

# Gas information sheet 58

## Type A appliance service - the quality and adequacy of air supply

Ensuring the quality and adequacy of air supply to a gas appliance is a fundamental responsibility for all gasfitters licensed to perform gas servicing work on Type A appliances. As a result, understanding the required scope of this work is critical for gasfitters to be able to complete it successfully and meet their responsibilities under the Gas Safety Act and subordinate regulations.

This information sheet:

- is only intended to provide a guide to the requirements for Type A servicing and inspection work (for more detailed information, please refer to the Type A Servicing Standard AS 4575-2005 Gas Appliances - Quality of Servicing)
- should be read in conjunction with ESV:
  - Gas Information Sheet 57, Your Obligations Under The Gas Safety Act
  - Gas Information Sheet 59, Inspecting and Servicing Type A Appliances.

### The quality and adequacy of air supply

When installing or maintaining a gas appliance, which should always include a gas appliance safety check, there are three points to be considered in relation to the supply and movement of air:

1. Air supply quality (AS/NZS 5601.1:2013, clause 6.4.2)
2. Air supply adequacy (AS/NZS 5601.1:2013, clause 6.4.1)
3. The adverse effect of air movement systems (AS/NZS 5601.1:2013, clause 6.3.1).

In a residential building, the quality of the air supply is normally a given, but it is worth keeping this in mind if the appliance is being installed in a laundry or a cluttered area.

#### 1. Air supply quality

Clause 6.4.2, Quality of Air Supply, says the air supply for a gas appliance should not be contaminated with combustion products, or contain chemicals, dust and fibres, or flammable vapour that can affect combustion or the gas appliance's safe operation.

Contamination is an important consideration, but ensuring gas appliances are installed in rooms with adequate ventilation is another important requirement. Providing adequate ventilation is more complicated, as you need to take into account the date the building was approved for construction: before or after the adoption of AS/NZS 5601 on 31 March 2014.

#### Buildings approved before 31 March 2014

Buildings approved for construction before 31 March 2014 must comply with clause 6.4.4. This is the old 3MJ/h per cubic metre rule, which simply means that for every 3 MJ/h you require 1 cubic metre (room volume).

For example, a 30MJ/h appliance needs to be installed in a room with a volume no smaller than 10 cubic metres. If the room is smaller than 10 cubic metres, it will require additional permanent ventilation.

#### Buildings approved on or after 31 March 2014

Buildings approved for construction on or after 31 March 2014 must comply with clause 6.4.5, which requires 0.4 MJ/h per cubic metre.

For example, a 30MJ/h appliance needs to be installed in a room with a volume no smaller than 75 cubic metres. If the room is smaller than 75 cubic metres it will require additional permanent ventilation.

## 2. Air supply adequacy

Clause 6.4.1, Adequacy of Air Supply, says appliances should be installed in locations with adequate ventilation to enable (under normal operating conditions) complete gas combustion, proper operation of the flue, the immediate surroundings to remain at a safe temperature.

The adequacy of ventilation is another important consideration, but it does not specifically consider whether extraction fans are present. As a result, the next step is to check whether any extraction fans are creating negative pressure.

The easiest way to determine whether an on open-flue gas appliance will be affected by air movement caused by extraction fans is to perform the following test:

1. Shut all the external doors and windows, and then open or close internal doors to create the maximum possible negative pressure potential.
2. Turn on all the extraction fans.
3. Carry out a smoke test at the downdraught diverter or combustion air intake.

If smoke is being drawn away from the diverter opening or combustion air intake and into the room then the fans are drawing air from the flue in an attempt to equalise the room's pressure. This is referred to as 'negative pressure'. If negative pressure is present, then the installation does not meet the requirement of clause 6.3.1 and is non-compliant. Additional ventilation needs to be installed.

To establish how much extra ventilation is required, open the nearest window in small increments while continuing the smoke test. When the smoke stops being drawn away from the appliance you have eliminated the negative pressure.

If you intend to leave the appliance operating, additional ventilation must be installed, but it is highly recommended that you also conduct a visual inspection of the appliance and a carbon monoxide (CO) test. This is because the flue system or the appliance may be defective and it may be more cost efficient to replace the old open-flue appliance with a new room-sealed one.

## 3. The adverse effect of air movement systems

Clause 6.3.1, Adverse Effect of Air Movement Systems, says gas appliances should be installed in an area where a fan, ventilation system, air blower or air distribution system will not prevent the appliance getting the air it needs for combustion and draught diverter dilution (or otherwise harmfully affect the appliance's operation). This may be difficult in modern buildings, which are more air tight than older buildings and allow much less ventilation. As a result, it may be necessary to install additional permanent ventilation (other than already required by Clauses 6.4.4 or 6.4.5). See Paragraph R2, Appendix R, to determine if additional ventilation is required.

### To recap

When carrying out a new installation or checking the safety of an old one, you must complete the following steps:

1. Ensure the air quality supplying the gas appliance.
2. Ensure the room is of sufficient size or additional ventilation has been installed (and if it is not, then ventilation needs to be installed).
3. Check that extraction fans are not creating negative pressure at the appliance flue.

Once the installation is assessed and you have established there is adequate ventilation, no negative pressure, and the air quality is suitable, you can commence an inspection of the appliance and flue.

Once that is complete, you are ready to commence a CO spillage test.

Remember, if the installation passes the CO test but fails the negative pressure test, then additional permanent ventilation needs to be installed if the heater is being left in operation.