भारतीय मानक

Indian Standard

IS 8007 (Part 2) : 2023
ISO 1726-2 : 2007

सड़क वाहन — ट्रैक्टरों और अर्ध-ट्रेलरों के मध्य यांत्रिक युग्मक

भाग 2 कम युग्मन ट्रैक्टर और उच्च-वॉल्यूम सेमी-ट्रेलरों के बीच अन्तर्विनिमयता

Road Vehicles — Mechanical Couplings Between Tractors and Semi-Trailers

Part 2 Interchangeability Between Low-Coupling Tractors and High-Volume Semi-Trailers

ICS 43.040.70

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Transport Tractors, Trailors and Industrial Trucks Sectional Committee, TED 22

NATIONAL FOREWORD

This Indian Standard (Part 2) which is identical with ISO 1726-2 : 2007 ‘Road vehicles — Mechanical couplings between tractors and semi-trailers — Part 2: Interchangeability between low-coupling tractors and high-volume semi-trailers’, issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards after the draft finalized by the Transport Tractors, Trailers and Industrial Trucks Sectional Committee and had been approved by Transport Engineering Division Council.

The text of ISO Standard has been approved for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. The Bureau of Indian Standards shall not be held responsible for identifying any or all such patent rights.

For the purpose of deciding whether a particular requirement of this standard is compiled with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’.

Indian Standard

ROAD VEHICLES — MECHANICAL COUPLINGS BETWEEN TRACTORS AND SEMI-TRAILERS

PART 2 INTERCHANGEABILITY BETWEEN LOW-COUPLING TRACTORS AND HIGH-VOLUME SEMI-TRAILORS

1 Scope

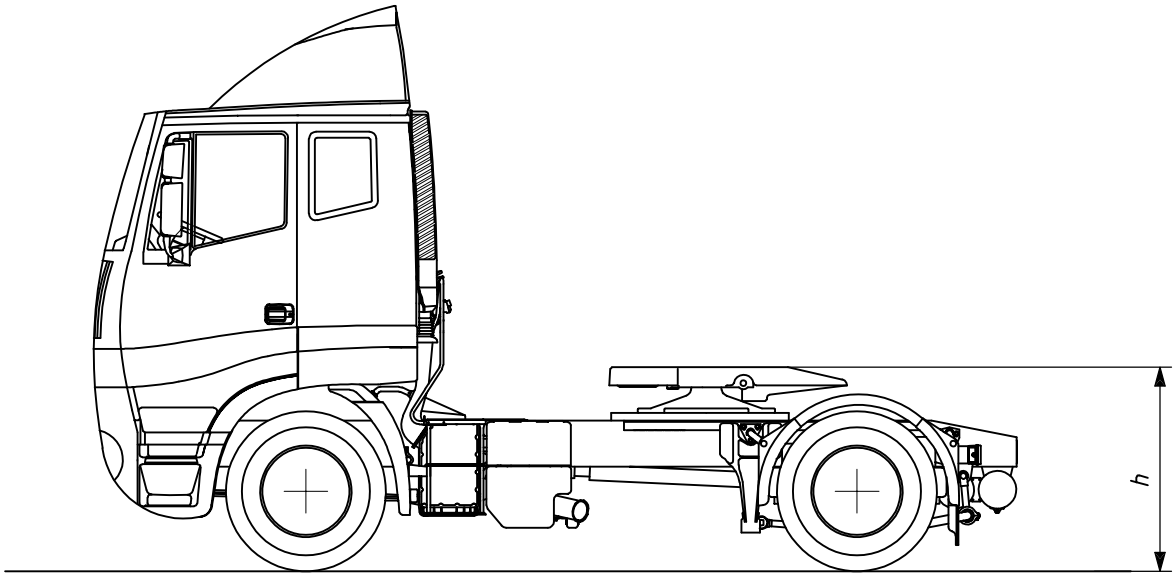
This part of ISO 1726 specifies dimensions to ensure interchangeability between a low coupling height tractor vehicle and a coupled high-volume semi-trailer, the two together constituting a high-volume articulated vehicle. It specifies certain interchangeability dimensions, including those of the optimised 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.



Key

h height of fifth wheel

Figure 1 — Height of fifth wheel

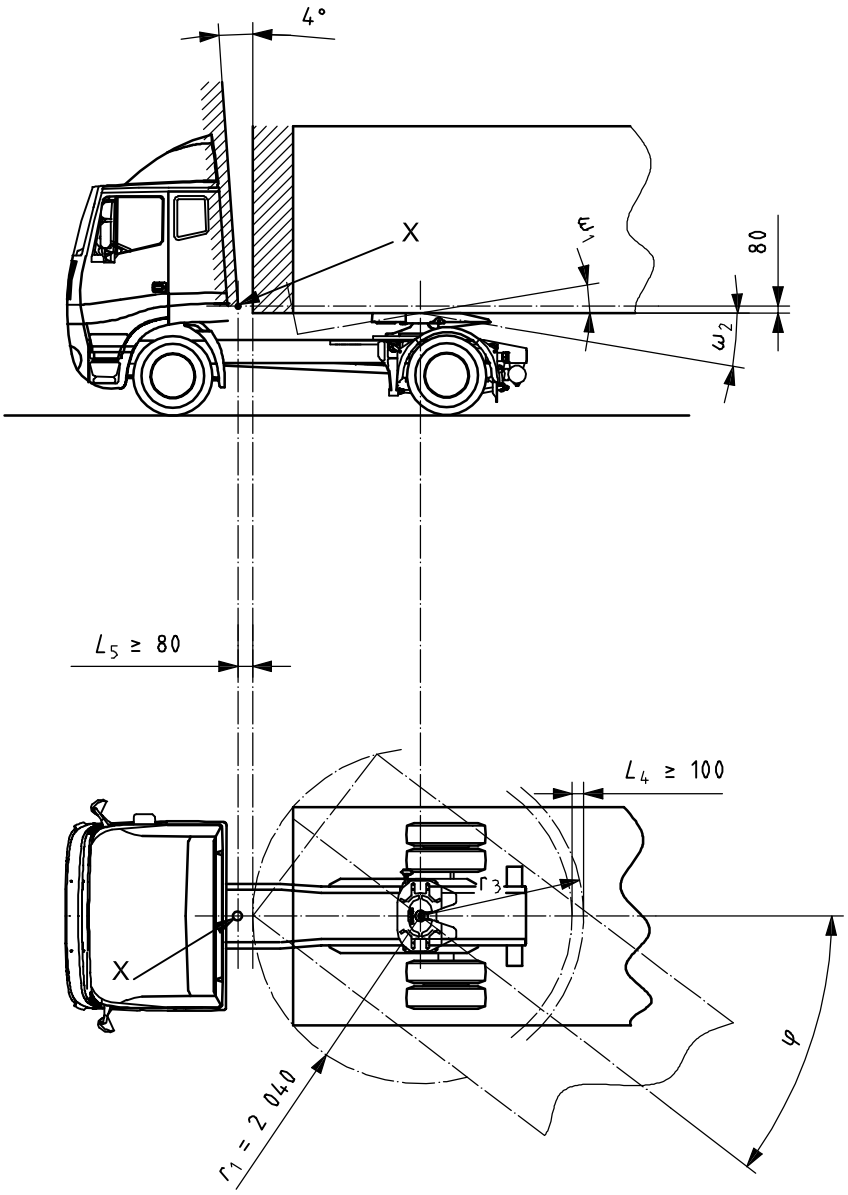
2.2 Height of fifth wheel of an uncoupled tractor

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

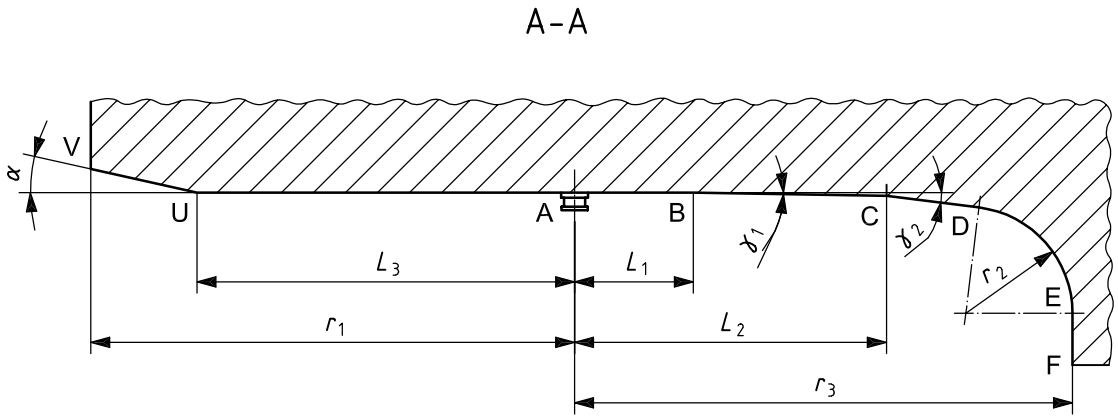
angle between second plane and first plane, $\gamma_1 = 1°$

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

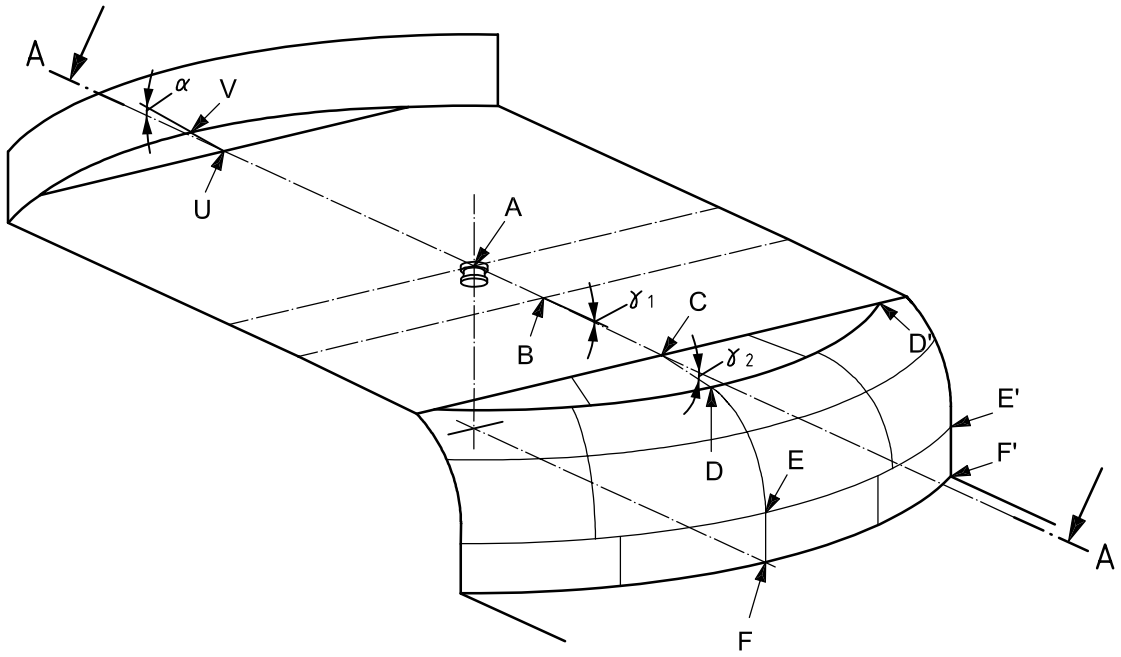
angle between inclined plane and the horizontal, $\alpha \geqslant 3{,}5°$

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

Dimensions in millimetres



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):

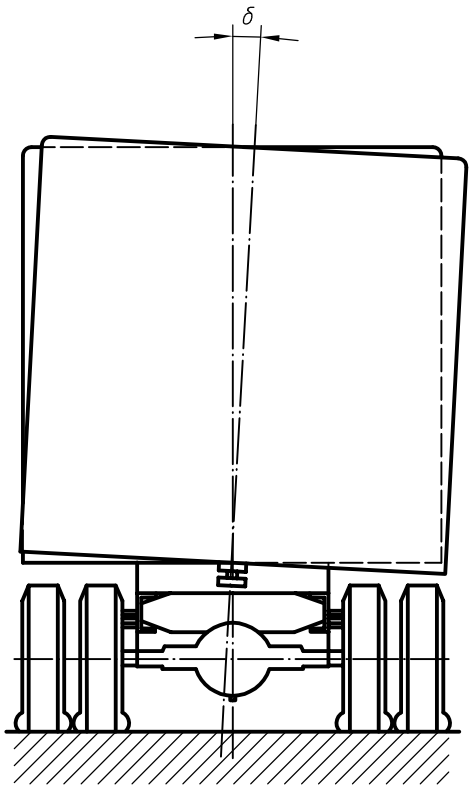
angle of inclination towards the front, $\omega_1 \leqslant 3{,}5°$;

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

3.3 Angle of articulation

The angle of articulation, φ, is the projection of the angle between the longitudinal axes of the tractor and semi-trailer in the horizontal plane (see Figure 2).

The articulation of the vehicle shall be such that no contact is made between the semi-trailer and the tyres or spray suppression equipment of the tractor, taking into account that $\omega_2 \leqslant 4{,}5°$ for all angles of $\varphi \leqslant 25°$.

Under manoeuvring conditions, the angle of articulation, φ, shall be able to reach 90° and the maximum angle of inclination, ω_2, may vary from 4,5° to 3° as φ varies from 25° to 90°.

3.4 Free space between the tractor and the semi-trailer

The free space between the tractor and semi-trailer is measured as follows (see Figure 2).

a) L_4 is the distance between two cylinders of revolution, both having the kingpin (coupling pin) axis as their axis. One of these cylinders has radius r_3 (lower part of the gooseneck) and the other is the cylinder of smallest radius within which all points of the rear part of the tractor are located. $L_4 \geqslant 100$ mm.

b) L_5 is the clearance between the surface of the cylinder of revolution, whose axis is the axis of the fifth wheel coupling and whose radius, r_1, is 2 040 mm, and a conical surface of revolution which has the same axis. This conical surface is generated by a line making an angle of 4° from the vertical towards the front of the tractor. A point, X, of this surface is positioned on the plane of symmetry of the semi-trailer at a height 80 mm above the fifth wheel coupling face. At this point, $L_5 \geqslant 80$ mm.

4 Designation

Low-coupling tractors and high-volume semi-trailers in compliance with the requirements of this part of ISO 1726 shall be designated as follows:

Tractor ISO 1726 - L

Semi-trailer ISO 1726 - L

where

L means “low coupling height”.

Bibliography

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

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

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