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Road vehicles — Fifth wheel kingpins — Strength test

Véhicules routiers — Pivot d'attelage — Essai de résistance



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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 8716 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 15, *Interchangeability of components of commercial vehicles and buses*.

This second edition cancels and replaces the first edition (ISO 8716:1988), which has been technically revised.

Road vehicles — Fifth wheel kingpins — Strength test

1 Scope

This International Standard specifies strength test conditions and requirements for 50 and 90 fifth wheel kingpins.

NOTE See ISO 337 [1] and ISO 4086 [2].

2 Normative reference

The following normative document contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1176, *Road vehicles — Masses — Vocabulary and codes*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 1176 apply.

4 General test requirements

4.1 The strength test specified in this International Standard is a dynamic test that shall be performed on a test bed.

4.2 The fixing arrangements for the kingpin on the test bed shall be the same as those for its attachment to the semi-trailer, in accordance with the kingpin manufacturer's fitting instructions.

4.3 Fifth wheel kingpins shall be tested separately, i.e. not together with fifth wheels, and with a locking device according to 6.1.

5 Determination of *D*-value

The *D*-value is a comparative value determined by calculation for the longitudinal forces occurring between the towing vehicle and the semi-trailer. *D*, expressed in kilonewtons, shall be calculated using the following equation:

$$D = g \frac{0,6 \cdot m_T \cdot m_R}{m_T + m_R - m_U}$$

where

m_T is the maximum design total mass, including m_U , of the towing vehicle that is to tow the semi-trailer, in tonnes;

m_R is the maximum design total mass of the semi-trailer to be drawn with the fifth wheel kingpin, in tonnes;

m_U is the mass imposed vertically on the fifth wheel by the semi-trailer loaded to its maximum design total mass, in tonnes;

g is the acceleration due to gravity (= 9,81 m/s²).

m_T , m_R and m_U correspond to the symbols T , R and U respectively, according to Directive 94/20/EC of the European Parliament and the Council of the European Union, and United Nations Economic Commission for Europe regulation UNECE/R55.

6 Test conditions

6.1 General

For the purpose of the test, the fifth wheel kingpin shall be equipped with all the fixtures needed to attach it to the vehicle (see ISO 337 and ISO 4086). The method of mounting shall be identical to that subsequently employed on the vehicle itself.

6.2 Application of test load

6.2.1 Apply the horizontal test load, $F_{h,t}$, simulating practical loads under driving conditions.

6.2.2 $F_{h,t}$ shall be an alternating force applied in the location and direction shown in Figure 1. $F_{h,t}$ shall be applied by means of a special slack-free device (similar to a fifth wheel locking device).

6.2.3 $F_{h,t}$ shall alternate between + 0,6 D and – 0,6 D .

6.3 Loading cycle

The dynamic test shall be carried out sinusoidally and the number of cycles shall be 2×10^6 .

6.4 Frequency

The selected frequency shall not exceed 25 Hz and shall not coincide with the natural frequency of the system.

7 Strength criteria

The dynamic test specified in clause 6 shall not cause permanent deformation, breaks or cracks.

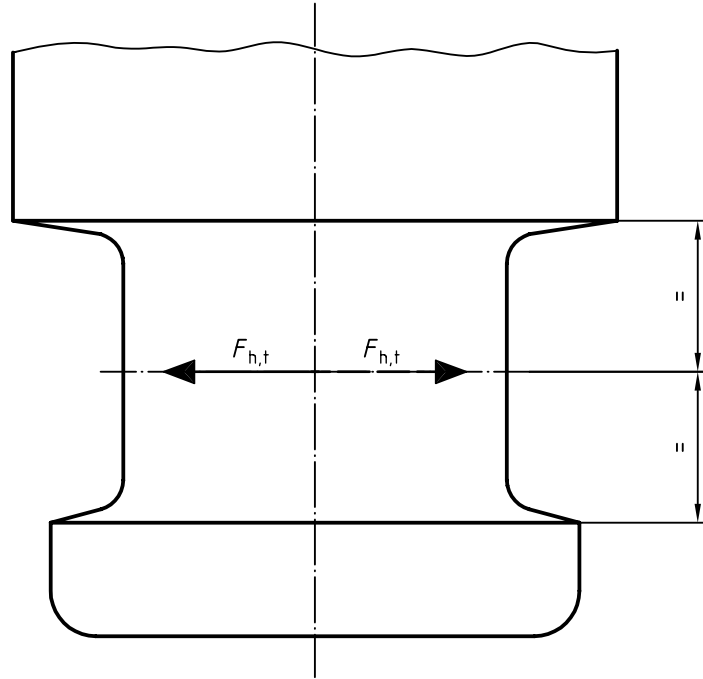


Figure 1 — Application of horizontal test load, $F_{h,t}$

Bibliography

- [1] ISO 337, *Road vehicles — 50 semi-trailer fifth wheel coupling pin — Basic and mounting/interchangeability dimensions*
- [2] ISO 4086, *Road vehicles — 90 semi-trailer fifth wheel kingpin — Interchangeability*

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