



# INSTALLING SOLID FUEL HEATERS

**Incorrect installation of solid fuel heaters has resulted in many minor to major fires, so it pays to get it right.**

By Ed Soja, BRANZ Fire Safety Engineer

**F**ires started by the incorrect installation of solid fuel heaters are not always obvious. Some only result in a small amount of charring while others cause total destruction. Sometimes, minor charring of combustible materials is only identified if the building is being renovated and linings are removed, or some building failure occurs that exposes the structure. Better then to follow some guidelines and avoid the possibility of heat-sensitive materials catching alight.

## Compliance document

Installation of solid fuel heaters is regulated by the New Zealand Building Code compliance document C/AS1 Part 9: *Outbreak of fire*. This calls for compliance with AS/NZS 2918:2001 *Domestic solid fuel burning appliances – installation*.

The two main principles controlling the installation of solid fuel heaters are clearances and ventilation.

## Clearances

All solid fuel heaters should include manufacturers installation instructions that give minimum distances from walls and other heat-sensitive materials. These instructions should be strictly followed to ensure the materials are not overheated, causing them to ignite.

Complying with clearances for free-standing heaters is straightforward (see Figure 1). Clearances can vary from heater to heater, but Figure 1 shows where these are applicable. 'A' and 'B' are floor protector dimensions given by the manufacturer.

Flue clearances are also important, but unless a manufacturer offers a tested flue system, flue clearances must comply with those specified in AS/NZS 2918. For examples of a tested and an untested flue system, see Figures 2 and 3, respectively. The principle of an untested flue

system is to provide a clearance between the two-flue shield, the outer flue shield and heat sensitive materials.

## Ventilation

Clearances not only separate the heater or flue from heat-sensitive materials, but they also allow air to circulate between the appliance and the building. This means either leaving the

shields open at the ends or where the shield rests against a plate, providing cut outs so that air can circulate between the annular spaces (see Figure 4).

Where the heater has been installed in an enclosure, a heater must have been tested to AS/NZS 2918 Appendix B, which will result in specific clearance distances to heat-sensitive materials, e.g. timber framework. In addition, →

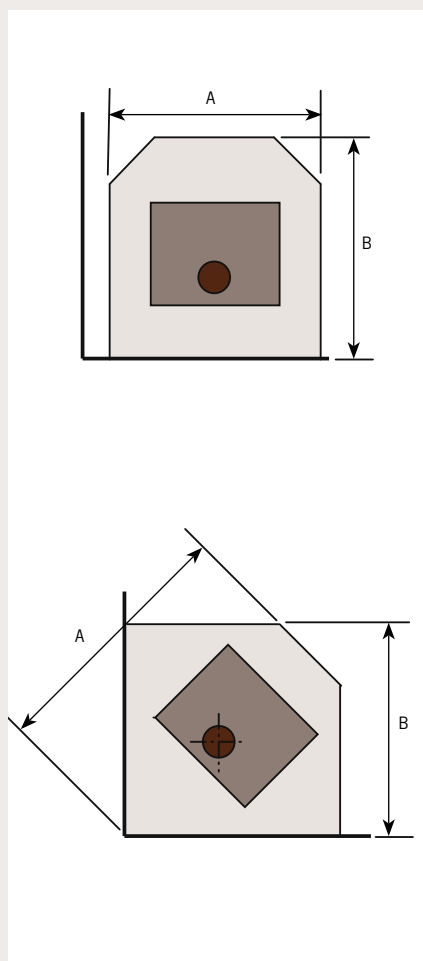


Figure 1: Clearance locations for solid fuel heaters. 'A' and 'B' are floor protector dimensions given by the manufacturer.

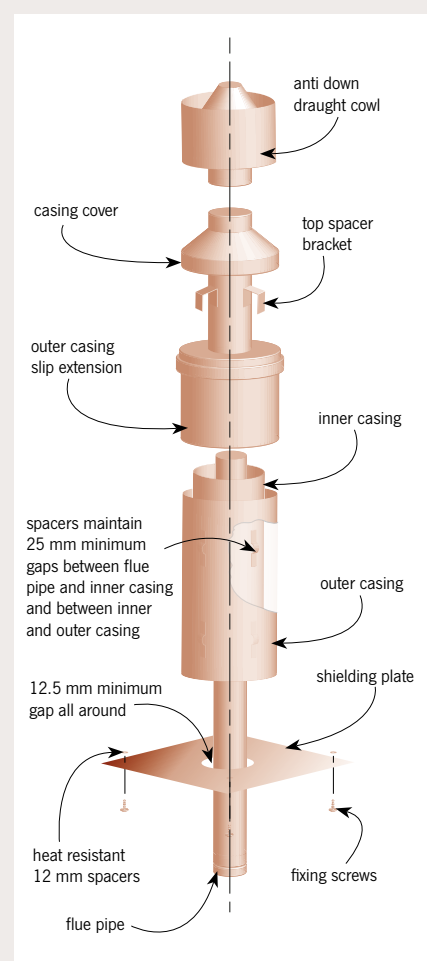


Figure 2: Example of a tested flue system (from AS/NZS 2918:2001).

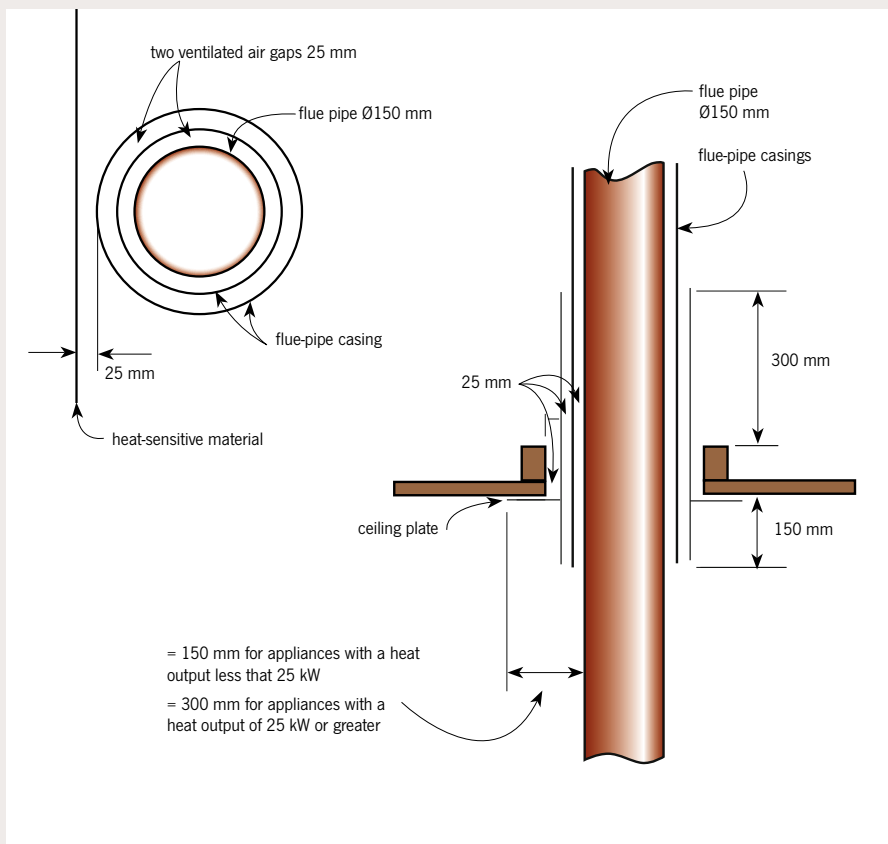


Figure 3: Clearances for an untested flue system, plan and elevation. Note the ventilated air gaps (from AS/NZS 2918:2001).

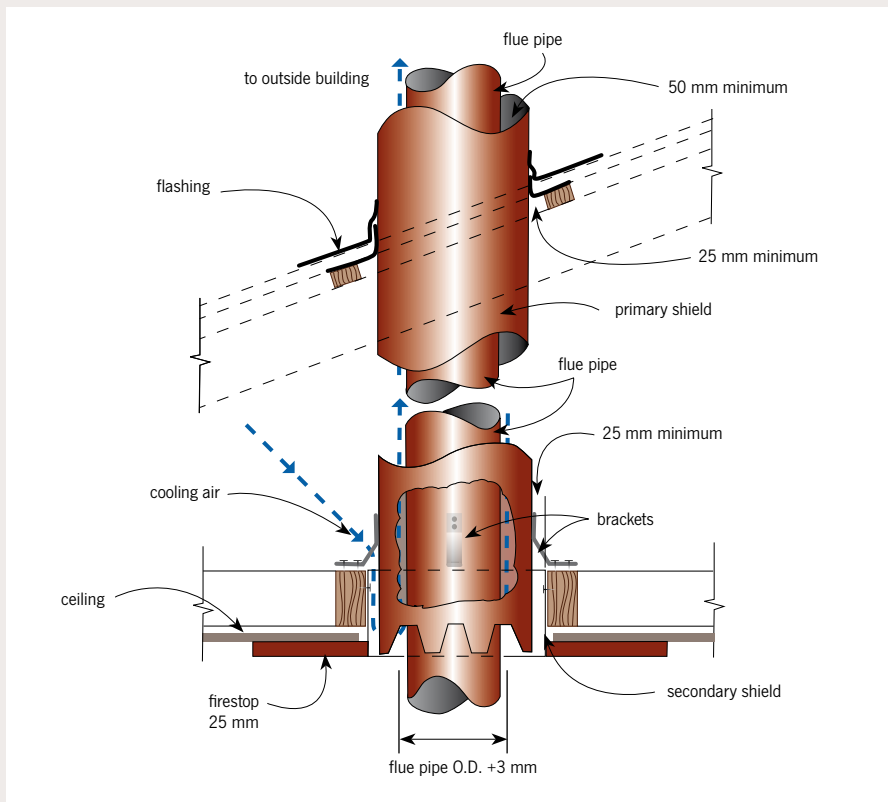


Figure 4: Air gaps at bottom of flue shields (modified from deleted standard NZS 7421). Refer to manufacturers literature for specific clearances.

any enclosure must be ventilated with openings at the top and bottom.

These openings must be at least 10,000 mm<sup>2</sup>, which is equivalent to a 100 × 100 mm square opening, a 50 × 200 mm rectangular opening; or a 113 mm diameter hole.

### Checklist

A few points to remember:

- Install the appliance in accordance with the manufacturer's instructions. Any deviation needs to be reviewed by a competent person who understands the principles of the installation, such as a registered installer with the NZ Home Heating Association.
- Be wary of installing in enclosures with timber or other heat-sensitive materials.
- Ensure that clearances are adequate and ventilation is provided for the flue and heater.
- Don't forget the floor protector (thickness and projection from the heater) and the flue extensions from the roof (see Figure 4). ❖

## AUTHORISED WOOD BURNERS

Since September 2005, the national environmental standards for air quality have required all wood burners installed on properties less than 2 hectares to have a discharge of less than 1.5 grams of particles for each kilogram of dry wood burnt, and a thermal efficiency at least 65%. The Ministry for the Environment has an online national list of wood burners that meet these requirements.

The main source of fine particle pollution, the most dangerous component of New Zealand's polluted air, comes from solid fuel home heating appliances. Councils have introduced a variety of rules and regulations to reduce these emissions, for example, Richmond has banned all solid fuel burners in new homes and Christchurch has banned all new burners in existing homes with no burner. In Canterbury, more than 10,000 open fires and older wood burners have been replaced using a local full subsidy and interest-free loan scheme repaid via rates.

Last year, central government began a \$4.8 million incentive programme retrofitting clean heating in low income homes. EECA is funding another 4-year scheme aimed at middle-income households.

*The list of authorised wood burners and other references are available on [www.mfe.govt.nz](http://www.mfe.govt.nz).* ❖