

(b) The testing procedures for the rolling acceleration smoke opacity test, required pursuant to N.J.A.C. 7:27-14.5, shall be performed on a straight and level road course, 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 DEIC, only, affix the RPM sensor to the engine and vehicle according to the smokemeter manufacturer's instructions;

3. For a DEIC, only, insert the engine oil temperature sensor into the oil dipstick tube and into the crankcase oil according to the smokemeter manufacturer's instructions;

4. For a DEIC, only, connect the engine RPM and oil temperature sensors to the smokemeter according to the smokemeter manufacturer's instructions;

5. 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;

6. Ensure that the smokemeter is warmed up and calibrated according to N.J.A.C. 7:27B-4.2 and the manufacturer's instructions;

7. Start the engine and operate at curb idle speed;

8. Purge the exhaust system of loose soot and stabilize the smoke opacity readings. For vehicles with low speed diesel engines, conduct one rolling acceleration by rapidly depressing the accelerator pedal to the floor and holding it there for three to five seconds, or until prompted by the smokemeter to release the pedal. For vehicles with medium or high speed diesel engines, conduct three rolling accelerations by rapidly depressing the accelerator pedal to the floor and briefly holding it there until the engine speed reaches approximately 2,500 RPM, then release. The rolling acceleration portion of the test sequence shall be deemed to be complete as soon as:

i. The vehicle has reached a speed of 10 miles per hour;

ii. The engine has reached maximum governed RPM;
or

iii. The engine has reached 2,500 RPM;

9. Initiate the test sequence on the smokemeter;

10. Select the appropriate smoke opacity pass/fail standards from N.J.A.C. 7:27-14.6, based upon the engine model year;

11. If using a partial-flow smokemeter, select the appropriate stack size from Table 1 below, based upon the engine horsepower. If using a full-flow smokemeter, enter the engine horsepower and nominal stack size as measured on the vehicle;

12. If using a smokemeter without horsepower input, select the appropriate stack size from Table 1 below, based upon the vehicle's engine horsepower;

13. When testing a vehicle with a manual transmission, depress the clutch and select the appropriate low gear for the degree to which the vehicle is laden to avoid overgearing or lugging. When testing a vehicle with an automatic transmission, place the transmission in "D" or "Drive" only, or the gear position immediately next to "N" or "Neutral";

14. When testing a vehicle with a manual transmission, gradually engage the clutch;

15. Accelerate until the vehicle is rolling forward at a speed equivalent to the engine curb idle, then increase the engine speed by 200 RPM, ± 50 RPM;

16. When testing a vehicle with a low speed diesel engine, rapidly depress the accelerator pedal to the floor and hold for approximately three to five seconds or until prompted by the smokemeter to release the accelerator. When testing a vehicle with a medium or high speed diesel engine, rapidly depress the accelerator pedal to the floor and hold it there until an engine RPM of approximately 2,500 RPM is achieved, then release the accelerator pedal. When testing a vehicle with a manual transmission, do not shift to the next gear. The rolling acceleration portion of the test sequence shall be deemed to be complete as soon as:

i. The vehicle has reached a speed of 10 miles per hour;

ii. The engine has reached maximum governed rpm;
or

iii. The engine has reached 2,500 rpm;

17. Release the accelerator pedal, disengage the clutch and bring the vehicle to a stop; and

18. Determine whether the vehicle has passed or failed by comparing the smoke opacity test result to the standards set forth at N.J.A.C. 7:27-14.6 appropriate for the test vehicle's engine model year.

(c) The testing procedures for the stall smoke opacity test, required pursuant to N.J.A.C. 7:27-14.5, shall be per-

formed, on a vehicle with a medium or high speed diesel engine and an automatic transmission only, as follows:

1. Unless the vehicle engine is of a torque-tube design, inspect the vehicle's drive shaft, U-joints and slip-joints for mechanical integrity. Discontinue testing of any vehicle exhibiting signs of appreciable looseness or wear in the U-joints or slip-joints, or any damage to the drive shaft which would adversely affect the vehicle's mechanical integrity. Do not resume testing unless and until the defects are repaired;

2. Ensure that the parking and service brakes are in good operating condition. Discontinue testing of any vehicle exhibiting inoperable or inadequate parking or service brakes. Do not resume testing unless and until the defects are repaired;

3. 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;

4. For a DEIC, only, affix the RPM sensor to the engine and vehicle according to the smokemeter manufacturer's instructions;

5. For a DEIC, only, insert the engine oil temperature sensor into the oil dipstick tube and into the crankcase oil according to the smokemeter manufacturer's instructions;

6. For a DEIC, only, connect the engine RPM and oil temperature sensors to the smokemeter according to the smokemeter manufacturer's instructions;

7. 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;

8. Ensure that the smokemeter is warmed up and calibrated according to N.J.A.C. 7:27B-4.2 and the manufacturer's instructions;

9. Chock the drive-wheels;

10. Set the vehicle's parking brake;

11. Start the engine and operate at curb idle speed;

12. Purge the exhaust system of loose soot and stabilize the smoke opacity readings. Conduct at least three snap accelerations by rapidly depressing the accelerator pedal to the floor and holding until the engine speed reaches high idle or 2,500 RPM, whichever is lower before releasing, with five to 45 seconds between accelerations;

13. Initiate the test sequence on the smokemeter. Some smokemeters may not have a testing sequence entitled "stall acceleration test." For these smokemeters, the snap acceleration test sequence may be used;

14. Select the appropriate smoke opacity pass/fail standard set forth at N.J.A.C. 7:27-14.6, based upon the engine model year;

15. If using a partial-flow smokemeter, select the appropriate stack size from Table 1 below, based upon the engine horsepower. If using a full-flow smokemeter, enter the engine horsepower and the actual stack diameter as measured upon the vehicle exhaust stack outlet;

16. If using a smokemeter without horsepower input, select the appropriate stack size from Table 1 below, based upon the vehicle's engine horsepower;

17. Apply the service brakes with the left foot;

18. Place the transmission in "D" or "Drive" or the gear position immediately next to "N" or "Neutral." Do not use the "LO" or "1" gear positions;

19. Rapidly depress the accelerator pedal to the floor and hold it there for approximately three seconds or until prompted to release it by the smokemeter;

20. Repeat (c)18 above at least two more times for a minimum total of three accelerations, with a pause of between five and 10 seconds between accelerations or until prompted by the smokemeter;

21. Three valid stall accelerations shall constitute a successful test procedure and terminates the test;

22. Determine whether the vehicle has passed or failed based upon three valid smoke opacity test results averaged arithmetically and compared to the standards set forth at N.J.A.C. 7:27-14.6 appropriate for the test vehicle's engine model year; and

23. If the tests results are invalid and testing must be repeated, allow a minimum of three minutes but no more than five minutes of idling to cool the transmission before repeating the test.

(d) The testing procedures for the visible black smoke screening test, required pursuant to N.J.A.C. 7:27-14.5, shall be performed as follows:

1. Determine whether the vehicle's governor and automatic transmission, as applicable, are functioning properly. Do not proceed with the testing of a vehicle which is determined to have a disabled or an improperly functioning governor or automatic transmission until the governor or automatic transmission is repaired or a properly functioning governor or automatic transmission is installed;

2. If the vehicle is equipped with a manual transmission, place the transmission in neutral and release the clutch. If the vehicle is equipped with an automatic transmission and a low speed engine, place the gear selector in the park or neutral position. If the vehicle is equipped with an automatic transmission, but is not equipped with a low speed engine, place the gear selector in drive or low gear. For both manual and automatic transmission vehicles, depress the brakes firmly throughout the remainder of the test;

3. Observe all exhaust ports of the vehicle for the presence of visible black smoke in the exhaust emissions throughout the duration of the test;

4. Beginning with the accelerator pedal in the low idle position, rapidly accelerate the engine at wide open throttle and hold the accelerator pedal at wide open throttle for one to three seconds after the engine has achieved maximum governed RPM or, for vehicles with an automatic transmission, only, until the engine speed stabilizes while operating in a forward gear. Release the accelerator pedal and allow the engine to idle for 15 seconds while continuing to observe the exhaust emissions for visible black smoke. If black smoke is observed, the vehicle shall be deemed to have failed to pass the visible black smoke screening test.

(e) (Reserved)

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.

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.

7:27B-4.4 Emission control apparatus examination procedure

(a) The procedure for examination of the emission control apparatus of a diesel-powered motor vehicle, required at N.J.A.C. 7:27-14.5(f), shall, if the motor vehicle had any exhaust aftertreatment incorporated within the vehicle's or engine's certified configuration by the vehicle or engine original equipment manufacturer, consist of a visual check to determine whether such exhaust aftertreatment is present on the motor vehicle.

(b) The absence of any exhaust after treatment determined pursuant to (a) above to be included in a motor vehicle or diesel engine's certified configuration shall result in a determination of failure to pass the emission control apparatus compliance examination.

New Rule, R.1985 d.331, effective July 1, 1985 (operative December 2, 1985).

See: 17 N.J.R. 781(a), 17 N.J.R. 1649(a).

Old rule "Light-duty gasoline fueled motor vehicle emission control apparatus compliance examination procedure" was repealed and this new section adopted except for (a)2 which is still pending.

Public Notice: The Department has decided not to adopt the proposed Plumbtesmo test procedure.

See: 18 N.J.R. 1714(b).

Emergency recodification from 7:27B-4.6 and amendment, R.1995 d.409, effective June 29, 1995 (expires August 28, 1995).

See: 27 N.J.R. 2752(a).

Adopted concurrent proposal, R.1995 d.527, effective August 28, 1995 (operative October 27, 1995).

See: 27 N.J.R. 2752(a), 27 N.J.R. 3806(a).

Recodified from N.J.A.C. 7:27B-4.9 and 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).

In (a) and (c), inserted "gasoline-fueled"; in (b), inserted "in a gasoline-fueled motor vehicle"; and added (d) and (e). Former section recodified as N.J.A.C. 7:27B-4.7.

Administrative change.

See: 33 N.J.R. 3550(a).

Recodified with amendments from N.J.A.C. 7:27B-4.8.

7:27B-4.5 Procedures for establishing an alternative smoke opacity standard for diesel-powered motor vehicles

(a) In the event that a heavy-duty diesel vehicle, which is equipped with an engine model year 1973 or older, fails to pass an exhaust emissions inspection as part of either a periodic inspection or an inspection conducted as part of the roadside enforcement program, the owner or lessee of the heavy-duty diesel vehicle may request the Department to establish an alternative smoke opacity standard for that vehicle-engine-chassis combination, if the cause of the failure is due to the design of the vehicle, rather than to insufficient repair and maintenance. The procedures for obtaining this alternative smoke opacity standard are as follows:

1. The owner or lessee shall present to the Department the "Heavy-duty Diesel Emission Testing Report" prepared by the inspector who conducted the smoke

opacity testing and determined that the vehicle failed to meet the standards set forth at N.J.A.C. 7:27-14.4 and 14.6, as applicable;

2. The owner or lessee shall submit documentation to the Department, or its designee, demonstrating that the vehicle engine and all fuel control and emissions-related components have been, within 45 calendar days of submission of said documentation:

i. Tuned to minimize the level of smoke in the exhaust emissions consistent with the design, specifications and certified configuration, as applicable, prescribed by the original equipment manufacturer; and

ii. Determined by a licensed diesel emissions inspection center, to be within the design, specifications and certified configuration, as applicable, prescribed by the original equipment manufacturer;

3. The owner or lessee shall subject the vehicle to any other examination or testing required by the Department or the Department's designee. Such examination or testing shall be performed by a person of the Department's choosing; and

4. The owner or lessee shall ensure the performance of any repairs which the Department deems likely to enable the vehicle to meet the smoke opacity standards set forth at N.J.A.C. 7:27-14.4 and 14.6, as applicable.

(b) If the Department determines that the vehicle cannot be repaired to meet the standards set forth at N.J.A.C. 7:27-14.4 and 14.6, it shall issue an alternative smoke opacity standard report to the owner or lessee which establishes an alternative smoke opacity standard for the specific vehicle-engine-chassis combination. The Department shall establish this alternative smoke opacity standard by adding 10 percentage points or the maximum points as necessary to not yield an alternative smoke opacity standard in excess of 100 percent to the highest smoke opacity percentage obtained from all testing of the vehicle performed subsequent to any tuning, repairing, or rebuilding of the engine pursuant to (a)2 above.

(c) In order to have the alternative smoke opacity standard applied when the vehicle is inspected pursuant to the requirements of N.J.A.C. 7:27-14 and this subchapter, an owner or lessee shall present the alternative smoke opacity report issued by the Department to the inspector at the time of the inspection of the vehicle. Failure by the owner or lessee to present the alternative smoke opacity report to the inspector at the time of inspection will result in the application of the smoke opacity standards set forth at N.J.A.C. 7:27-14 otherwise applicable to the vehicle.

New Rule, 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).

Former section recodified as N.J.A.C. 7:27B-4.12.

Administrative change.

See: 33 N.J.R. 3550(a).

Recodified from N.J.A.C. 7:27B-4.13. Former N.J.A.C. 7:27B-4.5, Procedures for the 2,500 RPM test, was recodified as N.J.A.C. 7:27B-5.4.

7:27B-4.6 Specifications for a smokemeter for determining compliance with N.J.A.C. 7:27-14

(a) A smokemeter used to measure smoke opacity in the exhaust emissions of a diesel-powered motor vehicle in order to determine the vehicle's compliance with N.J.A.C. 7:27-14 shall conform to the following:

1. The smokemeter shall, at minimum, conform to all specifications and standards set forth in SAE J1667 and incorporated herein by reference; and

2. The smokemeter shall be capable of accepting as input the vehicle exhaust stack diameter and the engine horsepower;

(b) In addition to the requirements set forth at (a)1 and 2 above, a smokemeter, when used by a diesel emissions inspection center to measure smoke opacity in the exhaust emissions of a diesel-powered motor vehicle for determining compliance with N.J.A.C. 7:27-14, shall conform to the following:

1. The smokemeter shall have an integrated engine RPM hookup with an accuracy of ± 20 RPM, which shall actively measure engine RPM during testing;

2. The smokemeter shall have an oil temperature probe which shall measure engine oil temperature in degrees Fahrenheit during testing;

3. The smokemeter shall have the capability to produce a printed test report, in a format approved by the Department. The report shall include:

i. The date and time of testing;

ii. The final test score and, if test score averaging is required pursuant to N.J.A.C. 7:27B-4.3(a) and (c), individual test run raw scores;

iii. The identification number of the inspector performing the test and the license number of the DEIC at which the test was performed;

iv. The vehicle identification number and the model year of the vehicle tested;

v. A graphical representation, with a resolution of ± 20 RPM, of the pattern measured by the engine RPM hookup during testing; and

vi. The oil temperature when measured during testing conducted pursuant to N.J.A.C. 7:27B-4.3(a)5, (b)4 or (c)6.

New Rule, 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).

Administrative change.

See: 33 N.J.R. 3550(a).