



GAS APPLIANCES
TECHNICAL GUIDANCE BULLETIN

Bulletin number: 001

Bulletin Date: 20/03/2012

Author: Enzo Alfonsetti

Product Type: Room sealed gas space heating appliances

Relevant Standard/s: AS4553:2008 Amendment 1 "Gas Space Heating Appliances"

Relevant Clause/s: Clause 5.3.1(c), MOT 5.3.1(b)/(c)

Subject: Thermal efficiency of room sealed space heaters

Guidance to be provided:

1. To advise the measurement point for CO₂ and temperature rise should be 300mm downstream from the flue spigot as for open flued appliances except for flues shorter than 300mm where the measurement point should be 50mm behind the flue terminal.
2. Where in the measurement plane air temperature should be measured.
3. What the longest vertical flue run should be for minimum resistance to flow.
4. To qualify that the thermal efficiency results should be stated for the flue run providing the minimum resistance to flow and the maximum resistance to flow.

Reason:

1. **It is not clear in the current method of test or in figure E5 where the correct sampling point is for the measurement of thermal efficiency in room sealed space heating appliances.**
 - Sampling at the flue terminal end results in higher thermal efficiency values which are not truly representative of the appliance efficiency.
 - This is because of heat loss through the flue pipe results in a lower ΔT . In other words, the longer the flue pipe the greater the heat loss through the flue pipe, the lower the ΔT and the greater the efficiency. This is even more so in the case with co-linear flue systems.
 - There is no illustration for a vertical flue installation in figure E5 and hence it is assumed that the sampling point is 50mm below the 'flue outlet'.
 - The 50mm dimension that is measured directly behind the 'flue outlet' in figure E5, may cause some problems when installing sampling probes on large flue terminals; i.e. the sampling point may be inside the terminal.
2. **Figure E5 does not demonstrate where in the measurement plane the air temperature is to be measured.**
3. **For vertical flue configurations the maximum flue run is not specified, this is in contrast to open flued appliances. It is difficult for testing laboratories to set up appliances with vertical flue runs that extend greater than 4.5m above floor level.**
4. **The method of test requires that thermal efficiency is measured with the flue system which provides the minimum resistance to flow. It then requires for the test to be repeated with the flue system providing the maximum resistance to flow. The method of test does not explain whether the final thermal efficiency result is an average of values obtained from these tests or whether both values are to be separately stated.**

Action(s):

1. **Measure for CO₂ and temperature rise should be taken 300mm downstream from the flue spigot as for open flued appliances. For**

This bulletin provides technical guidance from the Gas Technical Regulators to Conformity Assessment Bodies that are JASANZ accredited for the certification of gas appliances required to comply with AS3645. This technical guidance is provided where the technical requirements or test methodologies from current technical standards are inadequate or can be misinterpreted. This bulletin is valid until such time as the relevant technical standard is revised or amended accordingly.



- horizontal flue pipes that are shorter than 300mm, sampling should be at a point 50mm behind the flue terminal.
2. For vertical and horizontal co-axial flue configurations the air temperature should be measured at four points that are equidistant between the inner flue pipe and the outer air inlet pipe in the same plane as for the measurement of flue gas temperature and CO₂. The four sampling points should be spaced 90° apart. In the case of horizontal co-axial configurations the four points should be orientated so that air temperature measurements are taken at the 12.00 o'clock, 3.00 o'clock, 6.00 o'clock and 9.00 o'clock positions. In co-linear flue systems the air temperature should be measured at one point in the centre of the air inlet pipe and in the same sampling plane as for the measurement of flue gas temperature and CO₂.
 3. The longest vertical flue run (minimum resistance to flow) should be 4.5m from the floor as for open flued appliances unless a shorter run is specified by the manufacturer. For horizontal only flue configurations, the shortest horizontal run applies.
 4. Testing laboratories should state both the thermal efficiency value at maximum and minimum resistance to flow. Minimum thermal efficiency criteria of 70% (maximum resistance to flow) and 60% (minimum resistance to flow) should apply.

Result: That the certifying bodies and test laboratories adopt the technical guidance above in order to ensure a consistent approach when measuring the thermal efficiency of room sealed space heaters until such time as the method of test in AS4553 is amended accordingly.

Proposed Revision/s to Standard/s:

Refer to the technical guidance above

	SA	WA	VIC
Name and date:	T. Tucker 07/05/2012	D Robertson 08/05/2012	E. Alfonsetti 07/05/2012

Effective Date: 11/05/2012