COMMISSIONING – CHECKING AND RECORDING CO LEVELS

THIS POCKET GUIDE is a handy reference for registered gas engineers involved with the day-to-day commissioning of newly installed gas condensing boilers incorporating air/gas ratio control valve technology. From 1st April 2014, checking & recording CO levels and the CO/CO_2 ratio of flue gases is mandatory for such new boilers.

START - Set boiler to maximum gas rate in accordance with manufacturer's instructions (MIs) and allow sufficient time for combustion to stabilise.

Do not insert analyser probe during this period to protect the sensor.

Carry out flue integrity check by inserting analyser probe into the air inlet test point and allow readings to stabilise. (Refer to **Note 1**).

Is $O_2 \geq 20.6$ % or $CO_2 \leq 0.2$ %?

- N → Verify the flue integrity and refit to MIs. (Refer to **Note 2**).
- Y → Check CO level & combustion ratio at maximum gas rate. (Refer to **Note 3**).

Is $O_2 \geq 20.6$ % or $CO_2 \leq 0.2$ %?

- Y → Is CO level less than MIs stated level* and CO/CO_2 ratio < 0.004? *No level, less than 350 ppm.
- N → **Turn off appliance** and call the manufacturer's Technical Helpline for advice. (Refer to **Note 4**)

Is CO level less than MIs stated level* and CO/CO_2 ratio < 0.004? *No level, less than 350 ppm.

- Y → Set Boiler to minimum gas rate in accordance with MIs and allow sufficient time for combustion to stabilise. (Refer to **Note 5**).
- N → Check flue and extension seals are intact & have not displaced during installation. Rectify flue faults, if required.

Is CO level less than MIs stated level* and CO/CO_2 ratio < 0.004? *No level, less than 350 ppm.

- Y → Check CO & combustion ratio on boilers minimum gas rate by inserting analyser probe into flue gas sampling point. (Refer to **Note 6**).
- N → **Turn off appliance** and call the manufacturer's Technical Helpline for advice. If unable to commission disconnect the appliance from the gas supply. (Refer to **Note 7**).

Is CO level less than MIs stated level* and CO/CO_2 ratio < 0.004? *No level, less than 350 ppm.

- Y → Boiler operating satisfactorily. No further action required. (Refer to **Note 8**)
- N → **Turn off appliance** and call the manufacturer's Technical Helpline for advice. If unable to commission disconnect the appliance from the gas supply. (Refer to **Note 7**).

The procedure in this Pocket Guide **does not override boiler MIs** nor apply to service and maintenance activities involving, or requiring adjustment of the air/gas ratio control valve. **Always refer to boiler MI's**.

All satisfactory measurements of CO and CO/CO_2 ratio results shall from the 1st April 2014 be formally recorded on the manufacturer's commissioning documentation (Benchmark Certificate) normally located with the MIs. Failure to comply with this requirement may result in the product warranty being compromised.

Note 1: In the absence of an air inlet test point it will not be possible to carry out the flue integrity check with an analyser. The installer must now visually check the installation of the flue, verify the gas family is compatible with the boiler, the correct supply pressure is available and the gas rate is checked prior to checking the CO levels and CO/CO_2 ratio.

Note 2: The indications here point towards the flue products mixing with the air inlet. The flue assembly requires investigating and the problem identified and remedied. Ensure flue is fitted to MIs.

Note 3: Insert analyser into flue gas sampling point. Allow readings to stabilise then record. If no sample point available and MIs do not contain a procedure, contact boiler manufacturer for further guidance.

Note 4: If commissioning is not possible as a result of not being able to resolve the issues then the appliance must be disconnected from the gas supply in accordance with the GSIUR (IGEM/G/11).

Note 5: If MIs do not specify the method for setting the minimum rate call the manufacturer's Technical Helpline for guidance.

Note 6: Insert analyser into flue gas sampling point. Allow readings to stabilise then record. If no sample point available and MIs do not contain a procedure, contact boiler manufacturer for guidance.

Note 7: Disconnect from the gas supply in accordance with the GSIUR. Check and record CO levels and CO/CO_2 ratio at both maximum and minimum rate before contacting the manufacturer.

Note 8: Carry out all safety checks. Ensure all test and sample points are replaced and that the full boiler and system commissioning is complete. Complete Benchmark certificate/checklist.

- Source: Gas Safe Register TB 143
- Any electronic combustion gas analyser (ECGA) used needs to be of the correct type as specified by *BS 7967*
- Further information can be found within *BS 7967*

KEY

Y - Yes	**<** - Less than	**≤** - Less than or equal to
N - No	**>** - Greater than	**≥** - Greater than or equal to