

HOT WATER BOILERS

GENERAL DESCRIPTION

1. GENERAL

1.01 This section describes the controls and subordinate parts required on hot water boilers. Each hot water boiler, whether it is cast iron, steel fire tube, or steel water tube, shall have the controls and subordinate parts described in this section (See Fig. 1.)

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. Refer to Section 760-530-108* for additional information.

1.04 The controls, valves, and subordinate parts described in this section shall be manufactured in conformance with American Society of Mechanical Engineers (ASME), Section IV, and equipped to meet American Gas Association (AGA) American National Standard Institute (ANSI) Standard Z21.13 and Underwriter's Laboratories (UL) Standard 726.

1.05 Any hot water supply boiler, which is directly fired with oil, gas, or electricity, shall be treated as a low-pressure hot water heating boiler, if:

- Heat input exceeds 200 MBh (1000 British thermal units [BTUs] per hour)
- Water temperature exceeds 210°F
- Nominal water containing capacity exceeds 120 gallons.

2. DESCRIPTION

2.01 The *operating temperature control* shall be connected to the boiler shell using a separable well socket.

2.02 The *high temperature limit control* shall be connected to the boiler shell using a separable well socket.

2.03 The *feed water pressure regulator* shall be connected to the compression tank equalizing line of the hot water boiler. This regulator shall be adjusted to maintain design pressure on the hot water heating system. The antisiphon device or back-flow preventer is installed on water supply piping to prevent contamination of potable water supplies. Refer to local codes.

2.04 The *low water limit control* shall be installed in the supply piping between the boiler and king valve. If there is insufficient clearance it may be installed on the boiler shell.

2.05 The *pressure or altitude gauge* shall be connected to the boiler shell with a 1/4-inch National Pipe Thread (NPT) gauge cock.

2.06 The *king valve* (main shutoff valve) shall be connected to the boiler shell with as short a section of pipe as practical to permit installation of the low water limit control. The valve shall be a rising stem gate valve. If the valve is not operable by hand from the floor or platform, provide a chain operator.

2.07 The *safety relief valve* shall be connected to the shell of the boiler on the top or side, but in no case shall the valve be located on the boiler below the lowest permissible water level. The valve shall be connected by the use of flanges.

2.08 The *boiler return valve* shall be connected to the boiler shell with as short a section of pipe as practical. The valve shall be a rising stem gate valve.

2.09 The *boiler drain valve* shall be connected to the bottom of the boiler and shall be fitted with a discharge pipe directed towards a floor or funnel drain. A sufficient number of drain valves shall be installed to assure proper flushing of the boiler.

2.10 The *control drain valve* shall be connected to the bottom of the low water limit control

* Check Divisional Index 760 for availability.

below the water-equalizing connection and shall be fitted with a discharge pipe directed towards a floor or funnel drain.

2.11 The *low water limit control test and check valves* may be installed on hot water boilers for convenience of testing this control. This will conserve time and hot water on boilers where this testing is difficult and time consuming. When the control drain valve is opened, these valves severely restrict the flow of water to the control permitting it to be drained rapidly and actuate the control.

2.12 The *thermometer* shall be installed in the shell of the boiler using a separable well socket. It shall be located so it is easily readable while observing the pressure or altitude gauge.

2.13 The *air control fitting* shall be connected to the boiler at the main supply pipe connection with the equalizer line pitching upwards to the compression tank. If there are sufficient boiler tappings on top, the air control fitting may be connected directly to the shell with the equalizer line pitching upwards to the compression tank.

2.14 The *compression tank* shall be installed above the boiler whenever possible. The tank shall be ASME pressure tested for the safety relief valve pressure setting. The use of an air control fitting at the equalizer line connection to the compression tank is recommended. If a gauge glass is provided on the tank, it should be fitted with top and bottom shutoff valves.

2.15 The *circulating pump* shall be installed in the supply line to the heating system. It may be controlled by a space thermostat which starts the pump through a motor starter. In smaller multizone systems, the space thermostat opens its zone valve. When the zone valve is fully open, it closes a switch which starts the circulating pump. On large systems the circulating pump may run constantly, pumping water through a loop. Local modulating valves circulate the water through duct coils, finned-tube radiation, or unit heaters. Circulating pumps are generally centrifugal pumps.

2.16 The *flame safeguard controls and fuel train* (valves, controls, and subordinate parts) to be installed are described in Section 760-530-110.*

* Check Divisional Index 760 for availability.

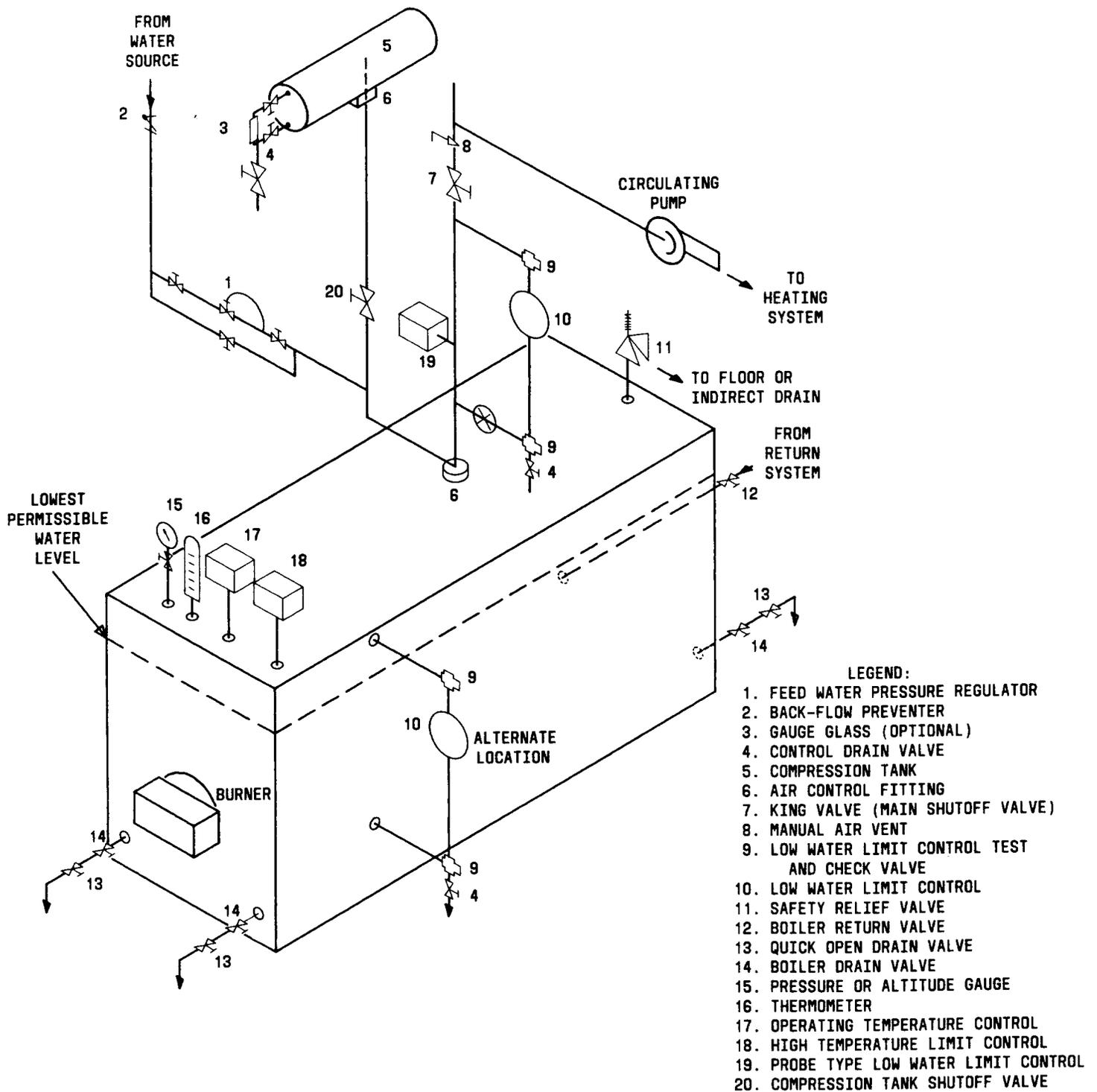


Fig. 1—Hot Water Boiler