THICKNESS (inch)
Less than 6	26	0.019
6 to 10	24	0.024
Over 10 through 16	22	0.029

For SI: 1 inch = 25.4 mm.

**M1803.3 Installation.** Vent and chimney connectors shall be installed in accordance with the manufacturer’s installation instructions and within the space where the appliance is located. Appliances shall be located as close as practical to the vent or chimney. Connectors shall be as short and straight as possible and installed with a slope of not less than 1/4 inch (6 mm) rise per foot of run. Connectors shall be securely supported and joints shall be fastened with sheet metal screws or rivets. Devices that obstruct the flow of flue gases shall not be installed in a connector unless listed and labeled or approved for such installations.

**M1803.3.1 Floor, ceiling and wall penetrations.** A chimney connector or vent connector shall not pass through any floor or ceiling. A chimney connector or vent connector shall not pass through a wall or partition unless the connector is listed and labeled for wall pass-through, or is routed

through a device listed and labeled for wall pass-through and is installed in accordance with the conditions of its listing and label. Connectors for oil-fired appliances listed and labeled for Type L vents, passing through walls or partitions shall be in accordance with the following:

1. Type L vent material for oil appliances shall be installed with not less than listed and labeled clearances to combustible material.
2. Single-wall metal pipe shall be guarded by a ventilated metal thimble not less than 4 inches (102 mm) larger in diameter than the vent connector. A minimum 6 inches (152 mm) of clearance shall be maintained between the thimble and combustibles.

**M1803.3.2 Length.** The horizontal run of an uninsulated connector to a natural draft chimney shall not exceed 75 percent of the height of the vertical portion of the chimney above the connector. The horizontal run of a listed connector to a natural draft chimney shall not exceed 100 percent of the height of the vertical portion of the chimney above the connector.

**M1803.3.3 Size.** A connector shall not be smaller than the flue collar of the appliance.

**Exception:** Where installed in accordance with the appliance manufacturer’s installation instructions.

**M1803.3.4 Clearance.** Connectors shall be installed with clearance to combustibles as set forth in Table M1803.3.4. Reduced clearances to combustible materials shall be in accordance with Table M1306.2 and Figure M1306.1.

**TABLE M1803.3.4  
CHIMNEY AND VENT CONNECTOR CLEARANCES  
TO COMBUSTIBLE MATERIALS<sup>a</sup>**

TYPE OF CONNECTOR	MINIMUM CLEARANCE (inches)
Single-wall metal pipe connectors:	
Oil and solid-fuel appliances	18
Oil appliances listed for use with Type L vents	9
Type L vent piping connectors:	
Oil and solid-fuel appliances	9
Oil appliances listed for use with Type L vents	3 <sup>b</sup>

For SI: 1 inch = 25.4 mm.

- a. These minimum clearances apply to unlisted single-wall chimney and vent connectors. Reduction of required clearances is permitted as in Table M1306.2.
- b. When listed Type L vent piping is used, the clearance shall be in accordance with the vent listing.

**M1803.3.5 Access.** The entire length of a connector shall be accessible for inspection, cleaning and replacement.

**M1803.4 Connection to fireplace flue.** Connection of appliances to chimney flues serving fireplaces shall comply with Sections M1803.4.1 through M1803.4.4.

**M1803.4.1 Closure and accessibility.** A noncombustible seal shall be provided below the point of connection to prevent entry of room air into the flue. Means shall be provided for access to the flue for inspection and cleaning.

**M1803.4.2 Connection to factory-built fireplace flue.** A different appliance shall not be connected to a flue serving a factory-built fireplace unless the appliance is specifically listed for such an installation. The connection shall be made in conformance with the appliance manufacturer’s instructions.

**M1803.4.3 Connection to masonry fireplace flue.** A connector shall extend from the appliance to the flue serving a masonry fireplace to convey the flue gases directly into the flue. The connector shall be accessible or removable for inspection and cleaning of both the connector and the flue. Listed direct-connection devices shall be installed in accordance with their listing.

**M1803.4.4 Size of flue.** The size of the fireplace flue shall be in accordance with Section M1805.3.1.

**SECTION M1804  
VENTS**

**M1804.1 Type of vent required.** Appliances shall be provided with a listed and labeled venting system as set forth in Table M1804.1.

**TABLE M1804.1  
VENT SELECTION CHART**

VENT TYPES	APPLIANCE TYPES
Type L oil vents	Oil-burning appliances listed and labeled for venting with Type L vents
Pellet vents	Pellet fuel-burning appliances listed and labeled for use with pellet vents

**M1804.2 Termination.** Vent termination shall comply with Sections M1804.2.1 through M1804.2.6.

**M1804.2.1 Through the roof.** Vents passing through a roof shall extend through flashing and terminate in accordance with the manufacturer’s installation requirements.

**M1804.2.2 Decorative shrouds.** Decorative shrouds shall not be installed at the termination of vents except where the shrouds are listed and labeled for use with the specific venting system and are installed in accordance with the manufacturer’s installation instructions.

**M1804.2.3 Natural draft appliances.** Vents for natural draft appliances shall terminate at least 5 feet (1524 mm) above the highest connected appliance outlet, and natural draft gas vents serving wall furnaces shall terminate at an elevation at least 12 feet (3658 mm) above the bottom of the furnace.

**M1804.2.4 Type L vent.** Type L venting systems shall conform to UL 641 and shall terminate with a listed and labeled cap in accordance with the vent manufacturer’s installation instructions not less than 2 feet (610 mm) above the roof and not less than 2 feet (610 mm) above any portion of the building within 10 feet (3048 mm).

**M1804.2.5 Direct vent terminations.** Vent terminals for direct-vent appliances shall be installed in accordance with the manufacturer’s installation instructions.

**M1804.2.6 Mechanical draft systems.** Mechanical draft systems shall be installed in accordance with their listing, the manufacturer’s installation instructions and, except for direct vent appliances, the following requirements:

1. The vent terminal shall be located not less than 3 feet (914 mm) above a forced air inlet located within 10 feet (3048 mm).
2. The vent terminal shall be located not less than 4 feet (1219 mm) below, 4 feet (1219 mm) horizontally from, or 1 foot (305 mm) above any door, window or gravity air inlet into a dwelling.
3. The vent termination point shall not be located closer than 3 feet (914 mm) to an interior corner formed by two walls perpendicular to each other.
4. The bottom of the vent terminal shall be located at least 12 inches (305 mm) above finished ground level.
5. The vent termination shall not be mounted directly above or within 3 feet (914 mm) horizontally of an oil tank vent or gas meter.
6. Power exhauster terminations shall be located not less than 10 feet (3048 mm) from lot lines and adjacent buildings.
7. The discharge shall be directed away from the building.

**M1804.3 Installation.** Type L and pellet vents shall be installed in accordance with the terms of their listing and label and the manufacturer’s installation instructions.

**M1804.3.1 Size of single-appliance venting systems.** An individual vent for a single appliance shall have a cross-sectional area equal to or greater than the area of the connector to the appliance, but not less than 7 square inches (4515 mm<sup>2</sup>) except where the vent is an integral part of a listed and labeled appliance.

**M1804.3.2 Size of multiple-appliance venting systems.** Two or more listed and labeled appliances connected to a common natural draft venting system shall comply with the following requirements:

1. Appliances which are connected to common venting systems shall be located on the same floor of the dwelling.

**Exception:** Engineered systems

2. Inlets to common venting systems shall be offset such that no portion of an inlet is opposite another inlet.
3. Connectors serving appliances operating under natural draft shall not be connected into any portion of a mechanical draft system operating under positive pressure.
4. Unless listed and labeled for such connection, solid fuel-burning appliances shall not be connected to a vent serving appliances burning other fuels.
5. When two or more vent connectors enter a common vent, the smaller connector shall enter at the highest level consistent with the available headroom and clearance to combustible material.

6. Automatically controlled gas appliances connected to a chimney which also serves equipment burning liquid fuel shall be equipped with an automatic pilot. A gas appliance vent connector and a chimney connector from an appliance burning liquid fuel may be connected into the same chimney through separate openings provided the gas appliance is vented above the liquid-fuel-burning appliance or both may be connected through a single opening if joined by a suitable fitting located at the chimney.

**M1804.3.2.1 Multiple appliance venting.** Existing lined masonry chimneys and unlined chimneys with not more than one side exposed to the outside may be used to common vent oil and gas appliances equipped with draft hoods, provided:

1. An approved liner shall be installed in an existing unlined masonry chimney when deemed necessary by the building official considering local problems of vent gas condensate.
2. The effective cross-sectional area is not more than four times the cross-sectional area of the vent and chimney connectors entering the chimney.
3. The effective area of the chimney when connected to more than one appliance shall not be less than the area of the largest vent or chimney connector plus 50 percent of the area of the additional vent or chimney connectors.
4. Automatically controlled gas appliances connected to a chimney which also serves equipment burning liquid fuel shall be equipped with an automatic pilot. A gas appliance vent connector and a chimney connector from an appliance burning liquid fuel may be connected into the same chimney through separate openings, provided the gas appliance is vented above the liquid-fuel-burning appliance, or both may be connected through a single opening if joined by a suitable fitting located at the chimney.
5. The chimney passageway shall comply with Section M1801.3.2..
6. The vent or chimney connector shall enter the chimney at least 6 inches (153 mm) from the bottom of the chimney. The chimney shall be provided with a cleanout. If 6 inches (153 mm) are not available, a cleanout shall be provided by installing a capped tee in the vent connector next to the chimney.

Unlined chimneys with more than one side exposed to the outside shall be lined with an approved liner unless otherwise approved by the building official.

When inspection reveals that an existing chimney is not safe for the intended application, it shall be rebuilt to conform to chimney standards in Chapter 10 or replaced with an approved factory-built chimney.

## SECTION M1805 MASONRY AND FACTORY-BUILT CHIMNEYS

**M1805.1 General.** Masonry and factory-built chimneys shall be built and installed in accordance with Sections R1003 and R1005, respectively. Flue lining for masonry chimneys shall comply with Section R1003.11.

**M1805.2 Masonry chimney connection.** A chimney connector shall enter a masonry chimney not less than 6 inches (152 mm) above the bottom of the chimney. Where it is not possible to locate the connector entry at least 6 inches (152 mm) above the bottom of the chimney flue, a cleanout shall be provided by installing a capped tee in the connector next to the chimney. A connector entering a masonry chimney shall extend through, but not beyond, the wall and shall be flush with the inner face of the liner. Connectors, or thimbles where used, shall be firmly cemented into the masonry.

**M1805.3 Size of chimney flues.** The effective area of a natural draft chimney flue for one appliance shall be not less than the area of the connector to the appliance. The area of chimney flues connected to more than one appliance shall be not less than the area of the largest connector plus 50 percent of the areas of additional chimney connectors.

**Exception:** Chimney flues serving oil-fired appliances sized in accordance with NFPA 31.

**M1805.3.1 Size of chimney flue for solid-fuel appliance.** Except where otherwise specified in the manufacturer's installation instructions, the cross-sectional area of a flue connected to a solid-fuel-burning appliance shall be not less than the area of the flue collar or connector, and not larger than three times the area of the flue collar.