

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 where applicable in 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 Temperature limitation. Where a combination potable water-heating and space-heating system requires water for space heating at temperatures higher than 140°F (60°C), a temperature actuated mixing valve that conforms to ASSE 1017 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 workman like 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. 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. As 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 from the local 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. Valves are prohibited 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 which have been approved by the building official and on gas-fired boilers in Group R occupancies of less than six units and in Group U 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 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 in accordance with Chapter 8 for oil or wood and Appendix C for fuel gas installations.

**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 installed in accordance with Chapter 7 or Appendix C of this code.

**SECTION 1017
STEAM AND HOT 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 under the jurisdiction of the *Oregon Boiler and Pressure Vessel Law* and related

administrative rules and is under the jurisdiction of Oregon Building Codes Division, Boiler and Pressure Vessel Program.

1017.1.1 Hot water piping systems. Water *piping* used for hot-water heating systems and hydronics shall be installed in accordance with the Chapter 12 of this code.

