

Brake System Performance Requirements —Truck, Bus, and Combination of Vehicles—SAE J992b

SAE Recommended Practice
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BRAKE SYSTEM PERFORMANCE REQUIREMENTS— TRUCK, BUS, AND COMBINATION OF VEHICLES—SAE J992b

SAE Recommended Practice

Report of Brake Committee approved July 1967 and last revised by Brake Committee and Automotive Safety Committee May 1971. Editorial change March 1978.

1. Introduction—The performance requirements in this SAE Recommended Practice represent the accumulation of the best information available from investigation of the brake system performance of new motor vehicles designed for roadway use.

2. Scope—This SAE Recommended Practice presents performance requirements for the brake systems of motor vehicles intended for roadway use and falling into the following classifications:

Light trucks and buses: 6001–10,000 lb (2700–4500 kg) gw

Truck and bus: Over 10,000 lb (4500 kg) gw

Combination of vehicles (towing vehicle over 10,000 lb (4500 kg) gw)

Acceptable performance requirements are based on data obtained from applicable sections of SAE J786a (March, 1978).

3. Purpose—The purpose of this recommended practice is to establish the minimum brake system performance requirements with regard to:

3.1 Stopping ability—of cold brakes, as affected by vehicle speed.

3.2 Stopping ability—of hot brakes, as affected by vehicle speed and duty cycle.

3.3 Pedal force (air pressure) requirements—maximum allowable.

3.4 Brake stability.

3.5 Stopping ability and recovery of wet brakes.

3.6 Stopping ability of emergency brake system.

3.7 Brake effectiveness distribution for vehicles in combination.

4. Instrumentation—See SAE J786a (March, 1978), paragraph 3.

5. Test Preparation—See SAE J786a (March, 1978), paragraph 4, except that drum, rotor, and lining measurements to establish wear are optional.

6. Test Procedure—See SAE J786a (March, 1978), paragraph 5.

7. Acceptable Performance Requirements

7.1 Preburnish Check—See SAE J786a (March, 1978), paragraph 5.3.

At some time during this test, the vehicle must attain a 14 ft/s^2 (4.3 m/s^2) deceleration at less than 200 lb (890 N) pedal force.

7.2 Effectiveness Tests—See SAE J786a (March, 1978), paragraphs 5.6, and 5.12.

The maximum stopping distances and minimum decelerations listed in Table 1 shall be attained at a maximum pedal force of 200 lb (890 N), or at an air pressure less than the maximum value specified by the vehicle manufacturer, or less in each of the tests conducted under paragraphs 5.6 and 5.12, except for the optional hot curves. In all stops, the vehicle must be maintained in a 12 ft (3.7 m) roadway lane.

7.3 Emergency System Effectiveness Test—See SAE J786a (March, 1978), paragraph 5.7.

The maximum stopping distances and minimum decelerations listed in Table 2 shall be attained at a maximum pedal force of 200 lb (890 N), or at an air pressure less than the maximum value specified by the vehicle manufacturer, maintaining the vehicle in a 12 ft (3.7 m) roadway lane.

7.4 Brake Effectiveness Distribution for Air Braked Vehicle Used in Combinations in Interchange Operations—See SAE J786a (March, 1978), paragraph 5.8.

The service brakes on any vehicle in a combination shall have the capability of developing a deceleration at 20 mph (32 km/h) of $9\frac{1}{2} \pm 1\frac{1}{2} \text{ ft/s}^2$ (2.9 m/s^2) at the manufacturer's gw rating at an application pressure from the service brake valve of 42 psi (290 kPa).

7.5 Fade and Recovery—See SAE J786a (March, 1978), paragraphs 5.9 and 5.13.

7.5.1 FADE—The pedal force or air pressure must not exceed 200 lb (890 N) or the maximum air pressure value specified by the vehicle manufacturer during any stop.

7.5.2 RECOVERY—The average of initial and final values recorded on the last recovery stops must be within $\pm 33\%$ of the baseline pedal force or application pressure within the minimum number of stops specified in SAE J786a (March, 1978), paragraphs 5.9 and 5.13, to constitute satisfactory recovery.

7.6 Water Recovery—See SAE J786a (March, 1978), paragraph 5.15.

The average of the initial and final values recorded in stop 15 must be within 20 lb (89 N) of the baseline pedal force or within 20 psi (138 kPa) of the baseline application air pressure.

7.7 Final Inspection

7.7.1 LINING—Lining shall be firmly attached and intact on shoes. (Minor cracks that do not impair attachment are acceptable.)

7.7.2 MECHANICAL—All components of the brake system shall be intact and functional.

7.7.3 ACTUATION SYSTEM—All hydraulic and air components of the brake system shall be within manufacturer's specifications for leakage.

8. Report Form—General Data and Summary Report Form, Fig. 1.

TABLE 1—EFFECTIVENESS TEST

Vehicle Classification	Max Stopping Distance from 20 mph (32 km/h), ft (m)	Min Deceleration, ft/s ² (m/s ²)	
		From 50 mph (80 km/h) ^a	From 60 mph (97 km/h)
Light trucks and buses (6001–10,000 lb (2700–4500 kg) gw)	25 (7.6)	—	15 (4.6)
Truck and bus (over 10,000 lb (4500 kg) gw)	35 (10.7)	12 (3.7)	—
Combination of vehicles	45 (13.7)	12 (3.7)	—

^aOr maximum attainable under 50 mph (80 km/h).

TABLE 2—EMERGENCY SYSTEM EFFECTIVENESS

Vehicle Classification	Max Stopping Distance from 20 mph (32 km/h), ft (m)	Min Deceleration, ft/s ² (m/s ²)	
		From 50 mph (80 km/h) ^a	From 60 mph (97 km/h)
Light trucks and buses (6001–10,000 lb (2700–4500 kg) gw), empty and loaded	85 (26)	—	5.5 (1.7)
Truck bus and combination of vehicles (over 10,000 lb (4500 kg) gw), loaded	85 (26)	5.5 (1.7)	—

^aOr maximum attainable under 50 mph (80 km/h).

The ϕ symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.