**What Are the Different Methods for Ductwork Installation?**

There are different methods of [ductwork](https://www.wisegeek.com/what-is-ductwork.htm) installation driven by the types of heating/cooling plants in homes as well as by design layouts. Ductwork designs are extended plenum, radiant piping or a combination of these. Some run through a ceiling instead of an [attic](https://www.wisegeek.com/what-is-an-attic.htm), and others run through a [crawlspace](https://www.wisegeek.com/what-is-a-crawlspace.htm) or basement, but all designs have their base in the furnace placement. Many localities have energy-efficiency codes, and ductwork installations must meet these standards. Newer duct materials have changed some methods, and experimental prototypes for hot/humid climate home construction have led to further innovations from the old tried-and-true ductwork installation plans.

The ductwork installations for gas air furnaces are specific to safety concerns when using gas. For safety, all components and fittings of ductwork for a gas air furnace system must meet performance temperature ratings, as well as smoke development and flame spreading ratings. Some residences and light commercial buildings have ductwork installation designs with the ductwork on the outside of the building. Inside installations need only insulation wraps, but outside installations need water-resistant sealant and weather protectant applied as well.

There are standards for the installation of electrical [central heating](https://www.wisegeek.com/what-is-central-heating.htm), ventilation and air conditioning ([HVAC](https://www.wisegeek.com/what-is-hvac.htm)) systems. These ductwork installations must have no leaks and a balance between the supply air and the return air. There should be no loss of airflow velocity because of crimping, improper sizing or bends too closely set to extended plenums. The designs of long ranch-style homes and those that have vaulted ceilings on one end of the home are best suited to extended plenum ductwork installations. Two-story homes, as well, need an extended plenum design to reach to the upper rooms.

The standard installations for central systems with extended plenum designs are for three different furnace types: upflow furnaces in closets or basements, downflow furnaces in mobile homes or tight crawlspaces and horizontal furnaces that can be used in attics and some crawlspaces. From off of the furnace plenum’s extension at right angles, there are branches of round pipe that flow out each side to supply registers in the individual rooms. Return air is received back through another trunk line with identical branches from the rooms to the HVAC to be re-conditioned. Instead of rigid round pipe for the branches from the extended plenums, some ductwork installation designs make use of flexible pipe.

The ductwork installations for radial piping designs have no extended plenum but have round pipes attached directly to the furnace plenum and individual separate runs to the register boots and outlets. These can be efficient only if the furnace is centrally located. These radial designs for ductwork are the easiest to install and the most economical because there is less ductwork to lose air velocity and efficiency. Additionally, there is semi-rigid flex piping that can be run individually to each room, and there are claims that it diffuses noise pollution in the home. Further, these semi-rigid pipes have been tested and proven to deliver better air quality over time, extracting damp air in humid climates and not allowing dust to settle and trap mold.

A newer type of ductwork installation design has been tested and found to be a considerable improvement over any other ductwork installation design for use in humid and hot climates. Making use of specific calculations, these designs make use of running ductwork in the interior of the home under the ceiling plane at a much lower cost and produce zero-energy homes.. There can be no duct leakage to the outside, and conducive gains/losses are eliminated because there is no heat buildup in an attic for the ductwork to have to deal with, so the set point temperatures remain nearly constant in the ducts. These designs also make use of transoms in each room to promote good airflow to returns.

from：<https://www.wisegeek.com/what-are-the-different-methods-for-ductwork-installation.htm>