

A PERFECT MATCH

Replacing Your Central Air Conditioning or Heat Pump System

If the Components Don't Properly Match, Everybody Loses

Imagine that you've purchased a brand new luxury car, and you're looking forward to a smooth, comfortable ride... but when you pick it up at the showroom you find out it has old, worn-out tires. Oh, sure it'll run fine... but as you shimmy down the highway, listening to the roar of the tires and wondering how long until one blows out, how do you feel... worried?... like you've been "taken for a ride"?

You could find yourself facing the same frustration if the components of your air-conditioning or heat pump system are not properly matched.

Your air-conditioning or heat pump system consists of two parts: an indoor (coil) unit and an outdoor (condensing) unit. These two parts are specifically designed to work together as a coordinated "team" to provide top performance and maximum efficiency and comfort. So if you install a new high efficiency outdoor unit, but don't include a new, equally efficient and properly matched indoor unit, the results could be uncomfortable, frustrating, and expensive.

From Disappointment to Premature Failure

At best, when your air-conditioning or heat pump components aren't properly matched you'll be sacrificing comfort. The system will still work but it won't perform up to the promised efficiency. This will also cost you money, because the system won't operate at peak efficiency.

At worst, when the components aren't properly matched, it could create undue stress on the system, resulting in premature failure.

Properly Matched Systems Mean Maximum Satisfaction

When you consider the steep costs of repairing or replacing air conditioners or heat pumps, installing properly matched systems the first time around makes good sense. Of course, replacing the indoor coil will add cost to the installation, but it will mean greater comfort and energy savings in the long run as you make up for the increased initial expense in lower operating costs.

Ensuring Efficiency

The efficiency of a central air conditioner is rated by its Seasonal Energy Efficiency Ratio (SEER). This SEER rating is technically defined as the cooling output provided by the air conditioner or heat pump during its normal annual usage period, divided by its total energy consumption. A SEER rating is similar to the miles-per-gallon rating for automobiles. The more energy efficient the air conditioner or heat pump is, the higher the SEER rating—because less electricity is needed to cool your home.

The minimum efficiency standard for central air conditioners and heat pumps manufactured after January 23, 2006, is 13 SEER.

ARI Certification Logo

When you see this symbol on central air-conditioning and heat pump equipment or on accompanying sales literature, it's an indication that the manufacturer has certified the performance of the equipment to ARI. Look for the ARI seal when you select new equipment.



The Right Person for the Job

Before your contractor enters your home, make sure they are licensed, well-trained and experienced. Look for firms whose employees are certified by the North American Technician Excellence (NATE) (www.natex.org). And make sure to ask your contractor to verify the efficiency of the indoor coil and outdoor condensing unit combination by showing you an ARI Reference Number.

An ARI Reference Number can easily be found by accessing ARI's free online performance certification directory at www.ari.org.

How Does A Split System Air Conditioner Work?

OBSERVATION:

Unlike what many people think, an air conditioner does not **add** cool air to an area, but instead, **removes** heat from the existing air—leaving the remaining air cooler.

THEORY:

The miracle of cooling is accomplished by the use of (1) a refrigerant, (2) a compressor, and (3) an evaporator.

Refrigerant acts like a sponge. "Squeeze" (compress) it and the heat is expelled; let it expand and it will absorb heat.

If you squeeze it outside, the heat is expelled into the outdoor air. Bring it back into the house, let it expand, and it will soak up more heat from inside the house.



A Visual Sequence of Events:

An air conditioning system generally consists of five mechanical components:

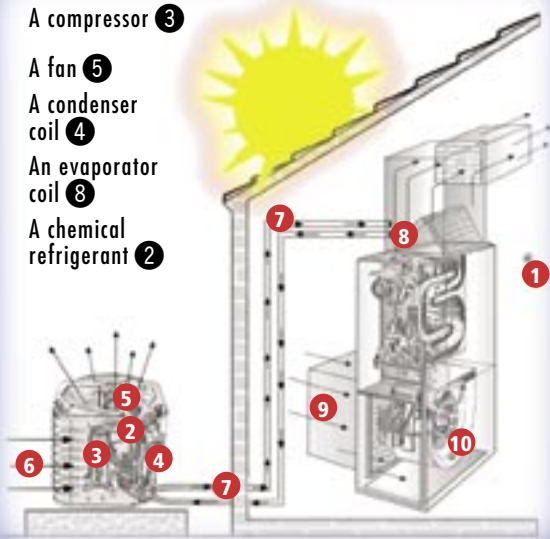
A compressor ③

A fan ⑤

A condenser coil ④

An evaporator coil ⑧

A chemical refrigerant ②



Air conditioning includes the cooling and heating of air, cleaning it and controlling its moisture level, and conditioning it to provide maximum indoor comfort.

An air conditioner transfers heat from the inside of a building ①, where it is not wanted, to the outside. Refrigerant ② in the system absorbs the excess heat ⑨ and is pumped through a closed system ⑦ of piping to an outside coil ④. A fan ⑤ blows outside air over the hot coil, transferring heat from the refrigerant to the outdoor air. Because the heat is removed from the indoor air, the indoor area is cooled.

Most central air conditioning systems include a "hot" side, outside your home, and a "cold" side, inside your home. The "hot" side generally consists of a condensing coil ④, a compressor ③, and a fan ⑤.

The "cold" side is usually located within your furnace. The furnace blows ⑩ air through an evaporator coil ⑧, which cools the air, and routes this cool air throughout your home using a series of air ducts.

(⑥ Indicates outside air.)

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Get Educated!

Visit www.ari.org, the Air-Conditioning and Refrigeration Institute (ARI) web site, and learn about matching coils, proper sizing, finding a certified contractor, and energy efficiency standards.

ARI is the national trade association representing manufacturers of more than 90 percent of North American produced central air-conditioning and commercial refrigeration equipment.



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