
**Road vehicles — Mechanical couplings
between tractors and semi-trailers —**

**Part 3:
Requirements for semi-trailer contact
area to fifth wheel**

Véhicules routiers — Liaisons mécaniques entre tracteurs et semi-remorques —

Partie 3: Exigences pour plateaux à friction de semi-remorques



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 40, *Specific aspects for light and heavy commercial vehicles, busses and trailers*.

This second edition cancels and replaces the first edition (ISO 1726-3:2010), which has been technically revised

The main changes are as follows:

- modification of maximum displacement and load application in [Clause 4](#);
- modification of static test requirements in [Clause 5](#).

A list of all parts in the ISO 1726 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The dimensional interchangeability of truck and trailer is specified in various standards and regulations. In order to be able to design the details and resistance of the coupling devices, the area for the introduction of forces and torques between fifth wheel and kingpin and trailer also needs to be well defined.

Since many fifth wheel coupling plates are designed with certain wear resistance and limited flexibility, it is important to take stiffness into account when designing the mating area of the trailer, which generally is made of steel.

The fact that damage and excessive wear can occur in this area, including broken coupling plates, emphasizes the necessity of this document.

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Road vehicles — Mechanical couplings between tractors and semi-trailers —

Part 3: Requirements for semi-trailer contact area to fifth wheel

1 Scope

This document specifies the test conditions of a static test performed on the semi-trailer contact area to the fifth wheel. It ensures the suitability of the semi-trailer to couple the greatest possible variety of tractor vehicles equipped with a fifth wheel coupling in accordance with ISO 3842.

It also specifies requirements to avoid damages or malfunctions of the fifth wheel coupling caused by the semi-trailer chassis, the semi-trailer plate or any other of its components.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

contact area to the fifth wheel

area surrounding and centred on the kingpin

3.2

test load

maximum vertical static load the semi-trailer manufacturer allows to be transmitted to a fifth wheel

4 Requirements

The unevenness before the test conduction shall not exceed 2 mm at any point within this zone.

During the static test in 5.2, the overall vertical deflection or displacement, S , shall not exceed 3,5 mm at any point relative to a plane, spanned by the top surfaces of the support blocks (see Figure 1).

After unloading/discharging, the total unevenness shall not exceed 2 mm at any point within this zone.

5 Test methods

5.1 General

The verification of the minimum requirements specified in this document can be performed by static tests (see [5.2](#)) or adequate calculation, if the deformation is only elastic.

In case of a static test, a homogeneously distributed load $F(p)$ shall be applied over a surface as shown on [Figure 2](#).

In the case of a calculation, the test forces, $F_v / 2$, shall be applied in one point or uniformly at dimensions X (see [Figure 1](#)), or alternatively as a homogeneously distributed load $F(p)$ over a surface as shown on [Figure 2](#).

5.2 Test with static vertical force

5.2.1 Test arrangement

The test shall be performed on a whole semi-trailer or on a representative vehicle section. In any case, the fixing arrangements shall be representative and in accordance with the kingpin manufacturer's fitting instructions.

5.2.2 Test procedure

Before starting the test, the unevenness of the trailer plate shall be measured and documented as deformation before test start (see [Figure 4](#)).

The test semi-trailer or the representative vehicle section shall be laden with the maximum permissible static load as declared by the vehicle manufacturer. Examples of load application are given in [Figures 1](#) and [2](#).

In case of different chassis constructions other load distributions are accepted, assuming they are equivalent and leading to the same load at the fifth wheel.

To cover dynamic influences the test forces shall be calculated with safety factor of 2, in both physical test and calculation cases.

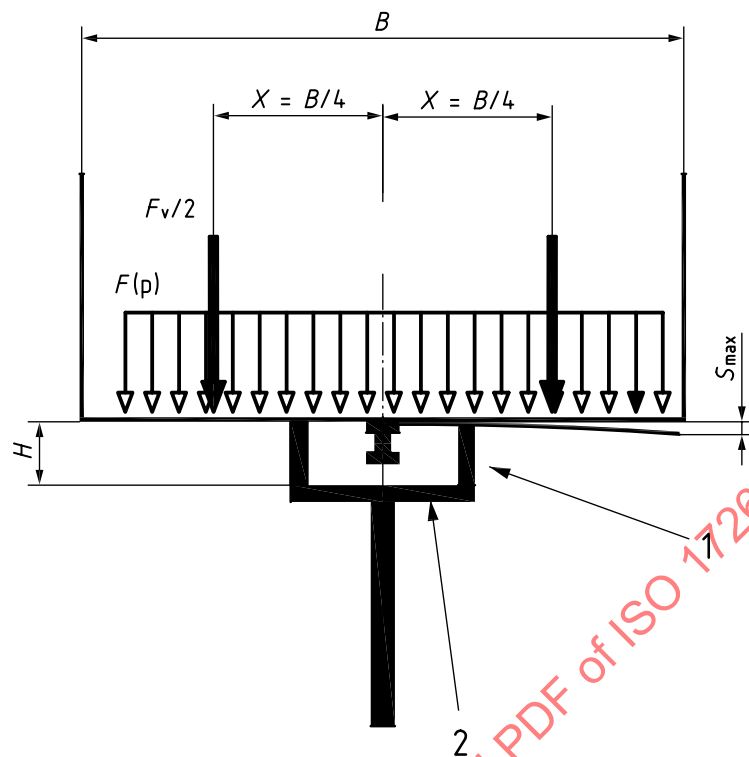
The section shall be supported by a device, equipped with two support blocks, both located around the kingpin and having a defined geometry and position as shown in [Figure 1](#) and [Figure 3](#). The supporting blocks shall have a length L_1 of 240 mm, a width W_2 of 140 mm and shall be positioned at a width W_1 of 580 mm from the centre of the kingpin.

The test shall be performed with the blocks arranged to the left and right of the kingpin, under 90° to the longitudinal axle of the trailer.

5.3 Alternative method

In case of calculation, the overall vertical elastic deflection or displacement, S , shall not exceed 1,5 mm at any point relative to a plane, spanned by the top surfaces of the support blocks in analogy to the test procedure described under [5.2.2](#) (see [Figure 1](#)).

The calculation method or the mathematical model shall be validated in comparison with the actual test procedure. Comparability of the results of the calculation (or the model) with results of conventional test procedures shall be proven.



Key

- | | | | |
|------------|-------------------------------------|-------|---|
| 1 | support blocks | 2 | support device for test |
| B | semi-trailer width | H | vertical dimension of support blocks (min. 95 mm) |
| $F(p)$ | homogeneously distributed test load | F_v | singular load derived from $F(p)$ |
| $S_{\max}$ | maximum permissible deformation | | |

Figure 1 — Example of application of vertical load, front view

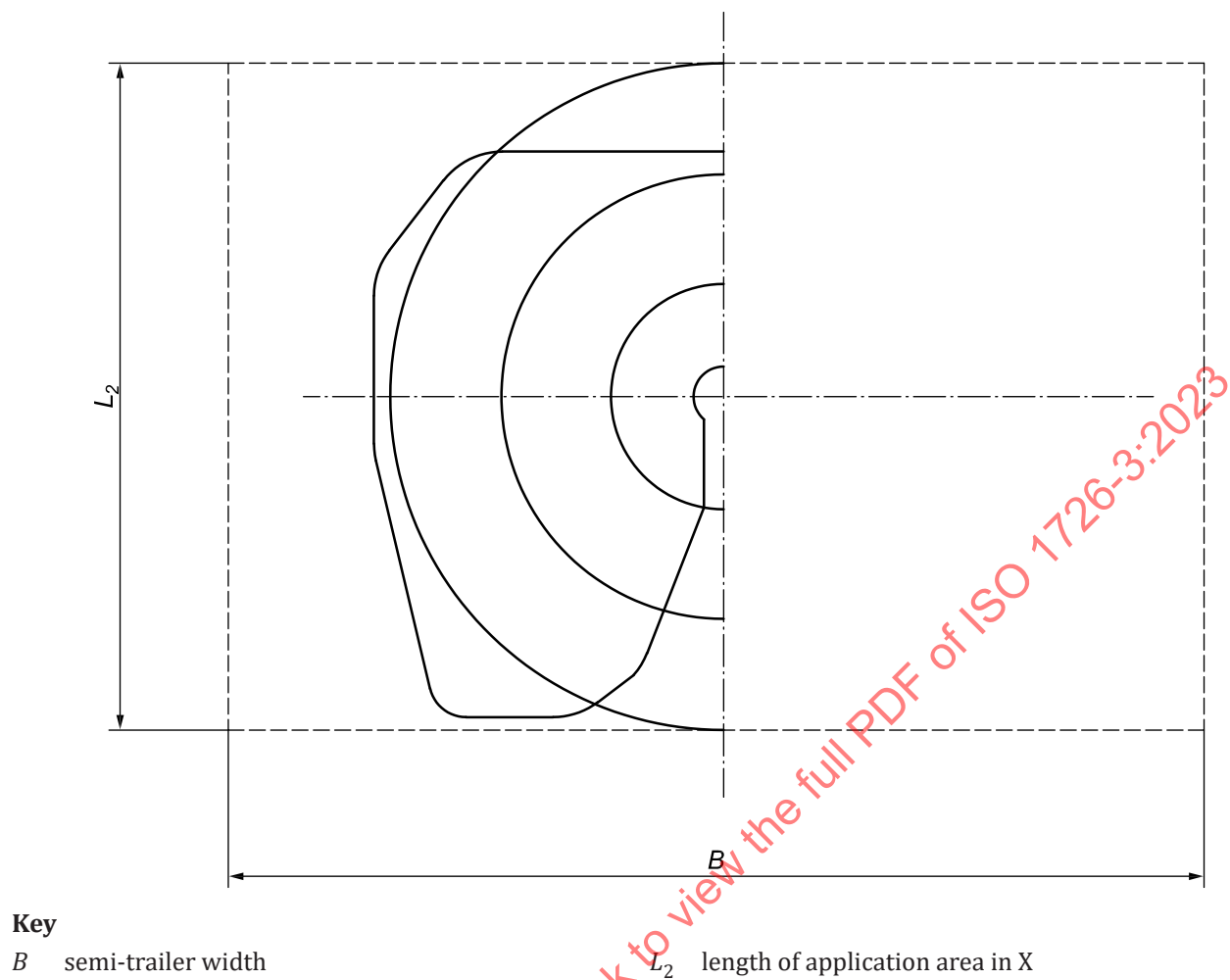
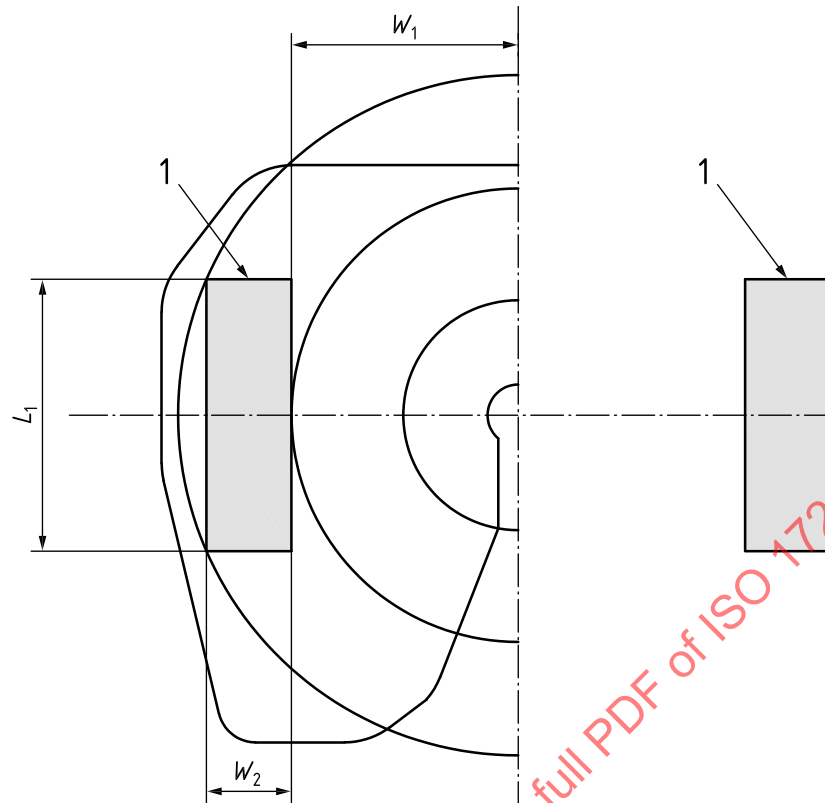


Figure 2 — Dimensions of application area for homogeneous load distribution



Key

1 support blocks

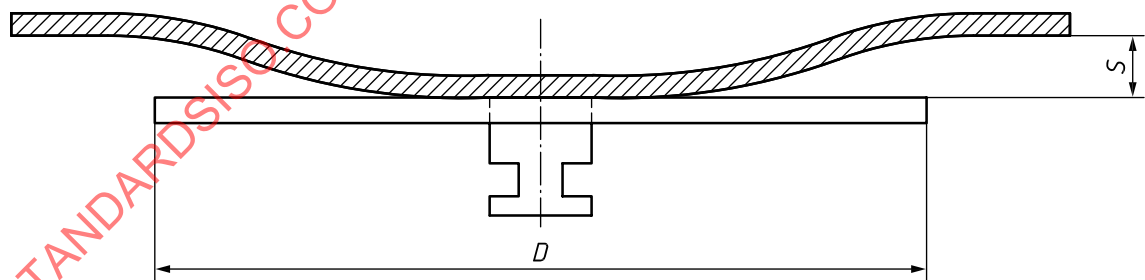
L_1 length of support blocks in X

W_1 position of support block in Y

W_2 width of support block

To avoid unrealistic local stresses under load, the upper surface of the blocks shall be provided with a chamfer all-around of maximum 5 mm $\times$ 30° and corner radii of $R = 10$ mm.

Figure 3 — Position and dimensions of support blocks



Key

S 2 mm maximum

D 965 mm minimum

Figure 4 — Examples for the method to measure the total unevenness (unladen case)

6 Design of the semi-trailer contact zones to the fifth wheel

Neither protrusions nor sharp edges are allowed in the contact area to the fifth wheel. Holes with sharp edges and holes exceeding a maximum diameter of 50 mm are not allowed. This also applies to all contact areas during the coupling and decoupling processes.