

used when equipment is outside of the conditioned area. The problem of securing a supply of outside air is often a difficult one. The proper design of ducts is of major importance for good air distribution. Chapters 40 and 41 are devoted to these subjects.

In the analysis of any large structure to be air conditioned which is divided into small spaces, such as an office building or hotel, a comparison should be drawn between the use of units and a central plant system. This study is one of economics, and should include such factors as first cost, installation costs, obsolescence, depreciation, maintenance costs, return on investment, flexibility, time of installation and possible loss of useful space during installation.

This same analysis should be extended to include a comparison of remote units with self-contained units. Self-contained units are possible where short term leases are involved, or where wiring can readily be brought to location or where existing water and drain facilities are adequate to handle the increased demand of water-cooled models. On

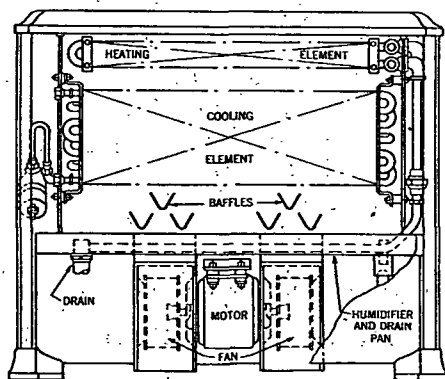


FIG. 7. REMOTE FLOOR TYPE ROOM UNIT AIR CONDITIONER

the other hand, remote type room units contain less mechanical machinery, avoid the operating cost penalty of an air-cooled condenser, as in the case of the self-contained, air-cooled room units, and seldom require heavy wiring to handle the fan load. In general, the smaller remote units are more suitable for use with new construction, where the units will probably remain during their useful life. This condition may change where larger, ceiling mounted units are compared with the floor mounted self-contained units. Controls are essential in unit application and range from the simple snap switch of a room unit to elaborate means of controlling temperature, humidity and air movement in laboratory and testing room application. The criterion of a well controlled installation is one which has neither too few nor too many controls. (See Chapter 34.)

With the expansion of cities during the past decade, the problem of water supply has become a costly and ever present problem. Consequently, laws are appearing designed to restrict the usage of water wherever possible, particularly when substitute means are available. Evaporative condensers and cooling towers (described in Chapters 37 and 39) are means devised to save large quantities of water in this connection.

TABLE 1. STANDARD RATING BASIS FOR SELF-CONTAINED AIR CONDITIONING UNITS

FUNCTIONS	TYPES OF UNITS	RATING CONDITION		
		Item	Description	Value
All	All	a	Barometric Pressure	29.92 in. Hg.
		b	Unit Ambient and Air Entering Room—Air Inlet (1) Dry-Bulb (2) Wet-Bulb	80 F 67 F
		c	Ventilation Air	See Note
		d	Water Temperature Entering Unit	75 F
		e	Water Temperature Leaving Unit	95 F
		f	Air Entering Outside Air Inlet (1) Dry-Bulb (2) Wet-Bulb	95 F 75 F
Cooling	Water-Cooled and Air-Cooled and Evaporatively Cooled Condensers	g	Unit Ambient and Total Air Entering Unit	70 F
		h	Heating Medium, Pressure or Temperature (1) Dry Saturated Steam (2) Water In (3) Water Out	16.7 lb per sq in. abs. 180 F 160 F
Heating	All Types Provided with Heating Function	i	Unit Ambient	70 F
		j	Total Air Entering Unit (1) Dry-Bulb (2) Wet-Bulb	70 F 53 F
Humidifying	All Types Provided with Humidifying Function	k	Filters	New and Clean

Note: Rating shall be based on both ventilation and recirculated room air entering at 80 F dry-bulb and 67 F wet-bulb temperature. (The Note as given in the code has been condensed in order to remove material not pertinent to this chapter).

Most manufacturers furnish equipment designed for use in combination with these water savers.

Municipal plumbing, heating, electrical and refrigeration codes, as well as fire underwriter restrictions, are likewise having their effects on the application of unit air conditioners. Meeting municipal and national code requirements should be an important item in connection with the installation of any unit equipment.

Ratings

There are two codes governing the rating and testing of unit air conditioners. The first code, Standard Method of Rating and Testing Air Conditioning Equipment¹, covers all types of air conditioning units except the self-contained type. The latter is covered by the second code, The Standard Method of Rating and Testing Self-Contained Air Conditioning Units for Comfort Cooling². The two codes are necessary because of the basic difference caused by the heat given up by the self-contained units.