SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J2425

ISSUED JAN1998

Issued 1998-01

An American National Standard

Steering Control Systems—Laboratory Test Procedure Heavy Trucks

1. ***Scope—***This SAE Recommended Practice describes a laboratory test procedure for evaluating the characteristics of heavy truck steering control systems under simulated driver impact conditions. The test procedure employs a torso-shaped body block that is impacted against the steering wheel.

2. ***References***

2.1 **Applicable Publications—**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.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J211-1—Instrumentation for Impact Test—Part 1: Electronic Instrumentation
SAE J211-2—Instrumentation for Impact Test—Part 2: Photographic Instrumentation
SAE J944 JUN80—Steering Control Systems—Passenger Car—Laboratory Test Procedure
SAE CRP-9—"Heavy Truck Crashworthiness (Testing and Analysis for Recommended Practice Development)", November 1996

3. ***Items to be Determined***

3.1 Impact velocity of the body block.

3.2 Resultant force during the impact.

4. ***Test Equipment for Instrumentation***

4.1 **Body Block—**The complete body block shall have the characteristics described in SAE J944, 5.1.

4.2 **Instrumentation—**Any system of instrumentation that will provide data from which the items in Section 3 can be determined is acceptable. The peak resultant force may be measured by mounting a 3-axis load cell between the steering wheel and column or may be calculated from unidirectional accelerometers mounted on the body block. All measurements should be recorded and filtered according to the most recent version of SAE J211.

SAENORM.COM : Click to view the full PDF of j2425_199801

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

TO PLACE A DOCUMENT ORDER; (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS http://www.sae.org

Copyright 1998 Society of Automotive Engineers, Inc.
All rights reserved.

Printed in U.S.A.

4.3 Any test equipment is satisfactory which can produce the minimum body block-to-steering wheel impact velocity of 24 km/h (15 mph) and which insures the body block is moving parallel to the vehicle horizontal reference, with translational (not rotational) motion, in side view at impact. (See Figure 1.) The direction of impact velocity, in the plan view, is parallel to the longitudinal vehicle axis.

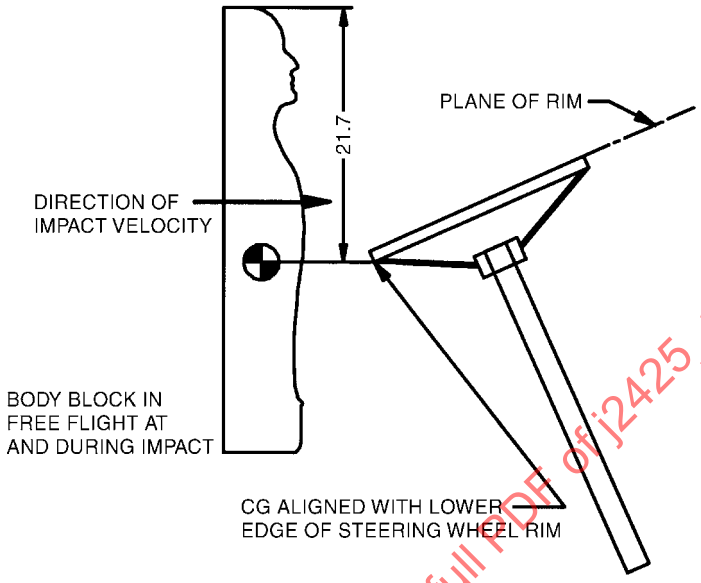

FIGURE 1—STEERING WHEEL/BODY BLOCK IMPACT CONFIGURATION

4.4 The steering wheel shall be mounted in the actual vehicle, vehicle buck, or on a fixture that is at least as rigid as the actual vehicle mounting.

4.5 If a load cell is used, it must be mounted between the column and the steering wheel.

5. Test Procedure

5.1 It is recommended that the steering wheel be turned so that its most rigid spoke is aligned with the direction of the impact velocity thus producing the worst-case force on the body block.

5.2 In the case of an adjustable steering wheel, the test will be made with the wheel adjusted to the manufacturer's design position. Other positions may be tested based on engineering judgement.

5.3 The body block at impact is positioned as shown in Figure 1. The body block is centered laterally in relation to the steering wheel hub. The vertical relationship between the steering wheel and the body block shall be such that the center of gravity of the body block is at the same level as the lower edge of the steering wheel rim, within ± 25 mm (1 in).

5.4 All parts under test shall be installed using the design attachment points and production parts or simulations thereof torqued to the proper value.

5.5 All parts and the body block shall be stabilized at an ambient temperature ranging between 21 to 29 °C (70 to 85 °F) for 4 h immediately prior to testing.

PREPARED BY THE SAE TRUCK AND BUS CRASHWORTHINESS SUBCOMMITTEE
OF THE SAE TRUCK AND BUS CAB AND OCCUPANT ENVIRONMENT COMMITTEE

SAENORM.COM : Click to view the full PDF of j2425_199801