CHAPTER V : CONFORMITY OF PRODUCTION PROCEDURE FOR TESTING OF 2 GAS ANALYSER

1 PHYSICAL CHECKING AND VERIFICATION

i) Instrument Model number
ii) List of accessories
iii) Sensor detector type and model number
iv) Sample cell dimensions
v) All PCB model numbers, size and quantity
vi) Display : type, number of digits, scale and resolution
vii) Probe length and diameter
viii) Input/output connectors and cables
ix) Printout sample
x) Front panel controls
xi) Electrical calibration
xii) Software programme version

2 Analyser Accuracy

The gas analyser shall have an accuracy of ± 3% of full scale for CO part and ±30 ppm absolute or ± 10% relative whichever is greater for HC part as determined by analysing known standard gases.

This accuracy shall be checked with the calibration gases of known concentration at minimum five points covering zero to full scale range. Calibration points shall be uniformly spaced as far as possible. It is preferred to test at ten points with five points below 5% for CO and 5000 ppm for HC.

3 Interference effects

The sum of the individual effects on the reading of the analyser from other gases and perticularly in concentration closed to those existing in the engine exhaust gas shall be less than 0.2 units for CO and 15 ppm for HC.

Interference of Carbon-di-oxide (CO2) and water shall be checked with CO2 gas between 12 to 16% concentration by flowing :

a) Only CO2 gas;
b) CO2 gas bubbled through water;
c) Nitrogen bubbled through water;
d) CO bubbled through water;
or known mixture of above all gases.

4.0 Temperature Sensitivity

The instrument shall be suitable for ambient temperatures between 278 K and 318 K. Between these two limits the result of the measurement shall not differ from that obtained at a temperature of 303 K (± 2 K) by more than 0.2 units for CO and ±30 ppm absolute or ± 10% relative whichever is greater for HC.

This test shall be conducted by passing a span gas having concentration more than 60% of the full scale. This test shall be conducted in the temperature controlled chamber and readings shall be taken after allowing two hours stabilisation time after attaining specified temperature. Any other drift like zero drift/span drift with time (if observed) shall be compensated for this time interval.

Separate drift and repeatability test are not included as these aspects will be partly verified during temperature sensitivity tests.

5.0 In addition to above conformity test, the test agencies at their sole discretion may determine to carry out any other test, if found necessary.