§ 90.410 Engine test cycle.

(a) Follow the appropriate 6-mode test cycle for Class I, I-B and II engines and 2-mode test cycle for Class I-A, III, IV, and V engines when testing spark-ignition engines (see Table 2 in Appendix A of this subpart).

(b) For Phase 1 engines and Phase 2 Class I-A, III, IV, and V, and Phase 2 Class I and II engines not equipped with an engine speed governor, during each non-idle mode, hold both the specified speed and load within ±five percent of point. During the idle mode, hold speed within ±ten percent of the manufacturer’s specified idle engine speed. For Phase 2 Class I, I-B, and II engines equipped with an engine speed governor, during Mode 1 or Mode 6 hold both the specified speed and load within ±five percent of point, during Modes 2–3, or Modes 7–8 hold the specified load with ±five percent of point, during Modes 4–5 or Modes 9–10, hold the specified load within the larger range provided by ±0.27 Nm (±0.2 lb-ft), or ±ten (10) percent of point, and during the idle mode hold the specified speed within ±ten percent of the manufacturer’s specified idle engine speed (see Table 1 in Appendix A of this subpart for a description of test Modes). The use of alternative test procedures is allowed if approved in advance by the Administrator.

(c) If the operating conditions specified in paragraph (b) of this section for Class I, I-B, and II engines using Mode Points 2, 3, 4, and 5 cannot be maintained, the Administrator may authorize deviations from the specified load conditions. Such deviations may not exceed 10 percent of the maximum torque at the test speed. The minimum deviations, above and below the specified load, necessary for stable operation shall be determined by the manufacturer and approved by the Administrator prior to the test run.

(d) Do not include power generated during the idle mode, Mode 11, in the calculation of emission results.


§ 90.411 Post-test analyzer procedures.

(a) Perform a HC hang-up check within 60 seconds of the completion of the last mode in the test. Use the following procedure:

(1) Introduce a zero gas or room air into the sample probe or valve V2 (see Figure 2 in Appendix B of Subpart D) to check the “hangup zero” response. Simultaneously start a time measurement.

(2) Select the lowest HC range used during the test.

(b) Begin the analyzer span checks within six minutes after the completion of the last mode in the test. Record for each analyzer the zero and span response for each range used during the preceding test or test segment.

(c) If during the test, the filter element(s) were replaced or cleaned, a vacuum check must be performed per §90.324(a) immediately after the span checks. If the vacuum side leak check was not within the specified vacuum range, the engine test cycle must be repeated.