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

Part 2:
Interchangeability between low-coupling tractors and high-volume semi-trailers

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

Partie 2: Interchangeabilité entre tracteurs avec accouplement bas et semi-remorques de grand volume

Reference number
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Foreword

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ISO 1726-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 15, *Interchangeability of components of commercial vehicles and buses*.

ISO 1726 consists of the following parts, under the general title *Road vehicles — Mechanical couplings between tractors and semi-trailers*:

⎯ *Part 1: Interchangeability between tractors and semi-trailers for general cargo*[1]

⎯ *Part 2: Interchangeability between low-coupling tractors and high-volume semi-trailers*

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1) Revision of ISO 1726:2000.

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

Part 2:
Interchangeability between low-coupling tractors and high-volume semi-trailers

1 Scope

This part of ISO 1726 specifies dimensions to ensure interchangeability between a low coupling height tractor vehicle and a coupled high-volume semi-trailer, the two together constituting a high-volume articulated vehicle. It specifies certain interchangeability dimensions, including those of the optimised gooseneck contour, as well as operating dimensions related to angle values. The specifications are primarily intended to permit semi-trailers to be coupled with two-axle tractors. However, three-axle tractors are not excluded, provided they are in compliance with the requirements of this part of ISO 1726.

This part of ISO 1726 does not provide limitations of maximum gross mass and overall dimensions, which are generally laid down by legislative requirements.

2 Interchangeability dimensions

2.1 Height of fifth wheel of a laden tractor

The height, h, of the fifth wheel of a laden low-coupling tractor above ground (see Figure 1) shall be in the range 900 mm to 975 mm.
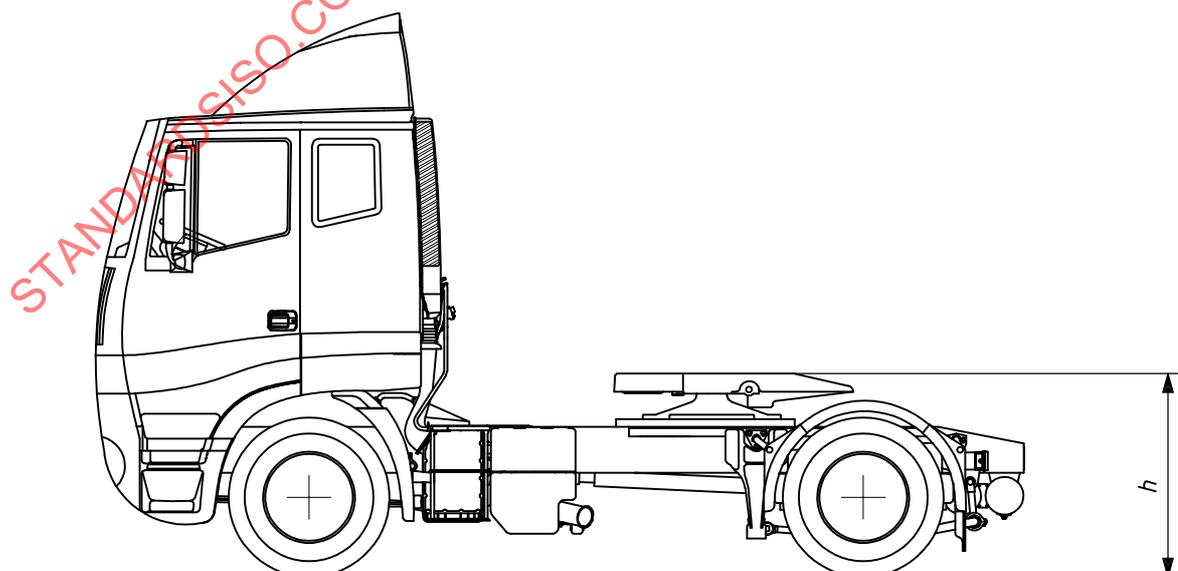
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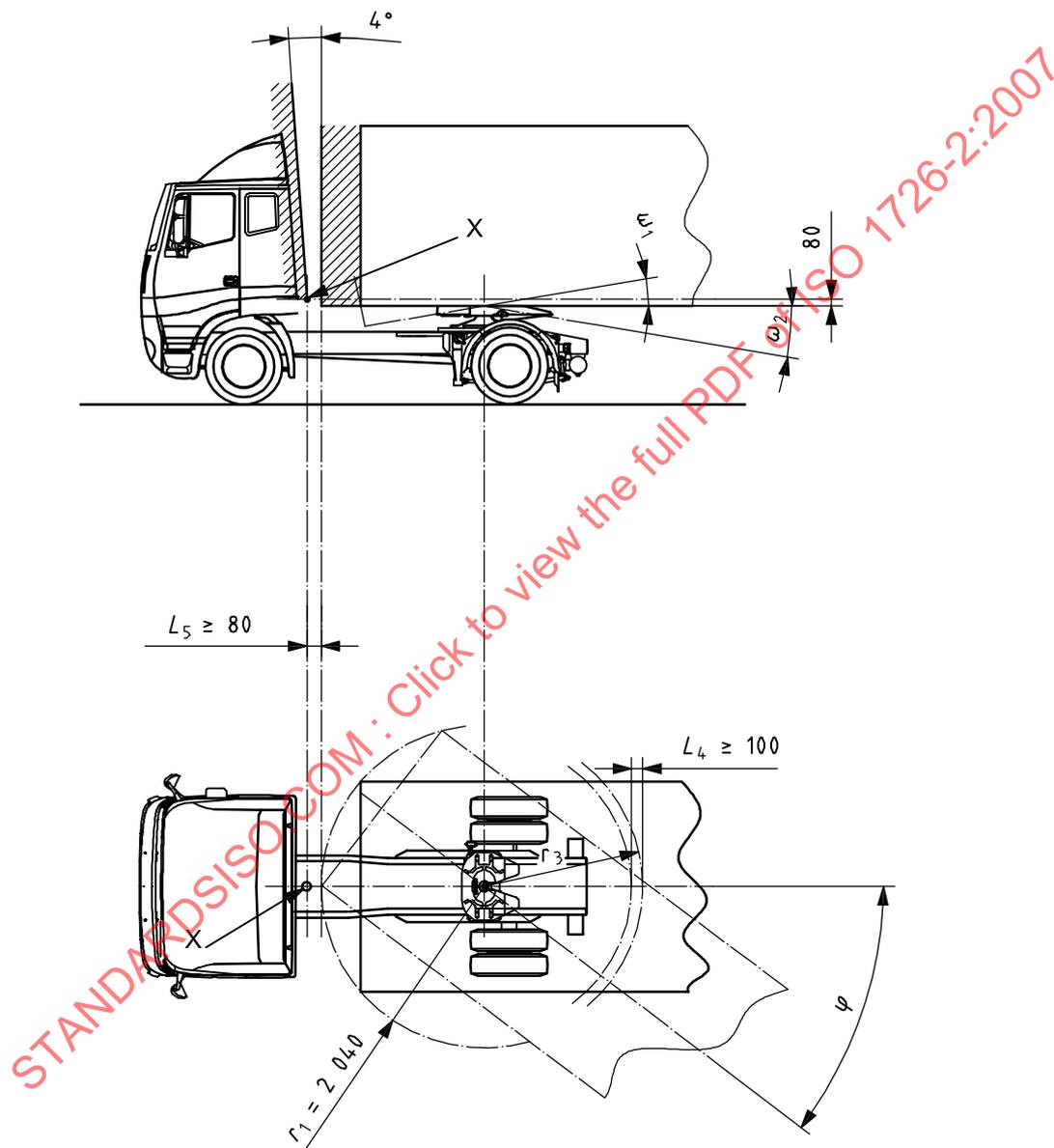h height of fifth wheel

Figure 1 — Height of fifth wheel

2.2   Height of fifth wheel of an uncoupled tractor

The height, h, of the fifth wheel of an uncoupled low-coupling tractor shall not exceed 1 000 mm.

2.3   Forward clearance zone radius of a semi-trailer

The front end of the semi-trailer (see Figure 2) shall not exceed the radius, r_1, of 2 040 mm.

Dimensions in millimetres

Key

L_4 distance between two cylinders of revolution [see 3.4 a)]

L_5 distance between surface of cylinder of revolution and conical surface of revolution [see 3.4 b)]

r_1 forward clearance zone radius of semi-trailer (see 2.3)

r_3 radius between axis of coupling pin and lower part of the semi-trailer gooseneck [see 2.4 d)]

ω_1 angle of inclination towards the front

ω_2 angle of inclination towards the rear

φ angle of articulation

Figure 2 — Free space between tractor and semi-trailer

2.4 Gooseneck contour

The gooseneck shall be located on the outside of a surface consisting of different planes and one surface of revolution specified below, which are interconnected one to the next without forming a step, as shown in Figures 3 a) and 3 b).

These parts of the total surface are defined as follows:

a) a first plane, AB, horizontal and perpendicular to the axis of the coupling pin (kingpin) with a length of L_1 and a width the same as the semi-trailer, limited by the intersection of a second plane, described in b);

b) a second plane, BC, with a width the same as the semi-trailer, making an angle γ_1 with the first plane, limited by the intersection of a third plane, described in c);

c) a third plane, CD, with a width the same as the semi-trailer, making an angle γ_2 with the first plane, limited by the intersection of a surface of revolution, described in d);

d) a surface of revolution, generated by rotating the vertical portion, EF, situated at a radius r_3 from the axis of the coupling pin (kingpin), and an arc of a circle of radius r_2 (DE) between the third plane and the vertical portion, EF, such that no discontinuity arises;

e) a fourth plane, AU, situated towards the front end of the semi-trailer, horizontal and perpendicular to the axis of the coupling pin (kingpin), with a length L_3 and a width the same as the semi-trailer, limited by the intersection of an inclined plane, UV, making an angle α with the horizontal; the extremity of the front end (V) shall not protrude beyond a surface of revolution generated by a vertical plane at radius $r_1 = 2\ 040$ mm from the axis of the coupling pin (kingpin).

The values adopted for these elements of the generator are as follows:

length of first plane, $L_1 = 500$ mm

length of first and second planes combined, $L_2 = 1\ 350$ mm

length of fourth plane, $L_3 = 1\ 800$ mm

radius of arc between third plane and vertical portion, $r_2 = 450$ mm

radius between axis of coupling pin (kingpin) and vertical portion, $r_3 = 2\ 100$ mm
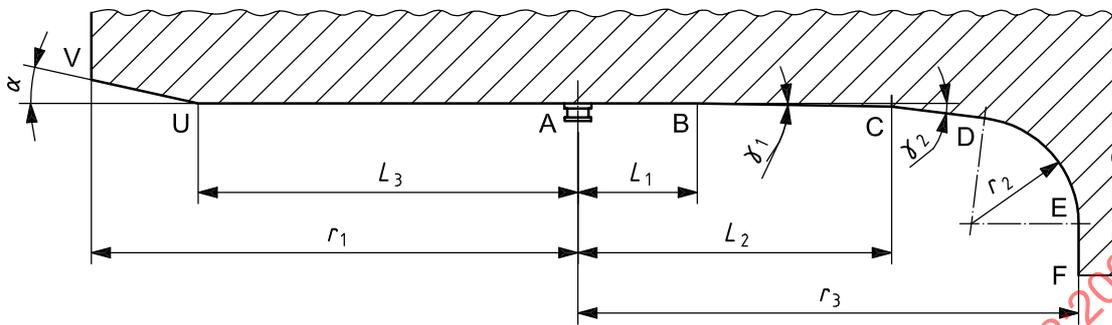
angle between second plane and first plane, $\gamma_1 = 1°$

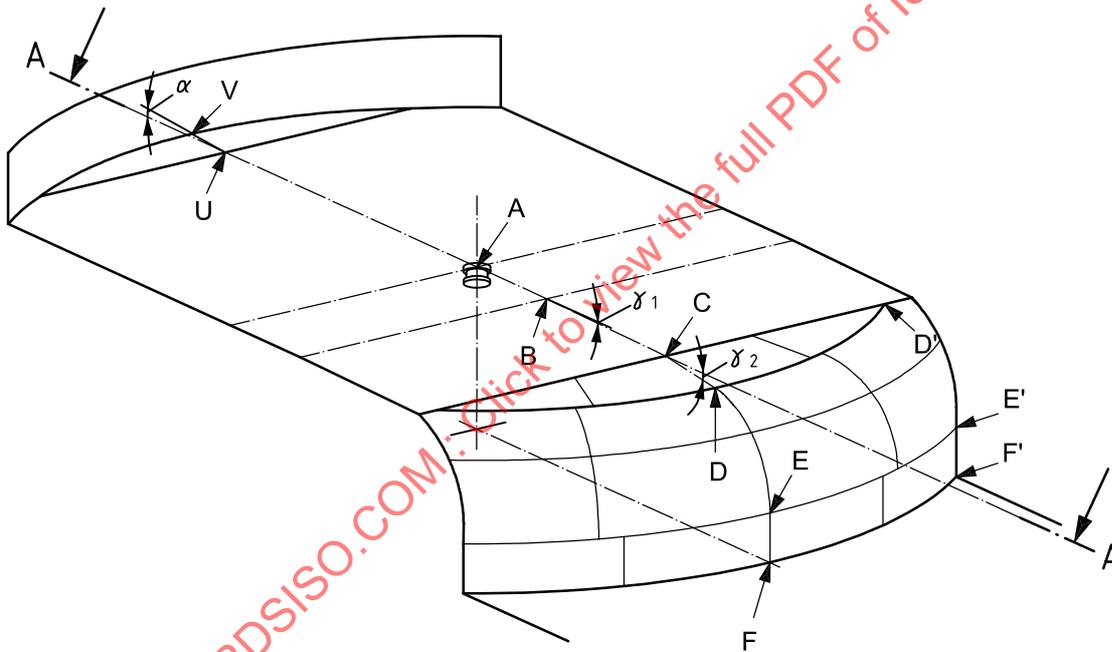angle between third plane and first plane, $\gamma_2 = 7°$

angle between inclined plane and the horizontal, $\alpha \geqslant 3,5°$

The centre of the circle of radius r_2 is determined on the basis of these dimensions.

A – A

a) Generator elements

b) 3-dimensional view

Key

L_1 length of first plane (AB)

L_2 length of first and second planes combined (AB and BC)

L_3 length of fourth plane (AU)

r_1 radius of cylinder of revolution at the front end = 2 040

r_2 radius of arc (DE)

r_3 radius between coupling pin (kingpin) axis and vertical portion (EF)

α angle between inclined plane (UV) and the horizontal

γ_1 angle between second plane (BC) and first plane (AB)

γ_2 angle between third plane (CD) and first plane (AB)

Figure 3 — Optimized gooseneck contour

3 Operating dimensions

3.1 Angles of inclination of the semi-trailer in relation to the tractor

The tractor shall be so constructed that the tractor and the semi-trailer components, except for those concerned with articulation, do not make contact with each other when the articulated vehicle is running in a straight line, when the angle of inclination of the semi-trailer relative to the tractor does not exceed the values shown below (see Figure 2):

angle of inclination towards the front, $\omega_1 \leqslant 3,5°$;

angle of inclination towards the rear, $\omega_2 \leqslant 4,5°$.

For the purposes of the measurement of ω_1 and ω_2, the fifth wheel plate is assumed to be situated in a horizontal plane. The tractor shall be set at the attitude which corresponds to the design laden condition when the tractor is standing on a horizontal plane.

3.2 Lateral inclination

When the semi-trailer is at a lateral inclination, δ, of a maximum of 2° relative to the tractor chassis (see Figure 4), there shall be no contact between the tractor chassis and the semi-trailer.
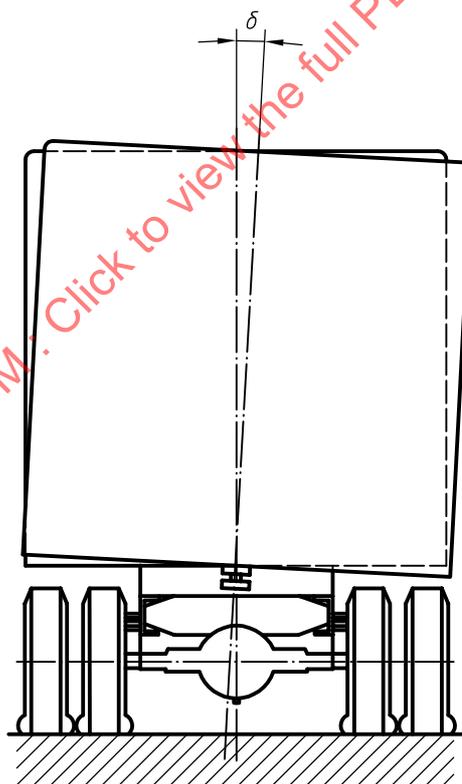
Key
δ lateral inclination

Figure 4 — Lateral inclination