Air distribution with self-contained room air conditioner or remote room air conditioner exposed in the conditioned space is usually through grilles or louvers built into the equipment. The grilles or louvers, are adjustable to assist in directing the air properly. The discharge of the air from this type of unit is directed upward at some angle with respect to the horizontal so that the cool air is not directed at the occupants, but at the same time is carried to the most remote part of the room. In general, the air discharge should be designed to distribute cool air over the entire zone, dropping slowly and returning to the unit below the breathing line and along the floor. The location of doorways, air vents and heat-exposed walls should be carefully observed as they have a marked effect on the direction of air flow and on its uniformity of temperature.

Air distribution with the suspended remote air conditioner in the conditioned space requires attention to outlet air velocity. Sufficient air velocity should be provided to give adequate induction and mixing with room air thereby preventing the immediate dropping of the air stream and resulting objectionable cold drafts.

Air distribution with units, either self-contained or of the remote type, located outside the conditioned space is provided by ducts and outlet grilles. The location of these outlets is quite critical and is influenced both by the building construction, economies of connections, and by the distribution of load. There are a wide variety of outlet types used, and most of these have fixed delivery characteristics, thus requiring careful consideration in their location. Some types of outlets are now available with adjustable vanes thereby permitting some alteration in the delivery of the air stream after installation. This frequently eliminates objectionable down drafts resulting from the impingement of the air stream against posts, pillars, lighting fixtures, and beams. Refer to Chapter 29 for a complete discussion of this type of air distribution.

Multiple remote units are sometimes used in lieu of a central plant system in installations for large office buildings or hotels. These units, with a centrally located refrigeration or heating source provide the advantages of individual room control by the occupants, use of less floor space since only piping lines need be run and no large ducts are required from floor to floor, and provide better fire protection since the absence of ducts prevents smoke or fire from being transmitted from one room or floor to another.

Self-contained units sometimes provide distinct advantages over remote units. Where the units are located in the conditioned space, the self-contained unit does not have any refrigerant or heating connections from an outside source and hence is more easily installed, makes a better appearance and is more easily removed if the owner wishes to relocate the equipment. When the units are located adjacent to the conditioned space, the self-contained units will use less total floor space than the remote type of system besides requiring less installation expense, due to the absence of refrigerant or steam piping.

The amount of water used in water cooled condenser types of self-contained units is sometimes an acute factor in application. Self-contained store units are almost universally water cooled. There are two types of water conserving equipment that can be used with a condensing unit; (1) a cooling tower, and (2) an evaporative condenser.

Cooling towers can easily be applied to the store conditioning unit in the same manner as they are applied to other condensing units. When the condensing unit enclosure is cooled by a water coil, the cooling tower must have enough capacity to supply both the water cooled condenser and water cooling coil. The condenser and water coil are placed in parallel to reduce the pressure drop.

Evaporative condensers can be applied to store units if the heat of the condensing unit is removed by recirculated air or a refrigerant coil, and if the water cooled condenser can be omitted and deducted from the price of the store cooler. In the case of a unit employing a water cooling coil to remove the heat from the condensing unit enclosure, the use of an evaporative condenser is uneconomical because a separate supply of water

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.
Cooling	Water-Cooled, Air-Cooled and Evaporatively Cooled Condensers	b	Unit Ambient and Air Entering Room—Air Inlet (1) Dry-Bulb (2) Wet-Bulb	 80 F 67 F
		c	Ventilation Air	See Note
	Water-Cooled Condensers	d	Water Temperature Entering Unit	75 F
		e	Water Temperature Leaving Unit	95 F
	Air-Cooled and Evaporatively Cooled Condensers	f	Air Entering Outside Air Inlet (1) Dry-Bulb (2) Wet-Bulb	 95 F 75 F
Heating	All Types Provided with Heating Function	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
Humidifying	All Types Provided with Humidifying Function	i	Unit Ambient	70 F
		j	Total Air Entering Unit (1) Dry-Bulb (2) Wet-Bulb	 70 F 53 F
Air Circulation	All	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.)