

## CHAPTER 10

# BOILERS, WATER HEATERS AND PRESSURE VESSELS

### SECTION 1001 GENERAL

**1001.1 Scope.** The purpose of this chapter is to establish and provide minimum standards for the protection of the public welfare, health and safety, and property by regulating and controlling the location of steam and hot-water boilers, water heaters and pressure vessels. Boilers and pressure vessels and their related piping are regulated by the Oregon Boiler and Pressure Vessel Law.

### SECTION 1002 WATER HEATERS

**1002.1 General.** Potable water heaters and hot water storage tanks shall be listed and labeled and installed in accordance with the manufacturer's installation instructions, the *Plumbing Code* and this code. All water heaters shall be capable of being removed without first removing a permanent portion of the building structure. The potable water connections and relief valves for all water heaters shall conform to the requirements of the *Plumbing Code*.

**1002.2 Water heaters utilized for space heating.** Water heaters utilized both to supply potable hot water and provide hot water for space-heating applications shall be listed and labeled for such applications by the manufacturer and shall be installed in accordance with the manufacturer's installation instructions and the *Plumbing Code*.

**1002.2.1 Sizing.** Water heaters utilized for both potable water heating and space-heating applications shall be sized to prevent the space-heating load from diminishing the required potable water-heating capacity.

**1002.2.2 Scald protection.** Where a combination potable water-heating and space-heating system requires water for space heating at temperatures higher than 140°F (60°C), a tempering valve shall be provided to temper the water supplied to the potable hot water distribution system to a temperature of 140°F (60°C) or less.

**1002.3 Supplemental water-heating devices.** Potable water-heating devices that utilize refrigerant-to-water heat exchangers shall be approved and installed in accordance with the *Plumbing Code* and the manufacturer's installation instructions.

### SECTION 1003 PRESSURE VESSELS

**1003.1 Scope.** The requirements of this section shall apply to the boiler rooms, combustion air, chimneys and vents, and fuel piping related to the construction, installation, repair and alter-

ation of rooms for the installation of boilers and pressure vessels.

**1003.2 Workmanship.** All equipment, appurtenances, devices and piping shall be installed in a workmanlike manner conforming to provisions and intent of this chapter.

### SECTION 1004 DEFINITIONS

**1004.1 Definitions.** Certain words and terms used in this chapter, unless clearly inconsistent with their context, shall mean as follows:

**BOILER** is as defined in ORS 480.515(2).

ORS 480.515(2) is not a part of this code but is reproduced here for the reader's convenience:

480.515 Definitions for ORS 480.510 to 480.670.

(2) "Boiler" or "boilers" means:

- (a) A closed vessel or vessels intended for the heating or vaporizing of liquids to be used externally to such vessel or vessels by the application of heat from combustible fuels, electricity or nuclear energy;
- (b) Related appurtenances including but not limited to pressure piping directly connected and related to the safe operation of a boiler; and
- (c) Pressure piping consisting of boiler or nonboiler external piping connected to a boiler, but not potable water nonboiler external piping.

**DOMESTIC WATER HEATER** is defined in ORS 480.525(1)(b).

ORS 480.525(1)(b) is not a part of this code but is reproduced here for the reader's convenience:

480.525 Exempt vessels.

(1)(b) Domestic water heaters designed for heating potable water, equipped with an approved pressure-relieving device, containing only water and that do not exceed:

- (A) Capacity of 120 gallons;
- (B) Water temperature of 210 degrees Fahrenheit;
- (C) Pressure of 150 pounds per square inch gauge pressure; or
- (D) Heat input of 200,000 BTU per hour.

### SECTION 1005 PERMITS REQUIRED

**1005.1 Permits.** It shall be unlawful to install any boiler or pressure vessel regulated by this code without first obtaining a permit to do so, from the building official and an installation permit from the Oregon Building Codes Division, Boiler and Pressure Vessel Program.

### SECTION 1006 DETAILED REQUIREMENTS

**1006.1 Safety requirements.** The installation of all boilers and pressure vessels shall conform to the minimum requirements for safety established by this code.

**1006.2 Stack dampers.** Stack dampers on boilers fired with oil or solid fuel shall not close more than 80 percent of the stack area when closed, except on automatic boilers with prepurge, automatic draft control and interlock. Operative dampers shall not be placed within any stack, flue or vent of a gas-fired boiler, except on an automatic boiler with prepurge, automatic draft control and interlock.

### SECTION 1007 EXPANSION TANKS

**1007.1 Expansion tanks.** All water heating systems provided with an air expansion tank shall be securely fastened to the structure; supports shall be adequate to carry twice the weight of the tank filled with water without placing any strain on connecting piping

All water heating systems incorporating hot-water tanks or fluid relief columns shall be installed to prevent freezing under normal operating conditions.

### SECTION 1008 SAFETY OR RELIEF VALVE DISCHARGE

**1008.1 General.** The discharge from relief valves shall be piped to within 18 inches (457 mm) of the floor or to an open receptacle, and when the operating temperature is in excess of 212 F (100 C), shall be equipped with a splash shield or centrifugal separator. When the discharge from safety valves would result in a hazardous discharge of steam inside the boiler room, such discharge shall be extended outside the boiler room. No valve of any description shall be placed between the safety valve and the atmosphere.

### SECTION 1009 GAS-PRESSURE REGULATORS

**1009.1 General.** An approved gas-pressure regulator shall be installed on gas-fired boilers where the gas supply pressure is higher than that at which the main burner is designed to operate. A separate approved gas-pressure regulator shall be installed to regulate the gas pressure to the pilot or pilots. A separate regulator shall not be required for the pilot or pilots on manufacturer-assembled boiler-burner units that have been approved by the building official and on gas-fired boilers in

Group R occupancies of less than six units and in Group M occupancies.

### SECTION 1010 CLEARANCE FOR ACCESS

**1010.1 Access.** When boilers are installed or replaced, clearance shall be provided to allow access for inspection, maintenance and repair, and passageways shall have an unobstructed width of not less than 18 inches (457 mm). Clearance for repair and cleaning may be provided through a door or access panel into another area, provided the opening is of sufficient size.

Package boilers, miniature boilers, low-pressure boilers and hot-water supply boilers with no manhole on top of the shell shall have a minimum clearance of 2 feet (610 mm) from the ceiling.

### SECTION 1011 BOILER ROOM ENCLOSURES

**1011.1 Boiler rooms.** Boiler rooms and enclosures and access thereto shall comply with Chapter 3 of this code and the *Building Code*.

### SECTION 1012 FLOORS

**1012.1 General.** Boilers shall be mounted on floors of noncombustible construction unless listed for mounting on combustible floors. The floor and related structural supports shall be designed as required in the *Building Code* to carry the loads imposed by the boiler and appurtenances.

### SECTION 1013 CHIMNEYS OR VENTS

**1013.1 General.** When required, boilers shall be connected to a chimney or vent as provided for other fuel-burning equipment in Chapter 8 of this code.

### SECTION 1014 DRAINAGE

**1014.1 Drains.** The boiler room shall have an approved floor drain or equivalent means for disposing of accumulation of liquid wastes incidental to cleaning or recharging.

### SECTION 1015 FUEL SUPPLY PIPING

**1015.1 Piping.** Fuel supply piping shall conform to Chapter 13, Appendix C or the standards cited in Chapter 15, Referenced Standards.

### SECTION 1016 AIR FOR COMBUSTION AND VENTILATION

**1016.1 General.** Air for combustion and ventilation shall be according to Chapter 7 or Appendix C of this code.

**SECTION 1017  
STEAM AND WATER PIPING**

**NOTE:** Boilers and pressure vessels and related piping are regulated by the state of Oregon Boiler and Pressure Vessel Law (ORS 480.510 to 480.670).

**1017.1 General.** Steam piping is regulated according to and under the jurisdiction of the Oregon Boiler and Pressure Vessel Law and related administrative rules and the jurisdiction of Oregon Building Codes Division, Boiler and Pressure Vessel Program. Water piping for hot-water heating systems and hydronics shall be installed according to Chapter 12.

