SAE International™

SURFACE VEHICLE STANDARD

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Superseding J299 SEP1993

Stopping Distance Test Procedure

RATIONALE

This document has been modified based upon the normal review process to assure that the document recognizes current equipment, instrumentation and procedures. The document was formerly a Recommended Procedure that is being converted to a Standard in recognition of its use by industry for more than 30 years. Fifth wheel measuring device was removed to acknowledge use of other devices for measuring speed and stopping distance. Speed and stopping distance maximum error were adjusted to correlate and be representative of current practice.

1. SCOPE

This SAE Standard provides a method for determining stopping distances of all motor vehicles with any type of brake system.

1.1 Purpose

This code provides the test procedure and instructions to determine motor vehicle stopping distances on any level road surface from any desired initial vehicle speed. It allows the user to impose test conditions specified by any source and designates the preferred instrumentation and techniques for achieving the accuracy that is practical with current equipment.

2. REFERENCES

There are no referenced publications specified herein.

3. DEFINITIONS

3.1 Motor Vehicle

Every device which is self-propelled and equipped with driver controls in, upon, or by which any person or property is or may be transported or drawn upon a highway or upon natural terrain, excepting devices moved by human or animal power or used exclusively upon stationary rails.

3.2 Start of Brake Application

The initial movement of the brake system control.

3.3 Stopping Distance

The distance traveled by a motor vehicle from the start of a brake application to the point at which the motor vehicle stops.

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3.4 Initial Stopping Speed

The speed of the motor vehicle at the start of brake application.

3.5 Instrumentation System Delay

The time between the start of brake application and the start of stopping distance readout.

4. INSTRUMENTATION AND EQUIPMENT

All instrumentation and equipment used in this test procedure must maintain required accuracy throughout the test period.

4.1 Speed Measuring Device

A device that not only monitors vehicle speed, but also makes an instrumented recording of actual initial stopping speed. Error must not exceed ±0.5% of the actual speed.

4.2 Stopping Distance Measuring Instrumentation

The distance measuring device is to be triggered at the point at which brake application can be detected and data acquisition begun without false triggering but in any event not to exceed 22 N (5 lb) and/or first movement of 2.0 mm (0.07 in) of travel of the center of the brake pedal pad, the tip of the brake treadle, or the tip of the brake control handle (initial movement). Total instrumentation system delay shall not exceed 20 milliseconds. Error of distance measuring instrumentation shall not exceed ±0.5% of actual distance.

5. MOTOR VEHICLE PREPARATION

5.1 Perform motor vehicle and brake system preparation required to conform to specific desired test conditions. Record these conditions and operations.

5.2 Install and calibrate instrumentation. Record pertinent instrumentation information.

6. TEST PROCEDURE

The following test sequence shall be conducted at the test site:

6.1 Attain a speed sufficiently above the desired initial stopping speed to allow the driver to perform operations in 6.2 and 6.3 and still comply with the requirements of 6.4. However, this speed shall not exceed desired initial stopping speed by more than 12 km/h (7.5 mph).

6.2 Release throttle.

6.3 If the stop is to be made in neutral or with clutch disengaged, perform the desired operation(s).

6.4 At the desired initial stopping speed, apply the brake control at the desired rate to any required limit(s) and maintain braking at the desired limit(s) until the motor vehicle reaches a full stop. The limit(s) shall be determined by the specific desired conditions and may be wheel skid, pedal force, deceleration, pressure, brake control movement, vehicle control, lane boundaries, or a combination of these.

NOTE: For vehicles with standard transmission, if stop is made in gear, the clutch should be disengaged when vehicle speed is reduced to below 16 km/h (10 mph) or as engine nears idle speed, whichever is the greater vehicle speed.