The Engineering Society
For Advancing Mobility
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SAE J175 JUN88

Wheels — Impact Test Procedure — Road Vehicles

SAE Recommended Practice
Revised June 1988

Submitted for Recognition as an American National Standard

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space ®
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HIGHWAY VEHICLE PRACTICE

Submitted for recognition as an American National Standard

SAE J175

Issued Sept. 1970
Revised June 1988

Superseding J175 SEP70

Ø WHEELS - IMPACT TEST PROCEDURE - ROAD VEHICLES

1. SCOPE:

The SAE Recommended Practice establishes minimum performance requirements and related uniform laboratory test procedures for evaluating axial (lateral) curb impact collision properties of all wheels intended for use on passenger cars and light trucks.

2. REFERENCE:

This standard is equivalent to ISO 7141-1981 with the exception of "Definitions" where SAE J393 is cited.

ISO 7141, Road Vehicles - Wheels - Impact Test Procedures

ISO 3911, Wheels/Rims - Nomenclature, Designation, Marking and Units of Measurement

3. DEFINITIONS:

See SAE J393, Nomenclature - Wheels, Hubs, and Rims for Commercial Vehicles.

4. TEST PROCEDURES:

4.1 Wheels for Test: Only fully-processed new wheels which are representative of wheels intended for passenger car and light truck applications shall be used for each test[1].

[1]Tire and wheels used for test should not be used subsequently on a vehicle.

4.2 Equipment: The test machine shall be one in which an impact loading is applied to the rim flange of a wheel complete with tire. The wheel shall be mounted with its axis at an angle of 13 ± 1 deg to the vertical so that its highest point is presented to the vertically-acting striker. The impacting face of the striker system shall be at least 125 mm wide and at least 375 mm long (see Fig. 1).

With the test calibration adapter located at the mid-span of the beam, a vertical mass of 1000 kg shall be applied to the center of the wheel mount as shown in Fig. 2. The vertical central deflection of the test fixture shall be 7.5 mm ± 0.75 when measured at the center of the beam.

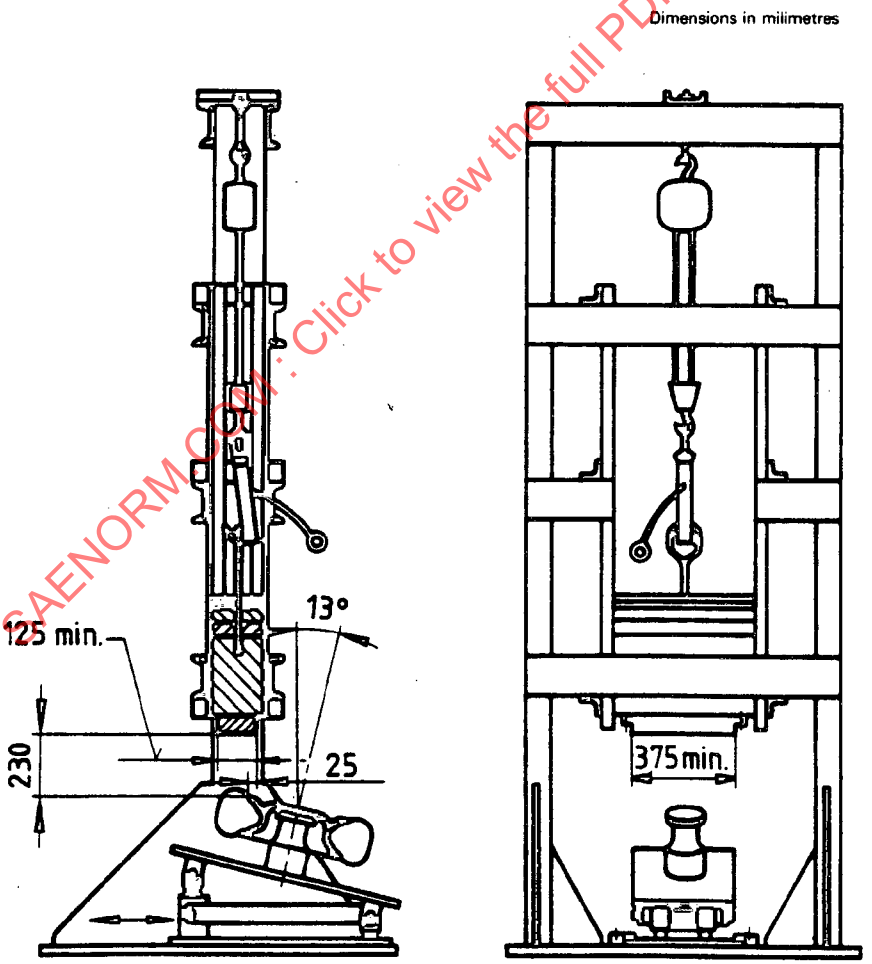

FIGURE 1 - Impact Loading Test Machine

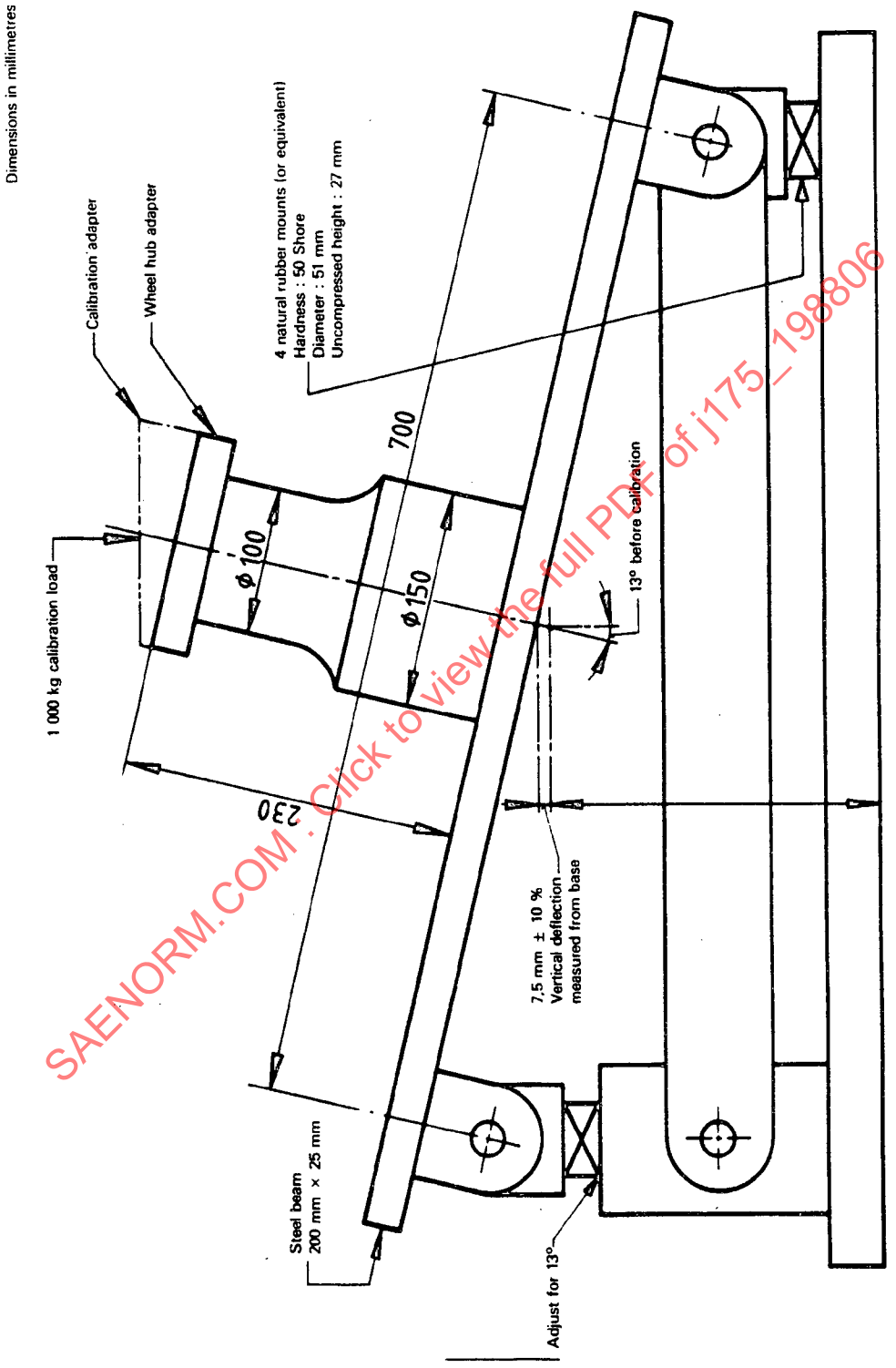

FIGURE 2 - Application of Loading to the Center of the Wheel Mount

4.3 Procedure: The wheel shall be mounted on the hub fixture by a means dimensionally representative of attachment used on the vehicle. The wheel attachment system shall be manually tightened to a value or by a method as recommended by the vehicle or wheel manufacturer.

The tubeless tire selected for the test wheel shall be the smallest nominal section width tire intended for use with the wheel, by the vehicle or wheel manufacturer. The inflation pressure shall be that specified by the vehicle manufacturer; in the absence of such specification, it shall be 200 kPa.

Because the design features of the wheel may vary, a sufficient number of locations on the circumference of the rim shall be tested to ensure that the integrity of the wheel is investigated. A separate wheel shall be used for each test.

The test should be conducted at room temperature (10 - 38°C).

4.3.1 Dropping Height: The dropping height for the striker weight shall be 230 ± 2 mm above the highest part of the rim flange.

4.3.2 Alignment of Striker: The striker shall be over the tire and the edge must overlap the rim flange by 25 ± 1 mm.

4.3.3 Magnitude of Striker Mass:

$$D = 0.6W + 180$$

where

D = mass of striker ±2%, expressed in kilograms;

W = maximum static wheel loading as specified by wheel and/or vehicle manufacturer, expressed in kilograms.

5. FAILURE CRITERIA:

5.1 The failure criteria are:

5.1.1 Visible fracture(s) penetrating through a section of the center member of the wheel assembly.

5.1.2 Separation of the center member from the rim.

5.1.3 Total loss of tire air pressure within one minute.

NOTE: Deformation of the wheel assembly, or fractures in the area of the rim section contacted by the face plate of the weight system, do not constitute a failure.

The phi (Ø) 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.

RATIONALE:

Not applicable.

RELATIONSHIP OF SAE STANDARD TO ISO STANDARD:

This standard is equivalent to ISO 7141-1981 with the exception of "Definitions" where SAE J393 is cited.

REFERENCE SECTION:

SAE J393 JAN84, Nomenclature - Wheels, Hubs, and Rims for Commercial Vehicles

ISO 3911, Wheels/Rims - Nomenclature, Designation, Marking and Units of Measurement

ISO 7141, Road Vehicles - Wheels - Impact Test Procedures

APPLICATION:

The SAE Recommended Practice establishes minimum performance requirements and related uniform laboratory test procedures for evaluating axial (lateral) curb impact collision properties of all wheels intended for use on passenger cars and light trucks.

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