

§ 7:27B-4.3 Procedures for using a smokemeter to measure the smoke opacity of heavy-duty diesel vehicles and diesel buses

(a) The testing procedures for the snap acceleration smoke opacity test, required pursuant to N.J.A.C. 7:27-14.5, shall be performed on heavy-duty diesel vehicles and diesel buses as follows:

1. Determine the engine horsepower from the engine identification plate or engine serial number. Refer to Table 1 below and input the nominal stack size into the smokemeter. If the engine identification plate is missing, inaccessible or illegible, measure the outside diameter of the exhaust pipe extending from the exhaust manifold with a precision caliper or equivalent gauge, rounding to the nearest inch;
2. For a PIF, only, affix the RPM sensor to the engine and vehicle according to the smokemeter manufacturer's instructions;
3. For a PIF, only, connect the engine RPM sensor to the smokemeter according to the smokemeter manufacturer's instructions;
4. Affix the smokemeter according to the manufacturer's instructions to the end of the vehicle's exhaust pipe. For full-flow smokemeters, ensure that the final two feet and the exit of the exhaust pipe is straight, with an internal diameter not to exceed five inches. Appropriate exhaust pipe adapters shall be used as necessary to comply with these specifications. Do not use full-flow smokemeters on vehicles with underbody exhaust pipes which direct the exhaust flow to the ground unless the exhaust gases are redirected away from the ground by the appropriate exhaust pipe adaptor mentioned above;
5. Chock the drive-wheels and release all tractor and trailer brakes;
6. Ensure that the transmission is in neutral and start the engine;
7. Ensure that the smokemeter is warmed up and calibrated according to N.J.A.C. 7:27B-4.2 and the manufacturer's instructions;
8. Initiate the test sequence on the smokemeter;
9. If using a partial-flow smokemeter, select the appropriate smoke opacity pass/fail standards, set forth at N.J.A.C. 7:27-14.6, based upon the engine model year. If using a full-flow smokemeter, enter the engine horsepower and stack diameter as measured from the vehicle exhaust stack;
10. If using a smokemeter without horsepower input, select the appropriate stack size from Table 1 below, based upon the vehicle's engine horsepower;
11. With each prompt from the smokemeter to "accelerate engine," rapidly depress the accelerator pedal to the floor and hold it there until prompted by the smokemeter to release the pedal;
12. Repeat (a)11 above at least four more times. This shall include, at a minimum, two preliminary snap accelerations to remove loose soot from the exhaust system for a stabilized reading, and a minimum of three snap accelerations for the official test, the average of which shall constitute the final test result; and
13. The pass/fail determination shall be based upon three valid smoke opacity test results averaged arithmetically and compared to the pass/fail standards appropriate for the engine model year.

TABLE 1

Engine Horsepower Rating vs. Nominal Stack Size

| Manufacturer's Rated Horsepower | Nominal Stack Size in Inches+ |
|---------------------------------|----------------------------------|
| Less than 101 | 2 |
| 101-200 | 3 |
| 201-300 | 4 |
| 301 and over | 5 |

+Note: Nominal stack size shall always be used when measuring engine smoke opacity, irrespective of the stack size equipped on the vehicle being tested. For example, a vehicle equipped with an engine rated at 301 horsepower or above which has an exhaust stack measuring seven inches in diameter shall, for purposes of an official test, have a nominal stack size of five inches input to the smokemeter. If, for example, a vehicle has no engine identification plate and is equipped with an exhaust stack measuring six or seven inches in diameter--but the exhaust pipe from the manifold is five inches in diameter--then the nominal stack size shall be five inches.

HISTORY:

Amended by R.1997 d.393, effective September 15, 1997 (operative October 7, 1997).

See: 29 N.J.R. 971(a), 29 N.J.R. 4108(a).

Rewrote section.

Amended by R.1998 d.309, effective July 6, 1998 (operative July 21, 1998).

See: 30 N.J.R. 901(a), 30 N.J.R. 2476(b).

Rewrote the section.

Amended by R.1999 d.210, effective July 6, 1999 (operative August 10, 1999).

See: 31 N.J.R. 828(a), 31 N.J.R. 1803(b).

In (a), deleted a reference to manual transmissions in the introductory paragraph.

Administrative correction.

See: 38 N.J.R. 5155(b).

Amended by R.2007 d.235, effective August 6, 2007 (operative September 8, 2007).

See: 38 N.J.R. 5244(a), 39 N.J.R. 3352(a).

In the introductory paragraph of (c), and in (c)13 and (c)21, substituted "power brake" for "stall".

Amended by R.2009 d.343, effective November 16, 2009 (operative December 18, 2009).

See: 41 N.J.R. 1606(a), 41 N.J.R. 4195(b).

Deleted (d) and (e).

Amended by R.2016 d.124, effective October 3, 2016 (operative December 2, 2016).

See: 48 N.J.R. 748(a), 48 N.J.R. 2049(a).

Rewrote the section.