

SEALING DUCT WORK

Heating and cooling costs for a typical home represent the greatest portion of the home's energy costs. Duct leakage robs a home of the energy expended to heat or cool the home, and causes pollutants to be drawn into a home.

Reasons to Seal Duct Work

When heating and/or cooling ducts leak into unoccupied space (wall cavities, attic spaces, basements, or crawl spaces), the energy that was paid for by the homeowner is wasted. Leaking duct work often accounts for up to 30% of total heating and cooling costs. This leakage can account for as much as 30% of a home's total air infiltration. When return ducts leak into unconditioned space, air from these spaces is drawn into the duct and is sent back to the unit, usually without passing through the filter, to be re-heated or re-cooled. The unconditioned air usually requires more energy to change temperature and results in increased energy costs. Because this air bypasses the filters, it also contributes to poor indoor air quality and is a component of filtration. When supply ducts leak into unconditioned spaces, expensive conditioned and filtered air is wasted according to the percent of leakage. Leaking supply ducts contribute to an increase in energy costs. Since the supply ducts are supplying less air than the return demand, air pressure within the conditioned spaces decreases, drawing outside air in through leaking window frames, door frames, wall, ceiling, and floor cavities, etc. The leaking outside air brings pollutants with it, contributing to poor IAQ, and the outside, unconditioned air will require more energy to change its temperature when it is returned.

Effects on Equipment From Duct Work Leakage

If duct work leaks 20% of the total airflow, cooling system efficiency can drop by 50%. Heating efficiency is similarly affected. Duct leakage also lowers the heating and cooling capacity, and can lessen equipment life.



Testing for Duct Work Leakage

To accurately determine if you have serious leakage requires a pressure test of the ducts with a special fan. Energy codes require that all joints in the duct work be sealed. Many leaks are not readily visible unless blower-door and pressure testing is performed.

Why Duct Work May Leak

Most connections are not sealed. There is also a problem with poor quality materials being used to seal ducts. Adhesives or duct tapes will dry out and not provide a good seal. On new constructions, duct sealant is about the same cost of a job sealed with tape. Retro sealing of an existing home is somewhat more expensive due to the increased labor involved in getting to the duct, but usually has a relatively short payback.

Types of Duct Work That Can Be Sealed

All types of duct work can have leakage problems. Polymer Adhesives duct sealants can be used to seal metal, flexible duct, and ductboard.

Where to Use Duct Sealant

- The connections between air handling units and plenums
- All seams, plenums, take-offs, boots, and other connections
- Longitudinal seams in spiral duct work
- Disconnected components
- Connecting joints between sections of branched duct work

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