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required by the instrument manufacturer or necessary according to good practice.

(b) If a methane analyzer is used, the methane analyzer shall be calibrated prior to introduction into service and monthly thereafter:

1. Follow the manufacturer’s instructions for instrument startup and operation. Adjust the analyzer to optimize performance.

2. Zero the methane analyzer with zero-grade air.

3. Calibrate on each normally used operating range with CH\textsubscript{4} in air with nominal concentrations starting between 10 and 15 percent and increasing in at least six incremental steps to 90 percent (e.g., 15, 30, 45, 60, 75, and 90 percent) of that range. The incremental steps are to be spaced to represent good engineering practice. For each range calibrated, if the deviation from a least-squares best-fit straight line is 2 percent or less of the value at each non-zero data point and within ±0.3 percent on the zero, concentration values may be calculated by use of a single calibration factor. If the deviation exceeds these limits, the best-fit nonlinear equation which represents the data to within these limits shall be used to determine concentration.

[63 FR 57013, Oct. 23, 1998]

§ 89.326 Engine intake air humidity measurement.

(a) Humidity conditioned air supply. Air that has had its absolute humidity altered is considered humidity-conditioned air. For this type of intake air supply, the humidity measurements must be made within the intake air supply system and after the humidity conditioning has taken place.

(b) Nonconditioned air supply procedure. Humidity measurements in nonconditioned intake air supply systems must be made in the intake air stream entering the supply system. Alternatively, the humidity measurements can be measured within the intake air supply stream.


§ 89.327 Charge cooling.

For engines with an air-to-air intercooler (or any other low temperature charge air cooling device) between the turbocharger compressor and the intake manifold, follow SAE J1937. This procedure has been incorporated by reference. See §89.6. The temperature of the cooling medium and the temperature of the charge air shall be monitored and recorded.


§ 89.328 Inlet and exhaust restrictions.

(a) The manufacturer is liable for emission compliance over the full range of restrictions that are specified by the manufacturer for that particular engine.

(b) Perform testing at the following inlet and exhaust restriction settings.

1. Equip the test engine with an air inlet system presenting an air inlet restriction within 5 percent of the upper limit at maximum air flow, as specified by the engine manufacturer for a clean air cleaner. A system representative of the installed engine may be used. In other cases a test shop system may be used.

2. The exhaust backpressure must be within 5 percent of the upper limit at maximum declared power, as specified by the engine manufacturer. A system representative of the installed engine may be used. In other cases a test shop system may be used.


§ 89.329 Engine cooling system.

An engine cooling system is required with sufficient capacity to maintain