In-Service Brake Performance Test Procedure Passenger Car and Light-Duty Truck —SAE J201

SAE Recommended Practice
Approved April 1976

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LAND SEA AIR SPACE

PREPRINT

IN-SERVICE BRAKE PERFORMANCE TEST PROCEDURE PASSENGER CAR AND LIGHT-DUTY TRUCK—SAE J201

SAE Recommended Practice

Report of Brake Committee approved April 1976. SAE J658 has been discontinued and replaced by this report.

1. Scope—This SAE Recommended Practice establishes a uniform procedure for testing the brake systems (service and parking) of all passenger cars, light-duty trucks, and multi-purpose passenger vehicles up to and including 10,000 lb (4500 kg) GVWR.

2. Purpose—The purpose of the test code is to evaluate brake system performance of vehicles in service for compliance with regulations.

2.1 The test code is expected to be utilized as a basis for a brake evaluation conducted by State or Federal officials engaged in highway safety programs.

2.2 The primary consideration is that this test requires a minimum of instrumentation, time, driver skill, and cost to conduct.

3. Instrumentation

3.1 Decelerometer (U-tube or equivalent).

3.2 Pedal force indicator.

3.3 Pedal travel indicator.

3.4 Speedometer.

3.5 Stop watch.

4. Installation Details

4.1 Install and adjust decelerometer to vehicle.

4.2 Install pedal force and travel indicator to manufacturer's procedure and calibrate.

4.3 Brake system is to be tested as received without any changes or adjustments.

5. Vehicle Test Weight

5.1 The vehicle is to be tested at the "as received" load excluding passengers. Official observer permissible.

5.2 The load may be repositioned or removed if a hazardous condition exists.

6. Test Facility

6.1 Selected test area shall be a paved 12 ft (3.7 m) lane of adequate length, dry, clean, straight, essentially level, and not heavily traveled.

6.2 Provide a 15% grade of sufficient length and skid resistance to support the entire test vehicle.

7. Test Procedure

7.1 Test Notes (to be recorded on data sheet—Fig. 1)

7.1.1 Vehicle make, model name, year, and serial number.

7.1.2 Vehicle odometer reading.

7.1.3 Condition of each tire.

7.1.4 Type of brake (disc, drum) (power, manual).

7.1.5 Brake warning lamp operation.

7.1.6 Brake stop lamps operation.

7.1.7 Any change in pedal height when held for 10 s at 20 lb (89 N) pedal force.

7.1.8 Any change in pedal height when held for 10 s at 150 lb (667 N) pedal force and if pedal reached its limit of travel.

7.1.9 If parking brake application will lock the wheels with the vehicle on the 15% grade.

7.1.10 Any unusual brake or vehicle noises.

7.1.11 Any unusual brake action such as pulls, roughness, etc.

7.1.12 If wheel slide occurred during the brake snubs and designate which wheel.

7.1.13 Maximum sustained deceleration attained.

7.2 Static Check

7.2.1 Verify warning lamp operation as indicated by vehicle manufacturer.

7.2.2 If vehicle is so equipped, observe brake warning lamp indicator during test.

7.2.3 With vehicle stopped and the engine running, apply 20 lb (89 N) force to the brake pedal and hold for 10 s.

7.2.4 Note if there is any change in pedal height during the 10 s.

7.2.5 With vehicle stopped and the engine running, apply 150 lb (667 N) force to the brake pedal and hold for 10 s.

7.2.6 Note if there is any change in pedal height during the 10 s or if the pedal reaches the limit of its travel.

7.3 Parking Brake

7.3.1 Drive vehicle up a 15% grade, apply the service brake to stop, and hold the vehicle.

7.3.2 Place transmission selector in neutral.

7.3.3 Apply the parking brake up to the regulatory load, but do not exceed 200 lb (890 N) force for a foot operated mechanism or 100 lb (445 N) for a hand operated mechanism. Remove foot or hand from the parking brake apply mechanism.

7.3.4 Release the service brake.

7.3.5 Observe if wheels remain locked.

7.4 Preliminary Snub Test to Acquaint Driver with Vehicle (to be conducted within 12 ft (3.7 m) wide test lane)

7.4.1 Snubs required—1.

7.4.1.1 Snub speed—30-10 mph (48-16 km/h).

7.4.1.2 Snub deceleration (sustained)—10 ft/s² (3 m/s²).

7.4.1.3 Moderate apply rate [do not exceed 150 lb (667 N)].

7.4.1.4 Abort snub if wheel slide occurs and discontinue test.

7.4.2 Snubs required—1.

7.4.2.1 Snub speed—40-20 mph (64-32 km/h).

7.4.2.2 Snub deceleration (sustained)—16 ft/s² (5 m/s²).

7.4.2.3 Moderate apply rate [do not exceed 150 lb (667 N)].

7.4.2.4 Abort snub if wheel slide occurs and discontinue test.

7.5 Highway Stopping Test [to be conducted within the 12 ft (3.7 m) wide test lane].

7.5.1 Stops required—1.

7.5.1.1 Initial speed—50-60 mph (80-97 km/h) or maximum practical speed attainable within the test area if less than 50 mph (80 km/h).

7.5.1.2 Sustained deceleration attainable—not to exceed 20 ft/s² (6 m/s²).

7.5.1.3 Pedal force—150 lb (667 N) maximum.

7.5.1.4 Brake apply rate—Maximum rate possible when maintaining deceleration control (not a spike) up to 20 ft/s² (6 m/s²).

7.6 Repeat Testing

7.6.1 If the vehicle brake systems exhibit marginal performance with respect to the regulatory requirements, tests for 7.4 or 7.5 may be repeated.

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