

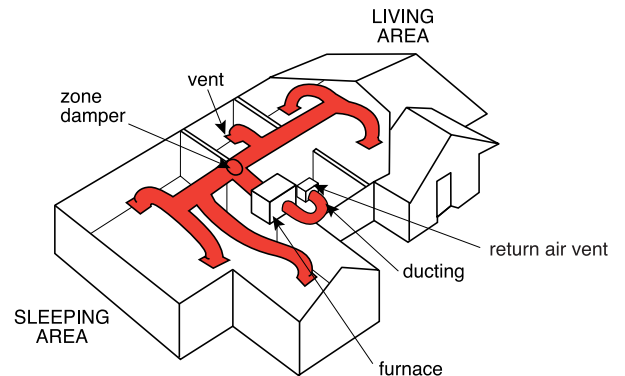
## Gas ducted heating

Gas ducted heating is a 'central' heating system, designed for heating an entire home. Central systems are suitable if you require heating in all or most rooms of your house simultaneously. As they heat larger areas than space heaters, they can be more expensive to purchase and run.

### The system

Gas ducted systems consist of:

1. A furnace fuelled by natural gas or liquefied petroleum gas (LPG). Air is drawn in by a fan, and passed over a heat exchanger to warm it. Furnaces are usually installed in the roof space or externally, but can also be placed under the floor or even in internal cupboards if space is limited.
2. Ducting distributes the heated air through a home. It is usually laid above the ceiling or under the floor, but can be placed between floors or in other cavities, depending on available room.
3. Registers (also called 'outlets' or 'vents'), attached to the floor or ceiling, or sometimes the wall, direct warm air into rooms. Provided ceiling registers are correctly positioned, and of appropriate design, they will provide a similar heating effectiveness to floor registers. Floor registers are usually located near outside walls to allow heat to fully flow back through the house to the return air grille. Ceiling registers should be located centrally in a room, or between the centre and external walls. They should never be placed towards the internal walls, as heat will not circulate properly around a room.
4. A return air vent (grille) recirculates air to the furnace, beginning the cycle again. The grille should be located at or near floor level—never in the ceiling. Filters can be attached to the grille to reduce dust circulation. If filters are added, grilles must be made larger. In zoned systems (see diagram) the grille must be readily accessible to your main living area.



*A schematic plan of a zoned ceiling ducted heating system*

### Energy Rating labels

Most new ducted heating furnaces display an Energy Rating label containing 1 to 6 stars. This label identifies the energy efficiency of the furnace—the more stars, the more energy efficient. Efficient units produce more heat for each unit of gas consumed—a 4 star unit fuelled by natural gas will cost up to \$450 less a year to run than a 1 star unit of the same capacity in a typical three bedroom home.

### Running ducted heating efficiently

#### Sizing

It is vital that a ducted system is designed and sized individually for every home. Never buy 'off the shelf', as under or oversized systems can perform very poorly.

#### Furnace efficiency

Buy a system with a high star rating.

#### Zoning options

Often, heating is not required in all rooms all the time. A zoning option allows heating to be limited to a smaller area of your home and can reduce running costs by over 50%. Zoning works by reducing the amount of heat the furnace puts out, and at the same time automatically closing off the

ducts to a specified section of your home, generally bedrooms and/or formal living areas. This directs a smaller amount of heat to the remaining rooms only. The installation of motorised 'zone dampers' in the ductwork makes zoning easier and more efficient, particularly where ceiling registers are difficult to close. In unzoned systems, only a limited number of registers (about 10%) may be closed at any one time. Always follow the installer's guidelines on the maximum number of registers which can be closed in your system.

#### **Pilot lights**

Pilot lights cost up to \$25 a year to run (natural gas systems). Look for models with electronic ('hot surface') ignition instead.

#### **Positioning of the furnace**

The furnace should be positioned as close as possible to the main living areas.

#### **Positioning of thermostats**

Thermostats should be placed in a draught-free position in living areas, where you spend most of your time. They should not be placed near the return air grille. Keep them away from windows, external walls and direct sunlight. Look for programmable thermostats to help set appropriate temperatures for different times of the day and overnight. You won't need to leave a system running all day so that you can come home to a warm house, which is a huge waste of energy and money. Preferably, turn the system off overnight and when you are out during the day.

#### **Ducting**

All duct runs should be kept as short as possible to minimise heat losses. Poorly insulated ducting will significantly reduce the performance of even the most efficient furnace. Ducting should be insulated to a level of at least R1.0\*, and to at least R1.5 if cooling is being added to the system. All connections should be well-sealed and taped. If located under the floor, it should be kept off the ground to keep it dry.

\* 'R' values measure the ducting's resistance to heat loss. The higher the value, the less heat will be lost from air flowing through the ducting.

#### **Maintenance**

For optimum performance, the system should be maintained and serviced according to the manufacturer's instructions. Take particular care to clean air filters on a regular basis.

#### **Cooling in ducted systems**

Gas ducted systems can provide a cooling effect by turning the circulation fan on without the heating mechanism. Active cooling can be provided by connecting a refrigerative air conditioner to the ducting. Evaporative cooling cannot be connected to ducted heating systems or outlets. If you plan to have refrigerative ducted cooling, larger diameter ducting and outlets may be required, so you will need to make this decision before you install your ducted heating system.

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