



Figure B98-12: Refueling Test Sequence

[59 FR 16296, Apr. 6, 1994]

§ 86.152-98 Vehicle preparation; refueling test.

(a) Provide additional fittings and adapters, as required, to accommodate a fuel drain at the lowest point possible in the tank(s) as installed on the vehicle. The canister shall not be removed from the vehicle, unless access to the canister in its normal location is so restricted that purging and loading can only reasonably be accomplished by removing the canister from the vehicle.

Special care shall be taken during this step to avoid damage to the components and the integrity of the fuel system. A replacement canister may be temporarily installed during the soak period while the canister from the test vehicle is preconditioned.

(b) Optionally, provide valving or other means to allow the venting of the refueling vapor line to the atmosphere rather than to the refueling emissions

canister(s) when allowed by this test procedure.

(c) For preconditioning that involves loading the vapor collection canister(s) with butane, provide valving or other means as necessary to allow loading of the canister(s).

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§ 86.153-98 Vehicle and canister preconditioning; refueling test.

(a) *Vehicle and canister preconditioning.* Vehicles and vapor storage canisters shall be preconditioned in accordance with the preconditioning procedures for the supplemental two-diurnal evaporative emissions test specified in § 86.132-96 (a) through (j). For vehicles equipped with non-integrated refueling emission control systems, the canister must be loaded using the method involving butane loading to breakthrough (see § 86.132-96(j)(1)).

(b) *Seal test.* The Administrator may choose to omit certain canister load and purge steps, and replace them with a bench purge of the refueling canister(s), in order to verify the adequacy of refueling emission control system seals. Failure of this seal test shall constitute a failure of the refueling emission control test. For integrated systems, this bench purge may be performed after the exhaust testing in order to obtain exhaust emission test results. Non-integrated system seal testing shall be performed using paragraph (b)(1) of this section.

(1) *Without the exhaust emission test.* The Administrator may conduct the canister preconditioning by purging the canister(s) with at least 1200 canister bed volumes of ambient air (with humidity controlled to 50±25 grains of water vapor per pound of dry air) maintained at a nominal flow rate of 0.8 cfm directly following the preconditioning drive described in § 86.132-96 (c) through (e). In this case, the canister loading procedures and the vehicle driving procedures described in § 86.132-96 (f) through (j) and in paragraphs (c) through (d) of this section shall be omitted, and the 10 minute and 60 minute time requirements of paragraph (e) of this section shall apply to time after completion of the bench purge. In

the case of multiple refueling canisters, each canister shall be purged separately.

(2) *With the exhaust emission test.* The Administrator may conduct the canister preconditioning by purging the canister(s) directly after the exhaust test (see paragraph (c)(1) of this section). The canister shall be purged with at least 1200 canister bed volumes of ambient air (with humidity controlled to 50±25 grains of water vapor per pound of dry air) maintained at a nominal flow rate of 0.8 cfm. In this case, the vehicle driving procedures described in paragraphs (c)(2) through (d) of this section shall be omitted, and the 10 minute and 60 minute time requirements of paragraph (e) of this section shall apply to time after completion of the bench purge. In the case of multiple refueling canisters, each canister shall be purged separately.

(c) *Canister purging; integrated systems.* (1) Vehicles to be tested for exhaust emissions only shall be processed according to §§ 86.135-94 through 86.137-96. Vehicles to be tested for refueling emissions shall be processed in accordance with the procedures in §§ 86.135-94 through 86.137-96, followed by the procedures outlined in paragraph (c)(2) of this section.

(2) To provide additional opportunity for canister purge, conduct additional driving on a dynamometer, within one hour of completion of the hot start exhaust test, by operating the test vehicle through one UDSS, a 2 minute idle, two NYCCs, another 2 minute idle, another UDSS, then another 2 minute idle (see § 86.115-78 and appendix I of this part). Fifteen seconds after the engine starts, place the transmission in gear. Twenty seconds after the engine starts, begin the initial vehicle acceleration of the driving schedule. The transmission shall be operated according to the specifications of § 86.128-79 during the driving cycles. The vehicle's air conditioner (if so equipped) shall be turned off. Ambient temperature shall be controlled as specified in § 86.151-98. It is not necessary to monitor and/or control in-tank fuel temperatures.

(i) The fixed-speed fan specified in § 86.135-94(b) may be used for engine cooling. If a fixed-speed fan is used, the vehicle's hood shall be opened.