

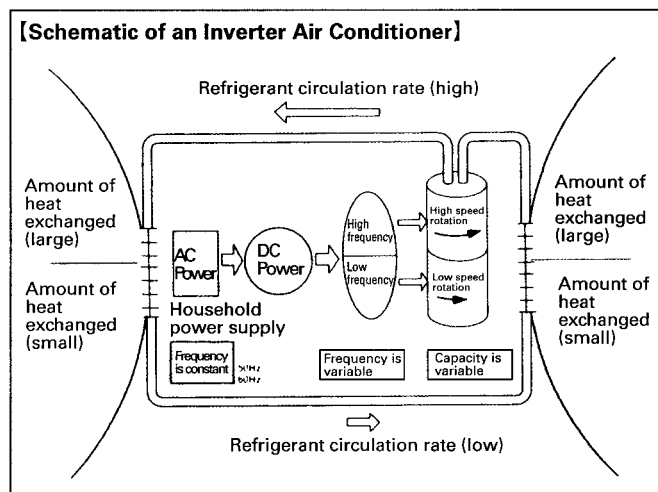
3. Main Functions

(1) Inverter Power Control

■ Principle of Operation of an Inverter

The heating and cooling load on the air conditioner varies depending on the outside temperature and the load conditions inside the room. Although the capacity of the air conditioner also changes with the rotational speed of the compressor, since the frequency of the normal motors is fixed (50Hz or 60Hz depending on the country and region), the range over which the capacity can be varied becomes narrow. The inverter air conditioner is one in which the control of the air conditioner performance is made over a wide range by converting the frequency.

- (1) The single phase AC is first converted into DC.
- (2) The DC is then converted into three phase AC power supply whose frequency can be varied from the minimum frequency to the maximum frequency that are required.
- (3) When the frequency is made higher, the rotational speed of the compressor increases, the circulation of the refrigerant becomes faster, and hence the amount of heat exchanged per unit time increases.
- (4) When the rotational speed of the compressor is made lower, the circulation of the refrigerant becomes slower, and hence the amount of heat exchanged per unit time gets reduced.

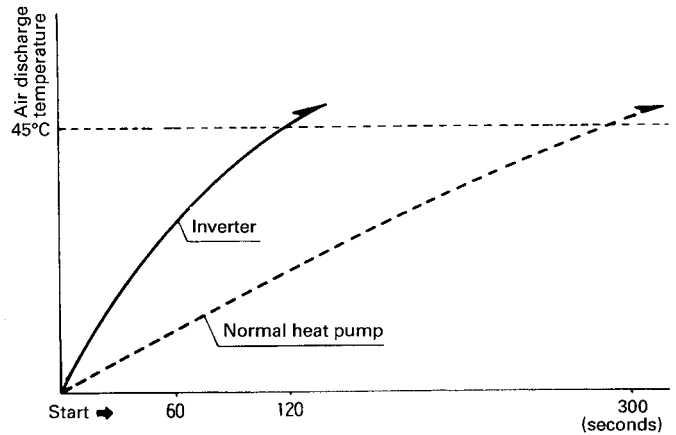


■ Important Features of Inverters

- (1) The capacity can be changed according to the changes in the outside temperature and cooling/heating load.
- (2) Quick heating and quick cooling
The compressor rotational speed is increased at the time of starting the heating (or cooling). This increases (or decreases) the room temperature in a short time.
- (3) High capacity is achieved even during extreme cold weather
High heating capacity is maintained even when the outside temperature is 0°C.
- (4) Comfortable Air conditioning
Detailed adjustment is made to meet the changes in the room temperature. It is possible to Air condition with a very small room temperature variation.
- (5) Energy saving heating and cooling
Once the room has been heated (during heating), energy saving operation is made at a low power while maintaining the room temperature.

- (6) Defrosting without reducing the room temperature
Defrosting is completed in about 3 to 4 minutes while maintaining the hot air discharge. The reduction in the room temperature due to defrosting becomes small and a comfortable temperature is maintained constantly. (The time required may vary depending on the conditions.)

■ Quick Heating Capability



- The hot air discharge is started about 300 seconds after starting in the case of the general heating and cooling units and about 120 seconds after starting in the case of the inverter units (comparison of our company's products under the conditions of the outside temperature of 0°C and room temperature of 10°C).