



# Efficient Duct Systems

## Optimize the Home's Comfort Delivery System

To create a comfortable home, an efficient duct system is a must. Ducts—known collectively as the air distribution system—carry air from the central heater or air conditioner to each part of the home and back again. In a typical house about 20 percent of the air that moves through the duct system is lost due to leaks, holes, and poorly connected ducts. That's why the duct systems found in ENERGY STAR qualified homes are third-party tested for tightness and verified to be properly insulated.

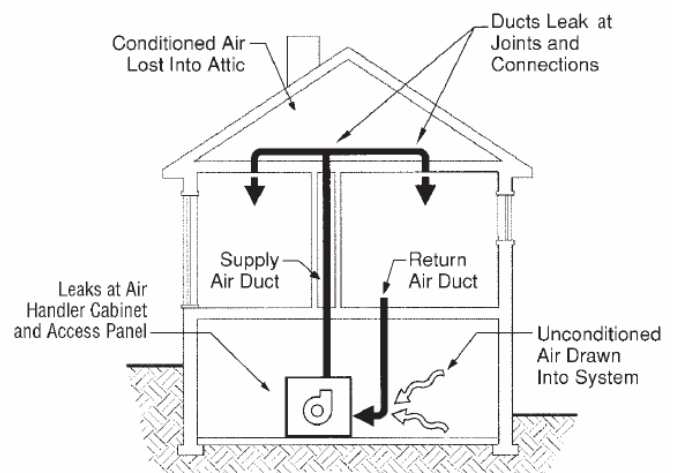
### BENEFITS OF EFFICIENT DUCT SYSTEMS

- **Improved Comfort.** When ducts are properly sealed and insulated, they deliver conditioned air more effectively to all rooms—helping to ensure a more constant temperature throughout the home.

- **Lower Utility Bills.** The average homeowner spends more than \$600 on space heating and cooling each year. Tightly sealed and well insulated ducts found in ENERGY STAR qualified homes can reduce annual utility bills by \$120 or more.

- **Improved Indoor Air Quality.** Leaky ducts in attics, unfinished basements, crawl spaces, and garages can allow dirt, dust, moisture, pollen, pests, and fumes to enter the home. Sealing these ducts helps improve indoor air quality.

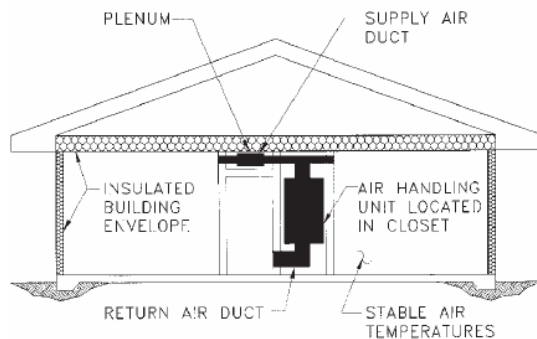
- **Lower Equipment Costs.** When ducts are leaky, the heating and cooling system has to work harder to condition the home. Duct sealing, along with proper insulation, allows the installation of a smaller, less costly heating and cooling system.



**Typical Places Where Ducts Leak**

## BUILDING EFFICIENT DUCT SYSTEMS

Techniques and practices that provide an efficient and effective duct system include:



*A Duct System Located in Conditioned Space*

**Ducts in Conditioned Spaces.** Ducts operate more efficiently in conditioned air at room temperature. They do not work as well in excessively hot or cold attics and crawl spaces.

**Sealed Ducts.** EPA promotes the use of mastic and/or Underwriters Laboratory (UL) 181 approved tapes, such as metal-backed tape, to seal ducts. These materials more effectively seal leaks around duct joints and seams than standard “duct tape.”

**Insulated Ducts.** Leaky ducts and poorly sealed connections can waste 20 percent or more of the air that you pay to heat and cool. To minimize this energy loss, EPA first recommends installing ducts in conditioned spaces. Where this is not possible, ducts should be insulated as recommended by the International Energy Conservation Code (IECC).

**Right-Sized Ducts.** Ducts in ENERGY STAR qualified homes are sized based on the Air Conditioning Contractors of America (ACCA) Manual J and Manual D calculations. This helps to ensure that the ducts accommodate the air flow requirements of the heating and cooling system for efficient distribution of heated or cooled air.

## A BETTER FUTURE

ENERGY STAR is a voluntary partnership between the government and more than 9,000 organizations, including more than 3,500 of the nation’s home builders. Together with home buyers and their families, we are working to achieve a common goal—protecting the environment for future generations by changing to more energy-efficient practices and products today.

ENERGY STAR is the government-backed symbol for energy efficiency. It identifies new homes, buildings, and more than 50 types of products that are energy efficient and offer the features, quality, and performance that today’s consumers expect. Products that can earn the ENERGY STAR include windows, heating and cooling equipment, lighting, and appliances. To learn more about ENERGY STAR, visit [www.energystar.gov](http://www.energystar.gov).