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CHAPTER 24

UNIT HEATERS AND UNIT VENTILATORS

Definitions; Unit Heaters: Classification, Application, Outlet Velocities, Ratings for Various Types, Location, Temperature, Automatic Control, Piping Connections; Boiler Capacity for Steam Unit Heaters; Unit Ventilators: Ratings, Applications, Location, Exhaust Vents; Window Ventilators

DESCRIPTIONS of heating, cooling, ventilating, humidifying, and dehumidifying systems are given in other chapters. This chapter deals with unit heaters and unit ventilators. Cooling units and unit air conditioners are described in Chapter 25.

Definitions

The generally accepted meaning of the word *unit* in the terms unit heaters, unit ventilators, and unit humidifiers is that of a factory made, encased assembly of the functional elements indicated by its name. Such units can be shipped complete or in sections, so that the only field work necessary is the assembling of the sections, providing proper supports, connecting the unit to sources of heat (or fuel), power and water supply and, if necessary, to vent pipes for combustion gases.

The term *unit heater* denotes an assembly of elements, the principal function of which is heating. The essential elements of a unit heater are a fan and motor, a heater, a housing, and outlet vanes or diffusers.

The term *unit ventilator* denotes an assembly, the principal function of which is to ventilate. It may serve to circulate air within the space, or to introduce air from without the space, or may accomplish both purposes. The essential elements of a unit ventilator are a fan and motor, a heater, a set of dampers, a housing, and outlet vanes or diffusers.

UNIT HEATERS

Classification

The various types of unit heaters which are at present available can usually be classified according to one of the three following methods:

1. *By type of heater.* Under this classification there are three types of heating elements to be considered: (*a*) *the steam or hot water type*, (*b*) *the electric type*, and (*c*) *the direct fired type* which may be *gas*, *oil*, or *coal fired*.

2. *By type of fan.* Under this classification there are two types of fans to be considered: (*a*) the *propeller type*[1] which may be equipped with a horizontal or vertical shaft, and (*b*) the *centrifugal type* which may be designed for *horizontal* or *vertical blow*.

3. *By arrangement of elements.* Under this classification there are two types of heaters to be considered: (*a*) the *draw-through type*, in which the fan draws air through, and (*b*) the *blow-through type*, in which the fan blows air through the heater.

Unit heaters are available in any combination of the three preceding general classifications. For example, the steam or hot water type may be