

As a check on the sizes of hot water mains, Table 60 will give safe sizes for gravity systems fed from roof tanks set not less than 20 ft. from the water line in tanks to the highest fixtures.

TABLE 60. SIZES OF HOT WATER MAINS

Gallons per Maximum Hour	Size of Hot Water Main, Inches
500	2
750	2½
1000	2½
1250	3
1500	3
1750	3½
2000	3½
2500	4
3000	4

CHAPTER VI

STEAM AND HOT WATER HEATING BOILERS

THE boiler is one of the most important parts of any heating system and its selection; as to type, size, rating, capacity, draft requirements, firing periods, kinds of fuel, principles of operation, efficiency and construction, should be made with great care.

TYPES OF BOILERS

Broadly speaking three types of heating boilers are commonly used.

Sectional Boilers, may be of the rectangular pattern with vertical sections, or of the round pattern with horizontal sections. They are usually constructed of cast iron; because of its great resistance to corrosion, pitting, and similar forms of deterioration under average water and atmospheric conditions. They require small amount of floor space and head room and have low water lines. Their water capacity is small and being divided into thin waterways they heat up and steam quickly.

On account of their sectional construction and the usual practice of being shipped knocked down and assembled on the job, they are easily handled through small openings at any stage of construction. Their design also facilitates the removal and replacing of damaged parts as well as an increase or decrease in capacity by the addition or removal of sections. Most sectional boilers are comparatively cheap in first cost but the labor of assembling is a factor which must be considered.

The Fire Tube Boiler, which may be of the horizontal tubular brick set pattern, the horizontal tubular fire box pattern (with or without supplementary brick setting), the vertical tubular brick set pattern or the vertical tubular fire box pattern.

Fire tube boilers are usually constructed of steel, which shows the greatest resistance to splitting, cracking or similar stress due to the expansion and contraction strains of temperature differences of too excessive pressures, or temperature. They are well adapted to oil burning on account of this resistance the wide temperature ranges encountered with this type of fuel. They have large water and steam spaces so that while they may heat up and steam slowly they retain heat and supply steam for comparatively long periods with a receding fire, thus tending to compensate for fluctuations in firing by the fly wheel effect of their water and steam capacities. Their large steam capacity also tends to prevent priming and fluctuation of the water line. They are comparatively steady under sudden and wide variations in load conditions and require little attention on this account. Steel boilers may be built for high or low pressure and are therefore, flexible in converting from one pressure to another.