

Technical Bulletin

Product: Worcester 4000 series

REVISED NATURAL GAS CO₂ TOLERANCES

Due to deviations that can occur in mains gas quality and other variations that can affect readings taken with portable flue gas analysers, we have increased the permitted tolerance either side of the nominal setting for CO₂.

All of our appliances are tested and adjusted to nominal CO₂ settings with G20 Gas before they leave the factory and should not require any adjustment at the time of commissioning.

At commissioning, the advice in the commissioning section of the Installation and Maintenance manual should be followed (Fig 1). There is no requirement to measure CO₂ at the time of commissioning.

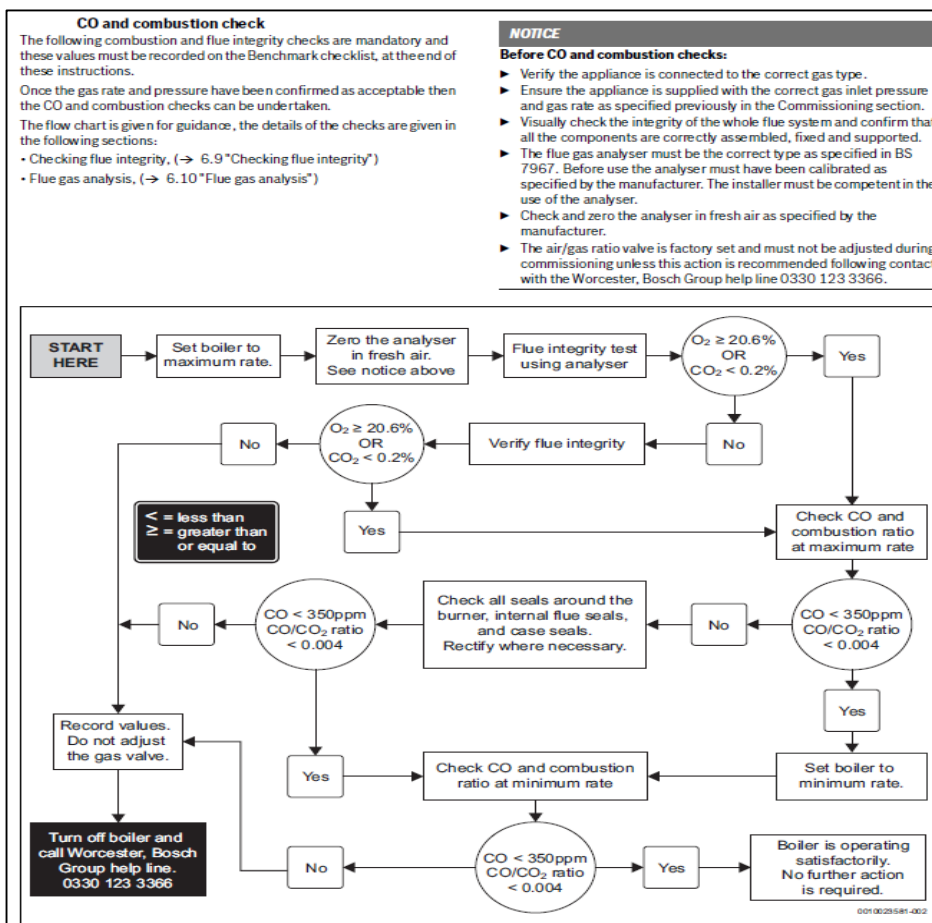


Figure 1: IM Extract: CO & Combustion check

Whilst it is always our intention to fully assist, it is essential to recognise that all information given by the company in response to an enquiry of any nature is provided in good faith and based upon the information provided with the enquiry. We recommend that advice should always be checked with your installer or contract partner. Consequently, the company cannot be held responsible for any liability relating to the use or repetition of such information or part thereof. In addition, whilst making every reasonable effort to monitor the performance and quality of our supply, installation and service network, we do not accept responsibility for the workmanship or operation of any third party company that the company may have promoted either in conversation, e-mail, or other communication. Similarly, the views and opinions expressed in communication with individuals within the company may not reflect that of the business as a whole.

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At any subsequent visit where it is necessary to carry out flue gas analysis, CO₂ must be checked to ensure combustion has not drifted from the factory setting.

Due to the variations, it may be impossible to achieve the CO₂ tolerances that are stated in the **Inspection and Maintenance – Flue Gas Analysis** section of the current **Installation and Maintenance manual**.

To allow for these possible variations, we have increased the permitted tolerance on CO₂ readings on Natural Gas appliances (Fig 2).

CO must remain <250ppm.

The revised tolerances can be applied to all 4000 series Natural Gas appliances. Manuals will be updated in line with this Technical Bulletin.

Important: All Flue gas analysis must be carried out with the boiler combustion case fitted.

If readings are taken with the case off, Wind conditions may prevent accurate readings from being obtained and may cause the boiler to lock-out at minimum output. If it is found that the gas valve does require adjustment, readings must be verified with the case on after the adjustment has been made.

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Flue gas analysis

- ▶ Ensure that the gas inlet pressure has been checked and is satisfactory.
- ▶ Refit the test point plugs after the test has been completed.

- ▶ Set the appliance to maximum and minimum output in chimney sweep mode (→ 6.4 "Chimney sweep mode") for the flue gas analysis checks.
- ▶ Check that the readings conform to those given in the following tables. In addition to CO and CO/CO₂ ratio checks also check the maximum and minimum CO₂ percentage reading.

CO/CO₂ settings

CO ₂ Reading	CO Reading
Natural Gas appliances	
Maximum rated Output ¹⁾	
Between 8.4 and 10.4%	<250ppm
Minimum rated Output ¹⁾	
A minimum of 0.2 lower than the maximum reading taken and between 8.0 and 10.2%	<250ppm
LPG appliances	
Maximum rated Output ¹⁾	
Between 10.4 and 11.0%	<250ppm
Minimum rated Output ¹⁾	
A minimum of 0.2 lower than the maximum reading taken and between 10.0 and 10.4%	<250ppm

1) Should be measured 10 minutes after firing the appliance

Table 30 CO₂ settings

If the CO₂ is out of tolerance then please check:

- ▶ The gas inlet pressure.
- ▶ The gas rate.
- ▶ The fan test pressure.
- ▶ The flue and air intake, plus any possible blockages in the condensate disposal.
- ▶ The condition of burner.
- ▶ For leaks or obstructions in the exhaust paths.
- ▶ That the injector is clean.

After all checks have been completed and the CO₂ is still out of tolerance then contact Worcester, Bosch Group helpline 0330 123 3366 before making any adjustment to the gas valve.

Figure 2: IM Extract: Flue Gas Analysis

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