AIR CONDITIONER SIZING

Important Factors in Sizing Air Conditioners

An air conditioner's efficiency, performance, durability, and initial cost depend on matching its size to the following factors:

- How large is your home and how many windows does it have?
- How much shade is on your home's windows, walls, and roof?
- How much insulation is in your home's ceiling and walls?
- How much air leaks into your home from the outside? and
- How much heat do the occupants and appliances in your home generate?

A system that is too large will cool the room or home quickly but not provide that comfort that is needed, because the cool air reaches the thermostat quickly and the thermostat sends a signal to shut the system before the relative humidity is reduced to a comfortable level. As the cold air is distributed in the room, the thermostat realizes that the temperature is not at the set point and then turns on the air conditioner. This quick cycling of the unit (start and stop) reduces the life span of the equipment and increases the energy consumption. A larger air conditioner also consumes more energy.

A system that is small will have to work all the time and is not energy efficient. So the right size is very important for energy efficiency.

To determine the size of a room air conditioner follow three steps:

Step 1: Determine the square footage of the area to be cooled, by multiplying a rectangular or square room's length by its width.

Step 2: Determine the correct cooling capacity - measured in British thermal units (BTUs) per hour - using the square footage and the chart below:

Capacity needed to cool an area based on size	
Area To Be Cooled (square feet)	**Capacity Needed (BTUs per hour)**
100 to 150	5,000
150 to 250	6,000
250 to 300	7,000
300 to 350	8,000
350 to 400	9,000
400 to 450	10,000
450 to 550	12,000
550 to 700	14,000
700 to 1,000	18,000
1,000 to 1,200	21,000

1,200 to 1,400	23,000
1,400 to 1,500	24,000
1,500 to 2,000	30,000
2,000 to 2,500	34,000

Step 3: Make any adjustments for the following circumstances:

- If the room is heavily shaded, reduce capacity by 10 percent.
- If the room is very sunny, increase capacity by 10 percent.
- If more than two people regularly occupy the room, add 600 BTUs for each additional person.
- If the unit is used in a kitchen, increase capacity by 4,000 BTUs.
- Consider where you install the unit. If you are mounting an air conditioner near the corner of a room, look for a unit that can send the airflow in the right direction.

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