

# International Standard



# 7141

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## Road vehicles — Wheels — Impact test procedure

*Véhicules routiers — Roues — Méthode d'essai de choc*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 7141 was developed by Technical Committee ISO/TC 22, *Road vehicles*, and was circulated to the member bodies in May 1980.

It has been approved by the member bodies of the following countries :

Austria	Germany, F.R.	South Africa, Rep. of
Belgium	Ireland	Spain
Brazil	Italy	Sweden
Bulgaria	Japan	United Kingdom
Chile	Korea, Dem. P. Rep. of	USA
China	Korea, Rep. of	USSR
Egypt, Arab Rep. of	Netherlands	
France	Romania	

The member body of the following country expressed disapproval of the document on technical grounds :

Australia

# Road vehicles — Wheels — Impact test procedure

## 1 Scope and field of application

This International Standard establishes a laboratory test procedure to evaluate axial (lateral) curb impact collision properties of a wheel manufactured either wholly or partly of light alloys with the purpose of screening and/or quality control.

This International Standard is intended for passenger car applications.

## 2 Reference

ISO 3911, *Wheels/rims — Nomenclature, designation, marking and units of measurement.*

## 3 Definitions

See ISO 3911.

## 4 Test procedures

### 4.1 Wheels for test

Only fully-processed new wheels for each test which are representative of wheels intended for passenger car applications shall be used<sup>1)</sup>.

### 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 tyre. The wheel shall be mounted with its axis at an angle of  $13^\circ \pm 1^\circ$  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 figure 1).

With the test calibration adapter located at the mid-span of the beam, a vertical mass of 1 000 kg shall be applied to the centre of the wheel mount as shown in figure 2. The vertical central deflection of the test fixture shall be  $7,5 \text{ mm} \pm 10 \%$  when measured at the centre of the beam.

### 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 fixing(s) shall be manually tightened to a value or by a method as recommended by the vehicle or wheels manufacturer.

The tyre selected for the test wheel shall be the smallest nominal section width tubeless radial-ply size intended for use with the wheel. 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 of centre members may vary, a sufficient number of locations on the circumference of the rim shall be tested to ensure that the integrity of the centre member is investigated. Separate wheel shall be used for each test.

#### 4.3.1 Dropping height

The dropping height for the striker weight shall be  $230 \pm 2 \text{ mm}$  above the highest part of the rim flange.

#### 4.3.2 Alignment of striker

The striker shall be over the tyre and the edge must overlap the rim flange by  $25 \pm 1 \text{ mm}$ .

#### 4.3.3 Magnitude of striker mass

$$D = 0,6 W + 180$$

where

$$D = \text{mass of striker} \pm 2 \%, \text{ expressed in kilograms;}$$

$$W = \text{maximum static wheel loading as specified by wheel and/or vehicle manufacturer, expressed in kilograms.}$$

1) Tyres and wheels used for test should not be used subsequently on a vehicle.

## 5 Failure criteria

5.1 The failure criteria are :

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

5.1.2 Separation of the centre member from the rim.

5.1.3 Total loss of tyre 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.

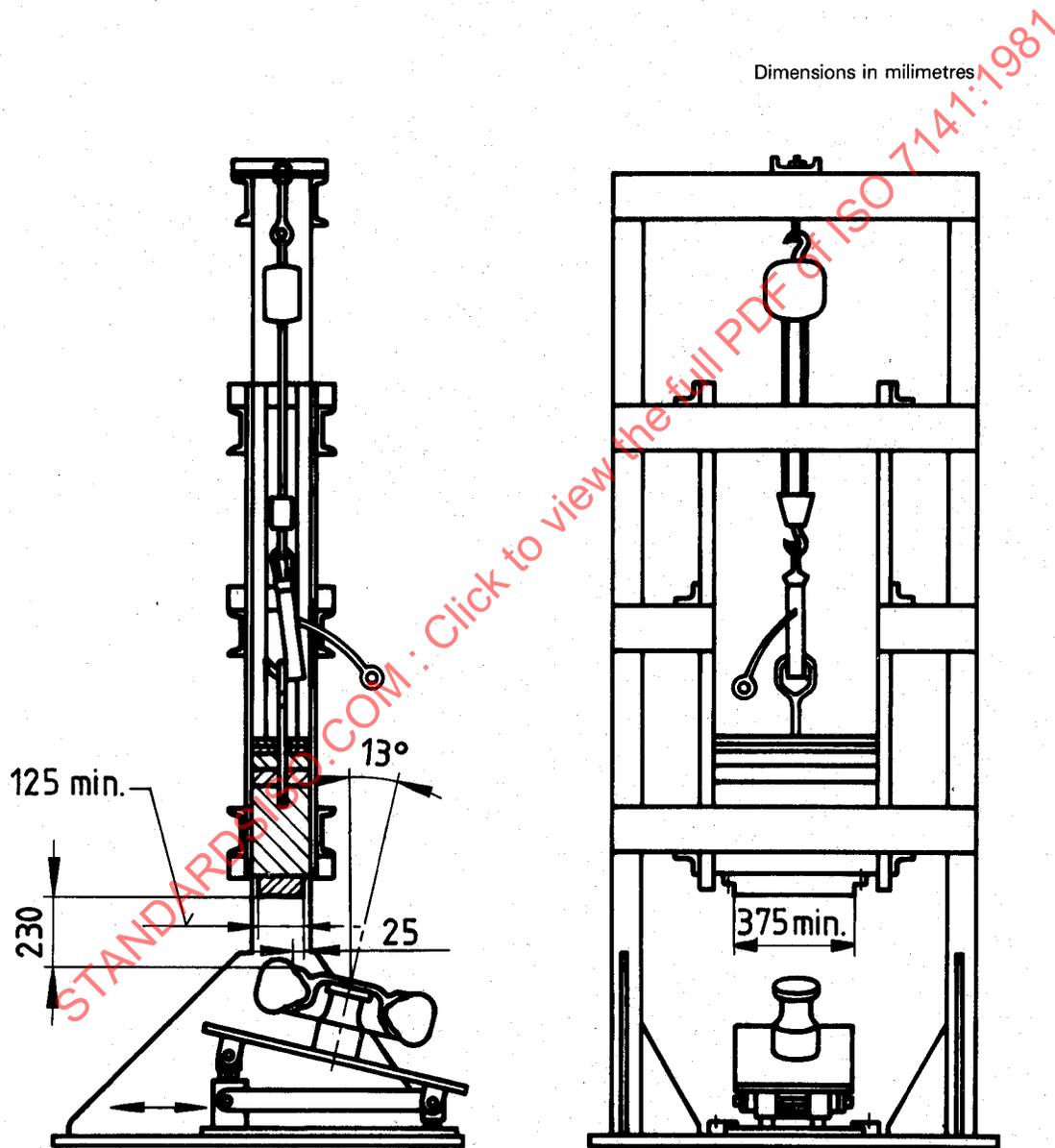


Figure 1 — Impact loading test machine