§ 86.225–94 [Reserved]

§ 86.226–94 Calibration of other equipment.

The provisions of § 86.126 apply to this subpart.

§ 86.227–94 Test procedures; overview.

The provisions of § 86.127–94 (a), (b), and (e) apply to this subpart.

§ 86.228–94 Transmissions.

The provisions of § 86.128–79 apply to this subpart.

§ 86.229–94 Road load force, test weight, and inertia weight class determination.

(a) Flywheels, electrical forces, or other means of simulating test weight as shown in the table in this paragraph shall be used. If the equivalent test weight specified is not available on the dynamometer being used, the next higher equivalent test weight (not to exceed 250 pounds) available shall be used. Light-duty vehicles over 5750 lbs. loaded vehicle weight shall be tested at a 5,500 lb. equivalent test weight.

Loaded vehicle weight (pounds)	Equivalent test weight (pounds)	Inertia weight class (pounds)
Up–1,062	1,000	1,000
1,063–1,187	1,125	1,000
1,188–1,312	1,250	1,250
1,313–1,437	1,375	1,250
1,438–1,562	1,500	1,500
1,563–1,687	1,625	1,500
1,688–1,812	1,750	1,750
1,813–1,937	1,875	1,750
1,938–2,062	2,000	2,000
2,063–2,187	2,125	2,000
2,188–2,312	2,250	2,250
2,313–2,437	2,375	2,250
2,438–2,562	2,500	2,500
2,563–2,687	2,625	2,500
2,688–2,812	2,750	2,750
2,813–2,937	2,875	2,750
2,938–3,062	3,000	3,000
3,063–3,187	3,125	3,000
3,188–3,312	3,250	3,000
3,313–3,437	3,375	3,500
3,438–3,562	3,500	3,500
3,563–3,687	3,625	3,500
3,688–3,812	3,750	3,500
3,813–3,937	3,875	4,000
3,938–4,125	4,000	4,000
4,126–4,375	4,250	4,000
4,376–4,625	4,500	4,500
4,626–4,875	4,750	4,500
4,876–5,125	5,000	5,000
5,126–5,375	5,250	5,000
5,376–5,750	5,500	5,500
5,751–6,250	6,000	6,000
6,251–6,750	6,500	6,500
6,751–7,250	7,000	7,000
7,251–7,750	7,500	7,500
7,751–8,250	8,000	8,000
8,251–8,750	8,500	8,500
8,751–9,250	9,000	9,000
9,251–9,750	9,500	9,500
9,751–10,000	10,000	10,000

(b) A dynamometer which meets the specifications of § 86.208–94(a) shall be adjusted to simulate the operation of a vehicle on the road at 20 °F (−7 °C). Such adjustment may be based on a determination of the road load force profile at 20 °F (−7 °C). Alternatively, the adjustment may be based on a 10 percent decrease in the target coastdown time that is used for FTP testing.

§ 86.230–11 Test sequence: general requirements.

(a) *Sequence steps*. Figure C94–1 of § 86.230–94 shows the steps encountered as the test vehicle undergoes the procedures subsequently described, to determine conformity with the standards set forth.

(b) *Driving schedule*. The Urban Dynamometer Driving Schedule (UDDS) test procedure (see § 86.115 and appendix I to this part) is used for vehicle preconditioning and testing.

(c) *Ambient temperature level*. (1) Ambient temperature levels encountered by the test vehicle shall average 20° ±5 °F (−7 °C ±2.8 °C) and shall not be less than 10 °F (−14 °C) nor more than 30 °F (−1 °C) during vehicle preconditioning, except for preconditioning performed in accordance with § 86.232(a)(7), and during all emission testing.

(2) The ambient temperature reported shall be a simple average of the test cell temperatures measured at constant intervals no more than one minute apart. Before the driving cycle may begin, the test cell temperature shall be 20 °F ±3 °F (−7 °C ±1.7 °C) when measured in accordance with paragraph (e)(2) of this section. The temperature may not exceed 25 °F (−4 °C) or fall below 15 °F (−9 °C) for more than three consecutive minutes during the test.

(d) *Vehicle positioning*. The vehicle shall be approximately level during all

phases of the test sequence to prevent abnormal fuel distribution.

(e) *Engine compartment cooling.* (1) Fixed speed air cooling of the engine compartment with the compartment cover open shall be utilized during testing that is conducted by the Administrator and, optionally for certification testing, by the manufacturer. If a separate movable fan is used, it shall be squarely positioned within 12 inches (30.5 centimeters) of the front of vehicles with front engine compartments. In the case of vehicles with rear engine compartments (or if special designs make the normal front engine positioning impractical), the cooling fan shall be placed in a position to provide sufficient air to maintain vehicle cooling. The fan capacity shall normally not exceed 5,300 cfm (2.50 cubic meters per second). If, however, the manufacturer showed (as provided in § 86.135–94(b)) that additional cooling is necessary, the fan capacity may be increased or additional fans used if approved in advance by the Administrator. The cooling air temperature shall be measured at the inlet to the fan.

(2) In lieu of using a separate fan, an air handling system that is integral with the test cell may be used provided comparable air movement is obtained. The cooling air temperature shall be measured in the center of a vertical plane that is located approximately 2 feet in front of the vehicle.

(3) The manufacturer may use, for certification and fuel economy testing, alternative engine compartment cooling fans or systems, including those which provide a variable air flow, if the manufacturer has determined that comparable results are obtained. Manufacturers may perform the test with the engine compartment closed, *e.g.* to provide adequate air flow to air flow to an intercooler through a factory installed hood scoop, if needed to provide a representative test. Additionally, the Administrator may conduct certification, fuel economy and in-use testing using the additional cooling set-up approved for a specific vehicle.

(f) *Heater and defroster usage.* The vehicle interior climate control system shall be operated with the interior heating system on and the air flow directed to the mode that primarily defrosts the front window during the test. Air conditioning controls shall be set to the ''Off'' position. No supplemental auxiliary heat is permitted during the dynamometer procedure. The heater may be used at any temperature and fan settings during vehicle preconditioning. The manufacturer shall use the vehicle's controls to achieve the operation specified in this paragraph (f). The manufacturer shall use good engineering judgment and take into account engine control changes (e.g., engine-off logic, idle speed operation, spark advance changes) and engine control features that may be directly affected by the fan or temperature settings.

(1) *Manually controlled systems.* (i) Prior to the first acceleration of the test at T=20 seconds the climate control settings shall be set as follows (these settings may be initiated prior to starting the vehicle if allowed by the vehicle's climate control system):

(A) *Temperature.* Manually operated systems shall be set to maximum heat. Automatic systems optionally using the provisions of this paragraph (f)(1) shall be set to 72 degrees F or higher.

(B) *Fan speed.* Full off, or if a full off position is not available, to the lowest available speed.

(C) *Airflow direction.* Airflow directed to the front window (window defrost mode). Based on good engineering judgment, an alternative vent setting may be used if necessary to achieve the temperature and fan speed settings in this paragraph (f)(1).

(D) *Air source.* If independently controllable, the airflow source control shall be set to the position which draws outside air.

(ii) At the second idle of the test cycle, which occurs at the first deceleration to zero miles per hour at T=125 seconds, the fan speed shall be set to maximum, and, if not already set in this position, the airflow shall be directed fully to the front window in the window defrost mode. Temperature and air source settings shall remain as set in paragraph (f)(1) of this section. These settings shall be completed by T=130 seconds.

(iii) At the sixth idle of the test cycle, which occurs at the deceleration

to zero miles per hour at T=505 seconds, the fan speed shall be set to the lowest setting that maintains air flow. This setting shall be completed by T=510 seconds. Based on good engineering judgment, the manufacturer may use alternative vent and/or higher fan speed settings for the remainder of the test. Temperature and air source settings shall remain as set in paragraph (f)(1)(i) of this section for the remainder of the test.

(2) *Automatic systems*. Automatic systems may use either the provisions in paragraph (f)(1) of this section or manufacturers may set the temperature at 72 degrees F and the air flow control to the front window defroster mode for the entire duration of the test.

(3) *Multiple-zone systems*. For vehicles with separate driver and passenger controls, or for vehicles with separate controls for the front seating region and for the passenger region behind the driver, all sets of temperature and fan controls shall be set according to paragraphs (f)(1) through (f)(3) of this section.

(4) *Alternative test procedures*. The Administrator may approve the use of other settings under § 86.1840–01 if, for example, a vehicle's climate control system is not compatible with the provisions of this section.

[71 FR 77924, Dec. 27, 2006, as amended at 74 FR 61548, Nov. 25, 2009]

§ 86.230–94 Test sequence: general requirements.

(a) *Sequence steps*. Figure C94–1 shows the steps encountered as the test vehicle undergoes the procedures subsequently described, to determine conformity with the standards set forth.