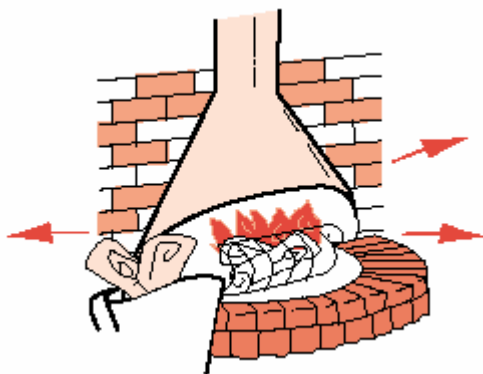




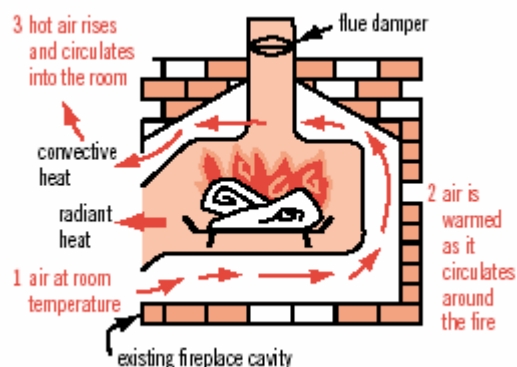
- > Should be used with a grate if burning coal or briquettes.



*An open fire has the lowest efficiency of all wood heaters*

#### **Fireplace inserts (combination radiant and convection heat)**

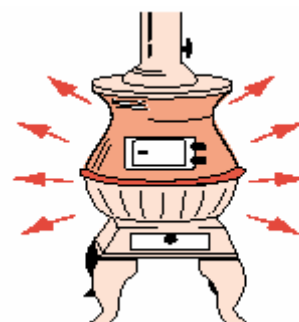
- > Hollow, metal inserts which are built into open fireplaces. Room air is circulated around the insert, picking up heat from it.
- > Increase the efficiency of an open fire by allowing room air to be heated directly. Efficiency range 23–35%.
- > Are useful if an open fire is to be used for substantial periods of time, but are generally not suited as your main source of heating.
- > Can be fitted with doors and air controls which further increase their efficiency.
- > Require a separate stainless steel flue, even when installed in an existing masonry chimney.
- > Can be fitted with fans to increase heat distribution.



*A fireplace insert*

#### **Non-airtight heaters (mainly radiant heat)**

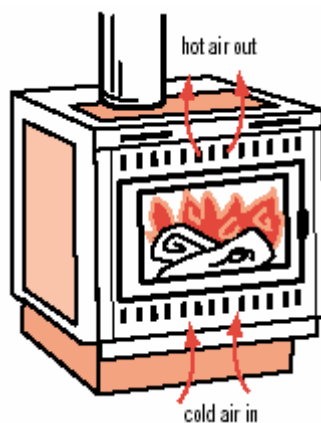
- > Include pot-belly stoves and other similar units.
- > Have an efficiency range of 25–40%.
- > Enclosed heaters with air entering at an uncontrolled rate through small gaps and inlets between joins in the metal, around glass panels, doors and ash removal trays.
- > Very hot surfaces.
- > May be suitable for infrequent heating of smaller areas as they are not too expensive to buy.
- > Generally not an efficient way to heat large areas for long periods of time.



*A pot belly stove produces convective and radiant heat*

### Airtight slow combustion heaters (combination radiant and convection heat)

- > Are the most efficient type of wood heater. Efficiencies range between 55–70%.
- > Can be free standing or in-built into a fireplace.
- > Combine an airtight firebox, air inlet controls, baffles, secondary air inlets and secondary combustion chambers to increase efficiency.
- > Are the best option for heating large spaces for long periods of time.
- > Convective models can be fitted with a fan to help distribute the heat quickly and more evenly.
- > Run most efficiently at medium or high burn rates.
- > Must be adequately flued.
- > Some units can assist in providing hot water through 'wetback' coils.



*An airtight wood heater is the most efficient heater for large areas*

### Central heating boilers and furnaces

- > Are large heating units designed for whole home heating.
- > Have efficiencies similar to airtight slow combustion heaters.
- > Boilers use wood to heat the water which is then circulated around the home, providing heating

from radiator panels, skirting board convectors, fan-coil units or in-slab floor coils.

- > Furnaces heat air which is then ducted through the home.
- > Some units can run on oil, gas or electricity in addition to wood.
- > Some boilers can be combined with slow combustion cooking stoves, and 'wetback' coils to provide hot water.

### Buying a wood heater

Before buying a wood heater, you must first decide what you want the heater to do. Note down answers to the following questions.

- > How big an area or how many rooms do I want to heat?
- > How long do I want to heat the rooms for?
- > Will I be using other types of heating as well?
- > Does my home have insulation, effective window protection and draught-proofing?
- > Where will the wood come from and how much will it cost?

This information along with a copy of your floor plan will help retailers size a unit accurately, and suggest the best position for its installation.

If you match the heater to your needs you will be far more satisfied with its performance.

Look for retailers who are members of the Australian Home Heating Association. This group has been formed to ensure high standards of service and reliable information on wood heating appliances.

### Sizing a wood heater

As a rule of thumb, you should select a heater which provides a maximum heat output of 1 to 1.5 kilowatts (kW) for each 10 m<sup>2</sup> of floor space you wish to heat.

For example, if you wish to heat 50 m<sup>2</sup> of living space, the heater should have a maximum output of 5–8 kW.

This assumes that your home is adequately insulated and draught-proofed. If not, you will need to purchase a larger heater or, preferably, install insulation, seal out draughts and add adequate window protection to reduce heat loss.

Accurate sizing is critical to the efficient operation and successful performance of a wood heater. Oversized heaters will not burn wood efficiently on low settings. And too small a heater will not be able to satisfactorily heat the area.

It is often expected that a larger heater will heat most of the house. However, distributing the heat evenly throughout the house is not always possible. Open plan areas are usually no problem, but getting heat down from high ceilings, along corridors and into bedrooms can be more difficult. In some cases, just leaving the door open does the trick. Sometimes ducts, ceiling fans or vents may be necessary to help distribute the heat more evenly.

Convective heaters are generally more useful than radiant heaters in distributing heat throughout a home.

### Firebricks

Firebricks are special bricks which line the inside of the firebox, protecting the metal and prolonging its life. Because they can keep fire temperatures higher for longer, they allow better combustion to occur. The extra mass of the bricks also means that the heater remains warm for a longer period after the fire goes out.

Firebricks are usually set in place without cement and, if well looked after, can give many years of service.

Not all models require firebricks for efficient combustion. Check with manufacturers.

### Welded steel or cast iron?

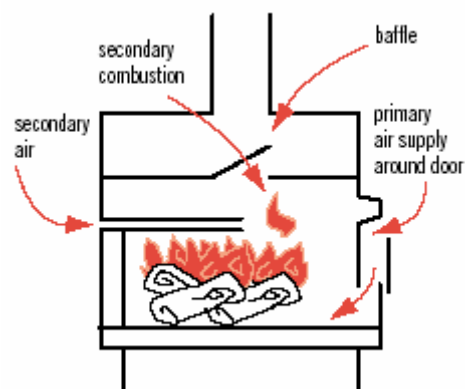
Welded steel and cast iron are both satisfactory materials for the manufacture of wood heaters. Thin steel (less than 6 mm) might warp or burn through sooner than it should unless protected by firebricks. Poor quality cast iron may crack. Check

for pitted surfaces and poor joins or welding between sections before buying. Generally, the thicker the plating and the better the quality of construction, the longer the heater will last.

### Dual burning/secondary combustion

Many slow combustion heaters incorporate a secondary air supply and/or baffles inside the firebox. These are intended to give more complete combustion through dual burning. In a good design, dual burning can increase efficiency and reduce emissions.

Some heaters also advertise 'triple burning'. This may further increase their efficiency, although the overall effect is marginal.



*Cutaway showing secondary combustion process*

### Warranty

Always check heater warranties carefully before purchase. In some cases the warranty is for different periods for different parts of the heater. Some parts may not be covered at all by the warranty.

### Fans

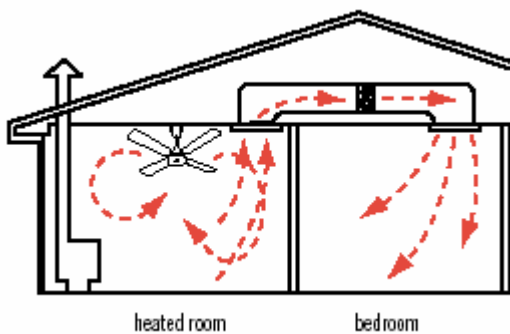
Fans help distribute heated air around a room.

A fan fitted to a wood heater can increase its efficiency by 6–8%. Fans help circulate larger volumes of warm air, break down the layers of hot air that collect up at ceiling level, and heat rooms faster.

Ceiling fans are useful in bringing hot air at ceiling level back down to floor level.

Heat shifters can be used to move warm air from near the ceiling of a heated room and blow it into otherwise unheated areas.

Although fans and heat shifters do not have much effect on the efficiency of the heater, they can lead



to fuel savings by making greater use of the heat.

*Ceiling fans and heat shifters make greater use of heat*

**Installation**

**Permits**

Always read the manufacturer’s installation instructions carefully before having your heater installed. You must also contact your local council to check on local building regulations.

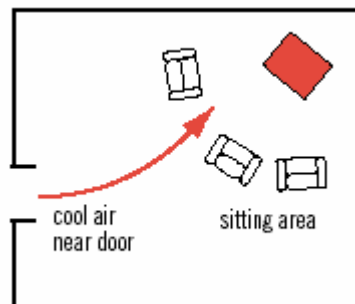
Before you install a heater it may be necessary to obtain a building permit from your local council to ensure the heater is installed in accordance with Australian Standard AS-2918 ‘Domestic Solid Fuel Burning Appliances— Installation’. This Standard applies to all wood heaters except open fireplaces and central heating boilers.

Wood heaters should only be installed by a person licensed in Plumbing (Mechanical Services) or the restricted class of Plumbing (Mechanical Services)—Restricted to Solid Fuel Heating.

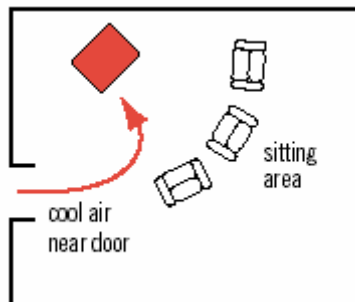
To comply with your Duty of Disclosure, you should also notify your insurance company that you have installed a wood heater.

**Locating the heater**

All heaters spread warm air out from near the heater to ceiling level, and pull cooler air to the heater along the floor. Try to locate the heater so that this uncomfortable cool draught does not flow across the main sitting area.



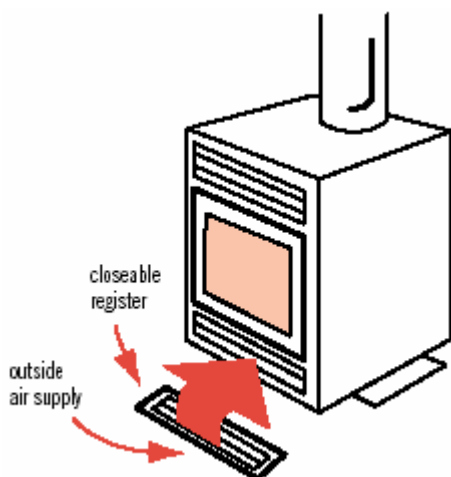
*Poorly placed heater*



*Better placed heater*

In timber-floored homes, consider installing a separate closable duct to provide an external air supply to the heater. This will help prevent the movement of draughts across the floor (see diagram on next page).

It is wise to seek the advice of manufacturers and suppliers as to the location of the heater.



*A separate air supply for heaters*

### The flue

Installing the correct flue is essential for the safe and efficient operation of your wood heater.

The most common cause of house fires resulting from wood heaters is incorrectly installed flues, so pay particular attention to this. One common problem spot is the area where the flue passes through the ceiling. You must use a flue approved for use with the heater you are installing. Incorrect installation could cause overheating of the ceiling or the materials in the attic space.

The flue used must comply with Australian Standard AS-2918 and the installation specifications provided by the manufacturer. Flues must be made from high temperature stainless steel or enamelled steel (the enamel must be on both the inside and outside of the flue pipe). Never use galvanised or mild steel as found in old oil heater flues, as they are unsafe. The decorative casings around a flue on free standing heaters form part of the flue's heat shield and must conform to the manufacturer's specifications.

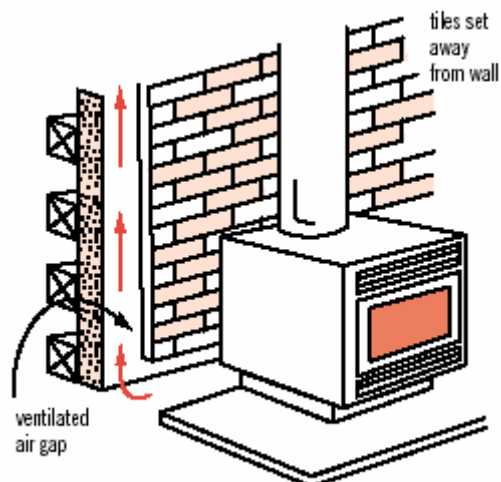
If you have any loose material in your attic space which could move (such as loose-fill insulation), you should install a screen around the flue to

prevent the loose material from coming in contact with the flue casing. A 90 mm gap must be left between any insulation and the flue.

### Heat shields

The distance required between a wood heater and a plaster or wooden wall can be safely reduced by the use of correctly installed heat shields. Heat shields may be constructed from brick, metal, high-temperature fibreboard or a proprietary heat shield material. In all cases a ventilated or air gap must be left between the heat shield and the wall.

When using a heat shield, refer to AS-2918 specifications and manufacturer's instructions, and have the shield installed by a professional installer.



*Heat shield*

### Efficiency ratings

All slow combustion wood heaters must be labelled as complying with Australian Standard 4013 for maximum emission levels. This label also provides a measurement of the burning efficiency of the wood heater.

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June 2004