

performance will usually represent a compromise between actual load requirements and the rated capacity. Within the range of accuracy of most load calculations, this compromise is not objectionable.

If the condensing unit and cooling and heating coil surfaces are carefully selected, and if proper consideration is given to reduction of piping losses, the performance of the combined system will compare favorably with field assembled apparatus. A system, in which the air handling unit is separated from the condensing unit, is called a remote system, and the conditioning unit is designated as a remote unit. The economical capacities of remote units usually range from 10 to 40 tons.

For applications where load calculations are subject to considerable variance and where close control is not considered essential, further economies of factory assembly can be obtained by combining the air handling and condensing equipment in one unit. This effects another compromise between load calculations and equipment selection, since the capacity of the combined unit is then dependent on the predetermined balance between a particular coil and condensing unit. These combination units are called self-contained units and, under the aptly descriptive name *store conditioners*, find economical application in 3, 5, 7½, 10, and 15 ton refrigeration capacities. These capacities, or limited multiples thereof, meet the load requirements of the majority of small and medium sized commercial establishments. With some modifications, these units can also be adapted to light industrial work.

To meet the requirements of individual comfort in small rooms and offices, where load calculations are subject to the indefinite design condition of *feeling cool*, self-contained units, called room coolers, find extensive and economical application. These units are usually restricted to summer and intermediate season operation, and range from ⅓ to 1½ tons of refrigeration capacity.

A special application of remote units is found in the unit air cooler which is used extensively in refrigeration work. Its primary function is to reduce temperatures in insulated and sealed storage spaces, and humidity control is a secondary consideration. Because of the small temperature differences between the coil and room temperatures, unit coolers handle three to five times as much air per ton as remote units used in air conditioning.

The attic fan completes the range of factory produced units for cooling. As its name implies, it is usually located at the top of a house and arranged to draw cool night air through the house. Its capacity is a function of the air changes per hour necessary to provide appreciable air movement.

COMPONENT PARTS OF UNIT TYPE EQUIPMENT

Units can be obtained for producing any of the required effects on air. As they function most satisfactorily when doing the work for which they were designed, field modifications are usually inadvisable because of expense involved as well as the possibility of causing unexpected difficulties in operation. The basic design considerations of unitary equipment follow.

Remote Units. Remote units can be obtained in two general classes, horizontal as shown in Fig. 1 and vertical as in Fig. 2. Their construction is essentially the same, except for the drain pan and filter locations.

Casings. Casings are generally constructed of sheet metal with angle iron frames and with removable panels for access to coil connections,

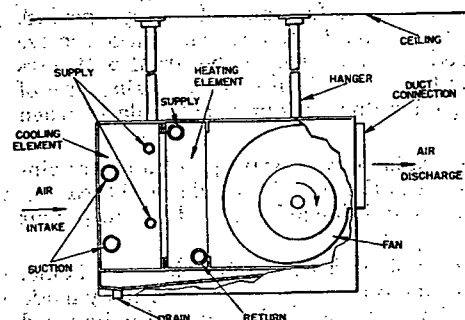


FIG. 1. HORIZONTAL REMOTE TYPE UNIT AIR CONDITIONER

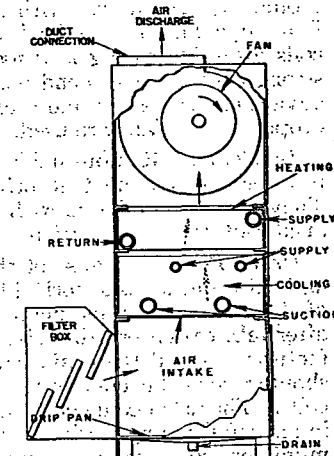


FIG. 2. VERTICAL REMOTE TYPE UNIT AIR CONDITIONER

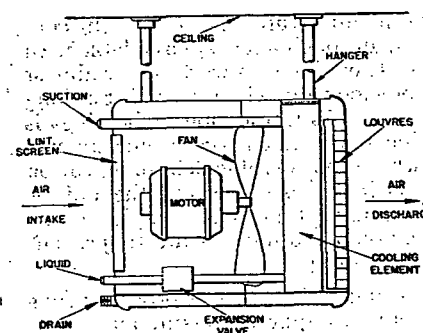


FIG. 3. SUSPENDED PROPELLER FAN TYPE UNIT AIR CONDITIONER

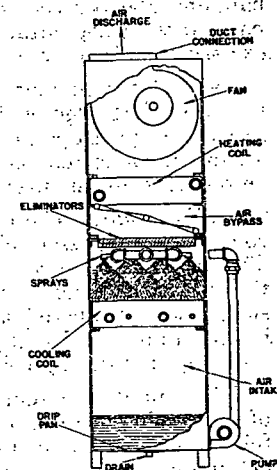


FIG. 4. SPRAY TYPE REMOTE UNIT AIR CONDITIONER

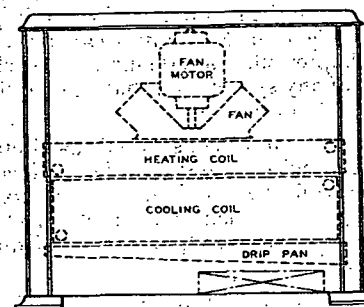


FIG. 5. REMOTE FLOOR TYPE ROOM UNIT AIR CONDITIONER