



SURFACE VEHICLE RECOMMENDED PRACTICE

J294™

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Service Brake Structural Integrity Test Procedure - Vehicles Over 4500 kg (10000 pounds) GVWR

RATIONALE

This document is being revised to correct full stop, timing, and force in 5.2.1 and 5.2.2.

1. SCOPE

This SAE Recommended Practice establishes a method of testing the structural integrity of the brake system of all new trucks, buses, and combination vehicles designed for roadway use and falling in the following classifications:

- a. Truck and bus: Over 4500 kg (10000 pounds) GVWR
- b. Combination vehicle: Towing vehicle over 4500 kg (10000 pounds) GVWR

The test consists of two distinct tests: a structural endurance test followed by a structural ultimate strength test.

NOTE: These two tests originated from separate procedures, and were combined in this recommended practice. Each test can be considered to be an independent evaluation of the service brake's structure. Based on time available, cost limitations, and the desired evaluation and historical data available, either of these tests could be considered as a complete evaluation of the brake's structure.

1.1 Purpose

The main purpose of the document is to evaluate the structural integrity of a vehicle's braking system. However, other areas such as the steering or suspension system may also be evaluated during the test provided that the criteria and procedure detailed as follows are not modified in any way. For repeatability, it is recommended that a brake apply device be utilized whenever possible, since it would eliminate the variations in application times and efforts of different operators.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated, the latest revision of SAE publications shall apply.

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Full document details: SAE J294_202112

For more information on this standard, visit
https://www.sae.org/standards/content/J294_202112

Documents

Document Sharing Hub

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1404 Service Brake Structural Integrity Requirements - Truck and Bus

SAE J1626 Braking, Stability, and Control Performance Test Procedures for Air- and Hydraulic-Brake-Equipped Trucks, Truck-Tractors, and Buses

SAE J2115 Air Brake Performance and Wear Test Code - Commercial Vehicle Inertia Dynamometer

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 FMVSS PUBLICATIONS

Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

FMVSS 105 Hydraulic and Electric Brake Systems

FMVSS 121 Air Brake Systems

3. EQUIPMENT

3.1 Brake Apply Device

Optional, but recommended for hydraulic braked vehicles.

3.2 Calibrated Speedometer and Odometer

3.3 Service (Application) Pressure Gauges

3.4 Pedal Force Transducer (Hydraulic Brakes)

3.5 Stop Counter

3.6 Decelerometer (U-Tube or Equivalent)

3.7 Ambient Temperature Gage

3.8 Recording Equipment

Pedal force versus time for hydraulic braked vehicle, brake chamber pressure versus time for air brake vehicles.

3.9 Tire Pressure Gage

3.10 Wheel Alignment Equipment

When steering and suspension system are also tested.

3.11 Torque Wrench

3.12 Direct Reading Temperature Instrument

Brake lining temperature.