

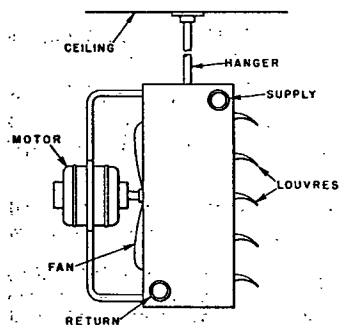


FIG. 1. SUSPENDED UNIT HEATER, PROPELLER TYPE FAN

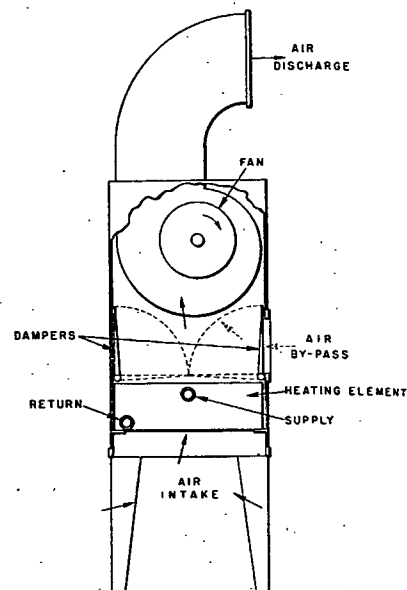


FIG. 2. FLOOR MOUNTED UNIT HEATER, HOUSED TYPE FAN

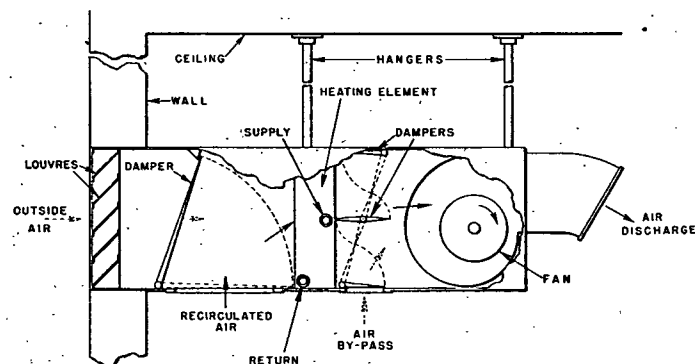


FIG. 3. SUSPENDED TYPE UNIT HEATER, HOUSED TYPE FAN

TYPES OF UNITS

There are two major types of unit heaters, propeller fan type and centrifugal housed fan type. The housed fan, high velocity (1500 to 2500 fpm) discharge units with outlets adjustable to deliver air in several directions, are able to project their heating effect over distance of from 30 ft to as much as 200 ft from the unit. This makes possible the location of these units at considerable distances from each other, thus reducing greatly the piping and loss of floor space due to the heating equipment. Propeller-type units, illustrated in Fig. 1, with outlet velocities of from 300 to 1000 fpm are usually placed from 30 up to 100 ft apart.

Two methods of application of unit heaters are commonly used. Floor mounted units, shown in Fig. 2 are available either with or without the air by-pass, and withdraw the cold air from the floor and discharge the heated air above the working zone. Suspended type units are located in an elevated position withdrawing air from this higher level and discharging the heated air down into the working zone. In closely occupied spaces where direct air drafts into the working zone are not permitted, the floor mounted unit will give more uniform temperature distribution. On the other hand, if opportunity is provided to deliver the heated air from suspended units down into the working zone, excellent temperature distribution is possible. A suspended high-velocity type unit heater connected to an outside air intake with damper to control the volume of ventilation is shown in Fig. 3.

A wide variety of structural designs is available. All employ some form of convactor, supplied with either steam or hot water, although occasionally equipped for gas or electric heat. Air is always forced over these convectors by a fan of either the propeller or centrifugal type. Heating surfaces may be in the form of steel pipe coils, non-ferrous tubes or pipes with extended surfaces, cast iron, and pressed or built up sections of the cartidge or automotive type.

HEATING MEDIUM

The convectors of unit heaters or ventilators may be supplied with either hot water or steam. When water is used, it should be circulated mechanically and the pump rate and friction loss should be based upon test data for the particular unit to be employed. Normally the friction within the convector is too great for gravity circulation. The heat output of a given heater will normally be less when using water than with steam at the same temperature, unless high rates of circulation are maintained.

Either high or low pressure steam may be used but it is essential that proper venting of the air from the coil be obtained at all times. Where unit heaters are used with outside air in freezing climates, a steam pressure of not less than 5 lb at the coil must be maintained due to the possible danger of freezing of condensate in the tubes. It is essential that properly constructed traps and some form of thermostatic air by-pass be used with high pressure steam as well as adequate condensing legs to prevent steam in the returns. Increasing the return temperature tends to increase return line corrosion, especially at points where overheated condensate or steam enters the return line.