

units are not generally equipped with controls. Control systems for remote units, and auxiliary controls for self-contained units, are covered in the general treatment of Controls in Chapter 38.

RATINGS OF UNIT AIR CONDITIONERS

Two standards have been used for rating and testing of unit air conditioners: (1) Standard Method of Rating and Testing Air Conditioning Equipment,¹ covering all types of air conditioning units except the self-contained type and (2) Standard Method of Rating and Testing Self-Contained Air Conditioning Units for Comfort Cooling² covering the self-contained type. (ASRE Standard Methods of Rating and Testing Air Conditioners, ASRE Standard 16-53, covers rating and testing of all types which operate non-frosting when cooling and dehumidifying at standard rating conditions.)

The standard rating of a self-contained unit for the conditions specified in Table 1, includes all items which apply to the function of a unit as: (1) name of unit, (2) functions which unit performs, (3) data on cooling, (4) data on heating, (5) data on air flow, and (6) data on humidification.

The standard rating conditions for unit air conditioners, other than the self-contained type, are identical with those in Table 1, except that entering wet-bulb temperature for cooling is expressed as 50 percent relative humidity (66.7 F wet-bulb) instead of 67 F wet-bulb temperature. In addition, the saturated suction refrigerant temperature for comfort cooling is specified at 40 F. This condition is omitted from Table 1 for self-contained units because it is not separately controllable in the testing of a unit that includes the evaporator and condensing unit.

APPLICATION OF UNITARY EQUIPMENT

One of the chief advantages resulting from use of factory produced units is the saving in installation and field assembly labor, a factor that should always be kept in mind when selecting a location for these units. Because of their compactness, the tendency exists to put them in closets, storage rooms, and other inaccessible places, where installation is so difficult that much of this cost advantage is lost.

Access panels are provided on units for the proper servicing and maintenance of the equipment. Adequate outside clearance at these panels is essential. Wherever there is danger of freezing of coils or clogging with dirt, sufficient clearance should be available for replacing them without removing parts of the building.

The outstanding source of difficulties in unitary systems is usually dirty filters. The characteristics of the light weight fans used are such that air volume drops off rapidly with increase in static resistance. Since changing of filters is an unpleasant duty likely to be neglected unless it can be done easily, the operator should be at the same level as the filters, rather than under them, when they are being removed.

Variable-pitch motor pulleys are usually provided for adjustment of the air quantity. The fans and motors of most conditioners are selected for the usual range of external resistances commonly used with the specific size of conditioner. The larger conditioners are capable of serving larger areas and therefore require fan and motor capacity for the greater external duct resistances that may be imposed on such conditioners.

Where varying sizes of coils are used within the same casing, it is very important that coil safing be carefully installed to prevent bypassing of unconditioned air. If coils are not equipped with individual casings,

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
Cooling	Water-Cooled Air - Cooled and Evaporatively 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).

additional safing may be required on top to prevent short circuiting air down through the upper edges of the fins. In this same category is the need for careful installation of the various sections of sectionalized units, using a sealing compound if necessary to prevent air leakage into the fan section of the unit.

Since the drain connection is usually made on the exit side of the coil, it is important that the drain line be properly sealed. This seal should be at least twice as deep as the suction on the fan in inches of water, to prevent gurgling sounds, and to insure a positive seal against infiltration of odors and moisture laden air. Drain pans should not be used to support the coils, unless they are designed to hold this weight without sagging. As the movement of air draws the condensate or excess humidification water toward the fan, drain connections are usually placed on the exit