

less than 35 ft. in height with no linings, the internal dimensions should be at least 8 x 12 in. up to 790 sq. in. of leader area, and at least 12 x 12 in. for leader capacities up to 1,000 sq. in. Chimneys under 35 ft. in height are unsatisfactory in operation and hence should be avoided.

SMOKE TEST

The chimney flue must be smoke tight and shall be subjected to a smoke test by the mason contractor in the presence of the architect or his representative, after the mortar has thoroughly hardened.

The method of conducting this test shall be as follows: With a good fire in the boiler or furnace, or in the base of the chimney, put about a square yard of tar paper on the fire. As soon as smoke appears at the top of the chimney close the top of the flue with a piece of old carpet or wet newspapers held down by a weighted board. Keep the tar paper burning in the firepot for five minutes. The architect or his representative shall sign an acceptance in triplicate, stating that the chimney was tight under the foregoing test, and shall give one copy to the mason contractor, one copy to the heating contractor and one copy to the owner.

CHAPTER 15

BOILERS FOR STEAM AND HOT WATER HEATING

Duty of Boiler; Boiler Selection; Boiler Ratings; Types of Boilers; Boiler Troubles; Operating Conditions; Burning Anthracite and Bituminous Coal; Pick-up Load; Hot Water Supply Boilers.

THE function of a boiler is to deliver a specified quantity of heat in the form of dry steam or hot water at its outlet.

If the boiler is equipped with automatic temperature or pressure control, this control should actuate dampers or other means for governing the rate of combustion within certain limits. When equipped with devices intended to accomplish a definite combustion result, as, for example, to burn bituminous coal smokelessly, the boilers should accomplish this without undue attention.

The most important conditions affecting the operation of the boiler to be met, if it is to accomplish its purpose, are as follows:

1. There must be a chimney or other means of draft of adequate capacity.
2. The fuel used must be as good as that contemplated when the boiler was selected.
3. The quality of attention and its frequency must equal that contemplated when the boiler was selected.
4. The piping and heat-emitting surfaces connected to the boiler must function properly.
5. The water in the system must be in favorable condition, free from grease and other foreign matter.

BOILER SELECTION

Ordinarily, especially in residence heating and in other small installations, the information upon which the boiler is selected is meager. This information usually covers the heat output of radiators under normal temperatures, the kind of fuel, whether anthracite or bituminous coal, oil or gas, and in a few cases the amount of heat-emitting surface in the piping. Successful selection of a boiler based only upon this information requires good judgment and the boiler usually must be selected large enough to deliver the required quantity of heat under the most adverse conditions of attention, fuel, draft, etc.

A boiler usually is selected from the manufacturer's catalog with a rating 80 to 100 per cent in excess of the manufacturer's rating expressed in equivalent square feet of direct radiation.

The following items taken from the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS CODE OF MINIMUM REQUIREMENTS FOR THE HEATING AND VENTILATION OF BUILDINGS cover information which should be available for intelligent boiler selection: