

How a Central Air Conditioner Works □ □

When the thermostat signals the air-conditioning system temperature, a whole sequence of events begins. The air is drawn from various parts of the house through return registers. This air is then pulled through a filter, where airborne particles and lint are removed—in fact, sophisticated filters may remove pollutants as well. Then the air is routed to air-supply ducts and blown back to the rooms. Whenever the air conditioner is running, this process continues continually.

But how does the evaporator coil get cold in the first place? It does so through the magic of refrigeration. Every air conditioner has three main components: a condenser, an evaporator, and a compressor.

With a typical “split system,” the condenser and the compressor are located in an outdoor unit; the evaporator is mounted in the air-handling unit, which is often a forced-air furnace. (With a “package system,” all three components are located in a single outdoor unit that may be located on the roof of the house.)

A refrigerant such as freon circulates through copper tubing connecting these components. This refrigerant receives and releases heat. As it circulates, it lowers in temperature, changing from liquid to gas back to liquid.

is especially cold when it begins to circulate through the handler pushes warm air across the coil, the refrigerant from the air that it turns into vapor. As a vapor, it travels pressurizes it and moves it through the outdoor coil, which fan also helps to dissipate the heat. The refrigerant then expansion device that converts it to a low-pressure, low which returns to the indoor coil. And so the cycle goes.