



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
2565 PLYMOUTH ROAD
ANN ARBOR, MICHIGAN 48105-2498

OFFICE OF
AIR AND RADIATION

February 15, 2016

CD-16-03 (LDV/LDT/MDV/HDV1 & 2/Alt Fuel
Converters)

**SUBJECT: Preparing Light-Duty Vehicles and Trucks for Chassis Testing at EPA's
National Vehicle and Fuel Emissions Laboratory (NVFEL)**

Dear Manufacturer:

Enclosed with this letter are instructions to vehicle manufacturers regarding the preparation of test vehicles prior to delivery to the National Vehicle and Fuel Emissions Laboratory (NVFEL) in Ann Arbor, Michigan for EPA confirmatory testing. These instructions replace EPA's Guidance Letter CCD-02-14 dated September 23, 2002.

Please use these instructions to expedite the testing of your certification and fuel economy data vehicles at NVFEL.

If you have questions about these instructions, please contact Michael Sabourin of the Compliance Division at (734)214-4316 or your EPA Certification Representative.

Sincerely,

A handwritten signature in black ink, appearing to read "Byron Bunker", is positioned above the typed name.

Byron Bunker, Director
Compliance Division
Office of Transportation and Air Quality

Enclosures

Enclosure 1 to CD-16-03
General Information

I. Background - Why Does EPA Test Vehicles?

- A. 40 CFR Part 86.1835-01(a)(1) provides that the Administrator may require submission of test vehicles selected for demonstrating compliance with emission standards to a designated test laboratory. The Agency conducts confirmatory testing at the NVFEL under this provision.
- B. 40 CFR Part 86.600.008-77(d) provides that the Administrator may require fuel economy data vehicles be submitted to a designated test laboratory. The Agency conducts fuel economy confirmatory testing at the NVFEL under this provision.

II. Applicability:

These instructions are effective immediately and are applicable to all light-duty vehicles, light-duty trucks and medium-duty passenger vehicles being tested for certification and/or fuel economy compliance following the Federal light duty test procedures (FTP).

The instructions are primarily directed at conventionally-fueled vehicles. Please provide written operating instructions and testing procedures for advanced technology vehicles, such as hybrids and fuel cells, to your EPA Compliance Division representative prior to delivery of the vehicle to NVFEL.

III. Preparation of Test Vehicles:

The attachments to this guidance list the preparation requirements for vehicles delivered to the NVFEL in Ann Arbor for testing. The following instructions are designed to facilitate efficient testing of the vehicle.

A. General

- 1. A set of keys, clearly marked with vehicle make, identification number, and model, should be provided with each test vehicle. Please try to limit the size of the key identification tag to no larger than 1 inch by 2 inches.
- 2. Information pertinent to the testing of the vehicle should be displayed in or on the vehicle. Include the following information:
 - a. Manufacturer vehicle identification number
 - b. Location of fuel tank drainage valve
 - c. A fuel tank shutoff valve for gaseous fueled vehicles
 - d. Location of fuel filler door release
 - e. Canister loading information including load port and vent location

Enclosure 2 is an example format to be used for these data. Enclosure 3 is a completed example of Enclosure 2.

Special operating and mode setting instructions (Dyno Mode, Transmission Mode, Start-Stop activation, but also unique instructions that come up such as unique hood release and/or accessing an electronic dipstick, etc.), starting procedures, identification of the dynamometer drive wheels, disabling of traction or stability control operation, and fan type and placement (see diagram below) must be submitted with each vehicle. EPA cannot test a vehicle without this information. Enclosure 3 provides an example for supplying this information.

3. Each vehicle must have the appropriate shift schedule (FTP, HWFET, and US06) entered into the data base for the Video's Drivers Aid (VDA) System. The shift schedule information must be entered in the NVFEL VERIFY database prior to the vehicle arriving at NVFEL. If the vehicle is not in the NVFEL VERIFY database system (e.g., intermediate-age aftermarket alternative fueled vehicles), the shift instructions must be provided in advance to NVFEL.
4. Test vehicles shall be delivered to and received by EPA no later than two days prior to the scheduled testing. Due to storage limitations, vehicles shall not arrive more than four days prior to scheduled testing nor remain longer than 1 week after testing, unless prior arrangements are made with EPA. Deliver vehicles to the attention of Mr. Ben Haynes. Vehicles should be delivered and picked up Monday through Thursday between 7:30am and 3:00 pm.
5. The vehicle information requested in Enclosure 2 should be completed and test number(s) assigned in advance of vehicle inspection.
6. For CNG and LPG fuel, in lieu of submitting a sample of the same fuel used to fill the test vehicle fuel tank, EPA will request that alternative fuel conversion manufacturers provide EPA with the most recent fuel properties report for the pipeline fuel that was used to test the emission data vehicle. This fuel must be odorized as described by 49 CFR 192.625.

Sufficient fuel must be supplied by the manufacturer to complete all required emission testing, and fuel economy testing.

7. If the vehicle is fueled with an HD-5 LPG fuel, send an email to that effect to the EPA certification representative. EPA will use LPG default parameters based on the assumption that the fuel is 95 mole percent propane, 1% butane and 4% propene. An example calculation assuming 95% propane and 5% n-butane is shown in Appendix XVI to 40 CFR Part 86.

¹References to specific manufacturers or suppliers do not constitute EPA promotion or endorsement of the equipment items described in this letter.

B. Items Associated with the Preconditioning Portion of the Test

1. A fuel tank drain line, separate from the main fuel line, must originate from the lowest point in the fuel tank(s) and must incorporate a positive shut-off valve and terminate in an accessible place (e.g., under the rear bumper, in the trunk, or near the fuel filler pipe). The line should end with either a 3/8 inch outside-diameter rigid tube or a quick disconnect similar to an Aeroquip Part No. 5602-8-105.
2. The evaporative emission canister must be accessible without use of a vehicle lift, and the load and vent ports must be labeled. If not, external labeled access lines must be available. Provide special canister loading instructions with the vehicle if required. Labeled canister load and vent lines must be easily accessible either outside the vehicle, underhood or through the trunk.
3. Before emissions testing of CNG and LPG vehicles, EPA will run an ambient temperature SHED test for one hour (less if a significant leak is detected) to verify the system is leak free.
4. For only those vehicles requiring a Cold Temperature Test Procedure, at least one type J (iron constantan) or type K (chromel-alumel) thermocouple must be installed, terminating in a male connector (*miniature or standard*) of the type *matching the thermocouple probe*. *The thermocouple(s) should be installed as near as possible to the volumetric center of the fuel when the tank contains 40 percent of its nominal fuel tank capacity.*

C. Items Associated with the Dynamometer Portion of the Test

1. The tailpipes of all vehicles must be equipped with a 2.5 inch stainless steel Marmon flange (Aeroquip/ServiceMaster Part No. MFF61196-250S, or equivalent). Flanges must be permanently welded to preclude leaks. The face of the flanges must project 3/8 inch beyond the end of the tailpipes as shown in Attachment A-3 to ensure leak-tight connections with the EPA CVS flanges. Accommodation can be made for a 4 inch Marmon flange for large displacement vehicles, but any other deviation from this configuration which precludes proper mating with the EPA CVS flange will result in rejection of the vehicle.
2. Flanges must extend far enough beyond the body of the vehicles to ensure adequate accessibility. Vehicles with dual exhaust systems should allow a minimum of 3 inches between flanges with faces parallel to one another to facilitate coupling to the EPA CVS flanges.
3. All front-wheel-drive vehicles must have either two sturdy hold-down eyelets (2.5 inch inside diameter) installed or a single eyelet if accessible by straps from both sides of the vehicle. The eyelet(s) should be located on each side of the vehicle forward of the front wheel centerline and at least 6 inches outboard of the vehicle centerline.

4. Rear-wheel-drive vehicles will be held by front chocks. Vehicles needing additional restraint should have one hold-down eyelet in the rear or a trailer hitch receiver.
5. Four-wheel-drive and all-wheel drive vehicles require two hold-downs, one eyelet in the front (passenger side preferred) per the front-wheel-drive instructions and one eyelet or hitch receiver in the rear.

NOTE: Not following these instruction may cause delays in testing or outright rejection of the vehicle at the time it is delivered to the EPA NVFEL.

**Enclosure 2 to CD-16-02
Format for Basic Data**

Manufacturer Vehicle Identification Number:

Starting Instructions:

Location of Fuel Tank Drain Valve:

Location of Fuel Filler Door Release:

Traction Control Switch Location and Operating Instructions:

Diagram of Fan Placement and Positions:

Special Operating and Mode Setting Instructions:

**Enclosure 3 to CD-16-03
Completed Sample of Format for Basic Data**

Manufacturer Vehicle Identification Number:

ABC-12345678

Starting Instructions:

Cold Start – Start engine by turning key to "Start" position
Hot Start – Start engine by turning key to "Start" position

Location of Fuel Tank Drain Valve:

Behind right corner of rear bumper

Location of Fuel Filler Door Release:

Release inside glove box, door is on driver's side

Traction Control Switch Location and Operating Instructions:

Center of dash board under radio, labeled TCS. To turn the traction control off, push the TCS button after starting the engine

Special Operating and Mode Setting Instructions:

Dyno Mode: Depress and hold brake pedal. Hold ignition button 5 seconds. Verify “Ready” light illuminates on instrument panel (see attached picture).

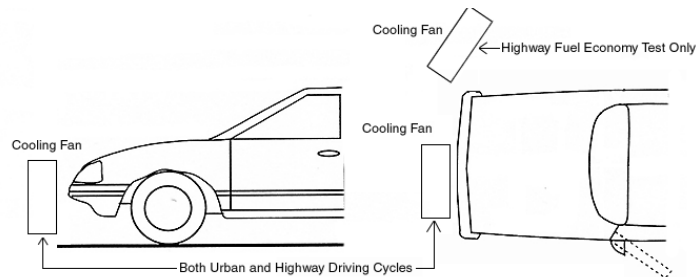
Start-Stop: Test with function on. Latch hood. Fasten seat belt. Press Start-Stop button and confirm it illuminates green.

Hood Release: Pull lever on driver’s kick panel twice.

Keyless Ignition: Store key at least 20 feet away from the vehicle.

Electronic Oil Level: From main menu, select “Vehicle Info,” then “Oil Level.”

Diagram of Fan Placement and Positions:



Enclosure 4 to CD-16-03
Tail Pipe End Flange

