DOMESTIC HOT WATER HEATERS

GENERAL DESCRIPTION

1. GENERAL

1.01 This section describes the following types of domestic hot water heaters and their controls:

- Gas fired
- Oil fired
- Electric fired.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 The recommendations contained in this section are minimum requirements. Other codes having jurisdiction will apply if they are more stringent. Engineering judgment, based on a specific job, may dictate more stringent requirements.

2. DESCRIPTION

2.01 Domestic hot water heaters are hot water supply boilers with a heat input of less than 200 MBh (1000 British thermal units [BTUs] per hour), a water temperature of 210°F or less, or a nominal water storage capacity of 120 gallons or less.

2.02 Oil- and gas-fired hot water heaters require flues to carry away gases and products of combustion. Follow the manufacturer's instructions for flue and combustion air intake sizing.

2.03 For information on the safety relief valves for hot water heaters, see Section 760-530-112*.

2.04 Dip tubes are connected to the cold water inlet connection. They direct the cold water to the bottom of the hot water heater to avoid short circuiting to the leaving hot water connection on the top of the tank. The deforming temperature of plastic dip tubes must exceed 400°F.

A. Gas-Fired Hot Water Heater

2.05 Gas-fired hot water heaters shall conform to American National Standard Institute (ANSI) Standard Z 21.10.1 or Z 21.10.3 and shall have the following controls:

(a) ***Operating Control:*** This control shall sense the temperature of the water and maintain it within the preselected range. It is recommended that the selected range be 100°F to 110° F. When the temperature of the water reaches 110°F, this control stops the flow of gas to the burner and will recycle when the water temperature reaches 100°F.

(b) ***High-Limit Control:*** This control will shut off the main gas and pilot when the water temperature reaches a preselected level, usually 160°F. If the hot water heater is rated over 75 MBh, the usual shutdown temperature is 180°F. This control requires manual reset after the water temperature drops to a lower value. Some of the newer model high-limit controls will require a control replacement, if it is a nonresetting-type control. After the control has been reset or replaced, the pilot can be relighted. The sensing element shall be of the immersion type and located in the top of the tank or in the side within 6 inches of the top of the tank. The operating elements of this high-limit control must be separate from the operating control, although they can be within the same enclosure.

B. Oil-Fired Hot Water Heater

2.06 Oil-fired hot water heaters shall conform to Underwriter's Laboratories (UL) 732 and shall have the following controls:

(a) ***Operating Control:*** This control shall sense the temperature of the water and maintain it within the preselected range. It is recommended that the preselected range be 100°F to 110°F. When the temperature of the water reaches 110°F, this control shuts down the oil burner. This control will recycle when the water temperature reaches 100°F.

(b) ***High-Limit Control:*** This control will shut down the oil burner when the water tempera-

* Check Divisional Index 760 for availability.

ture reaches 210°F. This control requires manual reset after the water temperature drops to a lower value. The sensing element shall be of the immersion type and sense the water temperature within 6 inches of the top of the tank. The operating elements of this high-limit control must be separate from the operating control, although they can be within the same enclosure.

C. Electric-Fired Hot Water Heater

2.07 Electric-fired hot water heaters shall conform to the National Electric Code, Article 422-14 and shall have the following controls:

(a) ***Operating Control:*** This control shall sense the temperature of the water and maintain it within the preselected range. It is recommended that the preselected range be 100°F to 110°F. When the temperature of the water reaches 110°F, the control de-energizes the electric heating element. This control will recycle when the water reaches 100°F.

(b) ***High-Limit Control:*** This control, the setting of which is factory set, will de-energize all the electric heating elements when it reaches a temperature of 210°F. This control requires manual reset after the water temperature drops to a lower value. The sensing element shall be of the immersion type and sense the water temperature within 6 inches of the top of the tank. The operating elements of this high-limit control must be separate from the operating control, although they can be within the same enclosure.