

## Environmental Protection Agency

## § 86.334-79

(d)-(e) [Reserved]

[42 FR 45154, Sept. 8, 1977, as amended at 46 FR 50495, Oct. 13, 1981; 47 FR 49807, Nov. 2, 1982; 52 FR 47869, Dec. 16, 1987; 58 FR 58423, Nov. 1, 1993]

### § 86.333-79 Dynamometer calibration.

(a) If necessary, follow the manufacturer's instructions for initial start-up and basic operating adjustments.

(b) Check the dynamometer torque measurement for each range used by the following:

(1) Warm up the dynamometer following the equipment manufacturer's specifications.

(2) Determine the dynamometer calibration moment arm. Equipment manufacturer's data, actual measurement, or the value recorded from the previous calibration used for this subpart may be used.

(3) Calculate the indicated torque ( $IT$ ) for each calibration weight to be used by:

$IT = \text{calibration weight (lb)} \times \text{calibration moment arm (ft)}$

(4) Attach each calibration weight specified in § 86.312 to the moment arm at the calibration distance determined in step (2). Record the power measurement equipment response (ft-lb) to each weight.

(5) For each calibration weight, compare the torque value measured in step (4) to the calculated torque determined in step (3).

(6) The measured torque must be within 2 percent of the calculated torque.

(7) If the measured torque is not within 2 percent of the calculated torque, adjust or repair the system. Repeat steps (1) through (6) with the adjusted or repaired system.

(c) *Option.* A master load-cell or transfer standard may be used to verify the in-use torque measurement system.

(1) The master load-cell and read out system must be calibrated with weights at each test weight specified in § 86.312-79. The calibration weights must be traceable to within 0.1 percent of NBS weights.

(2) Warm up the dynamometer following the equipment manufacturer's specifications.

(3) Attach the master load-cell and loading system.

(4) Load the dynamometer to a minimum of 6 equally spaced torque values as indicated by the master load-cell for each in-use range used.

(5) The in-use torque measurement must be within 2 percent of the torque measured by the master system for each load used.

(6) If the in-use torque is not within 2 percent of the master torque, adjust or repair the system. Repeat step (2) through step (5) with the adjusted or repaired system.

(d) The dynamometer calibration must be completed within 2 hours from the completion of the dynamometer warm-up.

### § 86.334-79 Test procedure overview.

(a) The test consists of prescribed sequences of engine operating conditions to be conducted on an engine dynamometer. The exhaust gases generated during engine operation are sampled for specific component analysis through the analytical train. The test is applicable to engines equipped with catalytic or direct-flame afterburners, induction system modifications, or other systems, or to uncontrolled engines.

(b) The tests are designed to determine the brake-specific emissions of hydrocarbons, carbon monoxide, and oxides of nitrogen. The gasoline-fueled engine test consists of 1 warm-up cycle and 1 hot cycle. The Diesel engine test consists of 3 idle modes and 5 power modes at each of 2 speeds which span the typical operating range of Diesel engines. These procedures require the determination of the concentration of each pollutant, the fuel flow and the power output during each mode. The measured values are weighted and used to calculate the grams of each pollutant emitted per brake-horsepower hour.

(c)(1) When an engine is tested for exhaust emissions or is operated for service accumulation on an engine dynamometer, the complete engine shall be tested, with all emission control devices installed and functioning.

(2) Evaporative emission controls need not be connected if data are provided to show that normal operating