

INTERNATIONAL  
STANDARD

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**Commercial road vehicles — Mechanical  
coupling between towing vehicles with  
rear-mounted coupling and drawbar  
trailers — Interchangeability**

*Véhicules routiers utilitaires — Accouplement mécanique entre véhicules  
tracteurs à dispositif d'attelage arrière et remorques à train avant  
directeur — Interchangeabilité*



Reference number  
ISO 11406:1993(E)

## 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.

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.

International Standard ISO 11406 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Sub-Committee SC 15, *Interchangeability of components of commercial vehicles and buses*.

Annexes A, B and C of this International Standard are for information only.

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# Commercial road vehicles — Mechanical coupling between towing vehicles with rear-mounted coupling and drawbar trailers — Interchangeability

## 1 Scope

This International Standard lays down the requirements for the various elements and dimensions of a towing vehicle rear-mounted coupling and of a drawbar trailer, to ensure interchangeability.

NOTE 1 Annex B gives examples of different configurations of vehicle combinations: this International Standard deals only with No. B.1.1.

This International Standard applies to road trains for commercial transport of cargo of the greatest possible variety: it does not cover dedicated or special combinations. Nor does it specify limitations of maximum gross mass and overall dimensions, which are generally laid down by legislative requirements.

Vehicles whose couplings form the subject of this International Standard are not interchangeable with vehicles whose couplings are mounted forward and below (which form the subject of ISO 11407[2]).

## 2 Interchangeability dimensions

### 2.1 Distance between drawbar coupling axis and rear end of towing vehicle

This dimension, dimension  $A$  in figure 1, shall be a maximum of 420 mm.

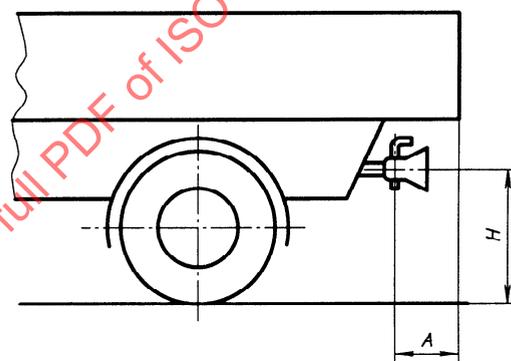


Figure 1 — Rear end of towing vehicle

### 2.2 Turning front of trailer

The turning front of the trailer, dimension  $C$  in figure 2, is the distance between the drawbar coupling axis and the cylindrical surface of revolution enclosing the front of the trailer, the axis of which is a vertical line passing through the pivot point of the front undercarriage of the trailer.

The minimum value of  $C$ , in millimetres, is determined by the equation

$$C_{\min} = \sqrt{\left(\frac{W}{2}\right)^2 + A^2} + S$$

where

- $W$  is the vehicle width, in millimetres;
- $A$  is as defined in 2.1;
- $S$  is the clearance between the turning circles of the towing vehicle and the trailer, in millimetres.

Based on practical experience,  $S_{min}$  shall be 80 mm. This ensures that no contact is possible between the towing vehicle and the front of the trailer under normal conditions of operation and turning.

Calculation examples for  $C_{min}$  are given in annex A.

NOTE 2 A smaller dimension  $C$ , if required by the client of the trailer manufacturer, does not exclude the risk of contact and damage to the bodies of towing vehicle and trailer, depending on the angle of articulation. In this case, such a combination is considered a dedicated combination and is not covered by this International Standard.

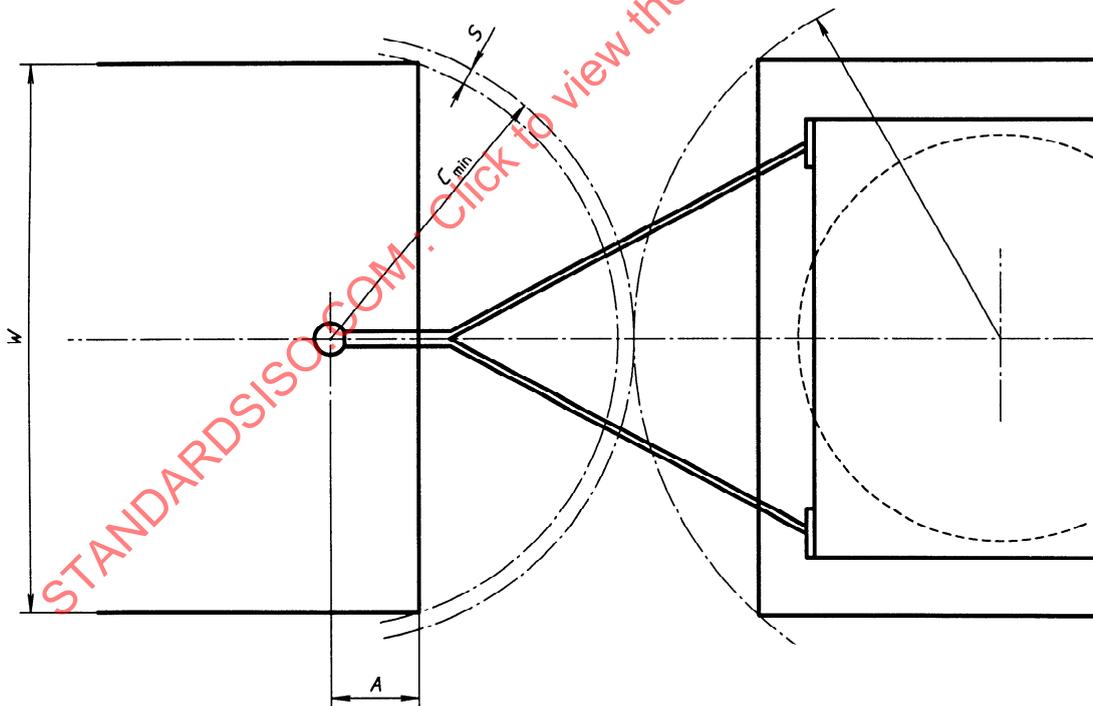
### 2.3 Heights of towing attachments on towing vehicle and of drawbar articulation axis on trailer

These dimensions shall be as given in table 1. They apply equally to laden or unladen vehicles.

**Table 1 — Heights**

Dimensions in millimetres

Total laden mass of vehicle or trailer ( $m$ )  t	Height of towing attachment on towing vehicle (dimension $H$ in figure 1)	Height of drawbar articulation axis on trailer
$6 < m \leq 10$	$700 \pm 150$	$700 \pm 100$
$10 < m \leq 14$	$850 \pm 150$	$850 \pm 100$
$14 < m$	$900 \pm 150$	$900 \pm 100$



**Figure 2 — Turning front of trailer**

## Annex A

(informative)

### Determination of dimension $C$

Dimension  $C_{\min}$  (see figure 2) is calculated with the equation in 2.2. Table A.1 gives examples of dimensions.

**Table A.1**

Dimensions in millimetres

Dimension	Example	
	1	2
$A$	420	420
$W$	2 500	2 600
$S_{\min}$	80	
$C_{\min}$ <sup>1)</sup>	1 400	1 450
1) Rounded values.		

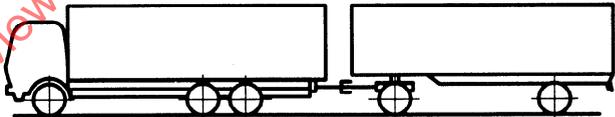
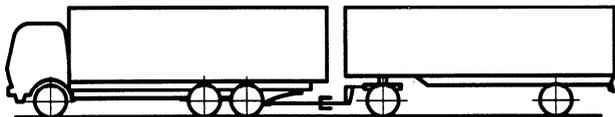
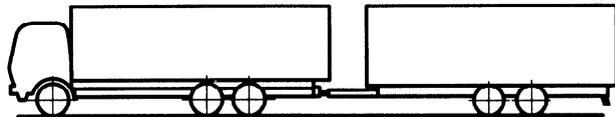
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**Annex B**  
(informative)

**Examples of different configurations of vehicle combinations**

Examples are given in table B.1.

Table B.1

No.	Description	Figure
<b>B.1</b>	<b>Drawbar trailers</b>	
B.1.1	Towing vehicle with rear-mounted coupling and drawbar trailer.	
B.1.2	Towing vehicle with coupling mounted forward and below, and drawbar trailer.	
B.1.3	Towing vehicle with rear-mounted coupling and close-coupled drawbar trailer (extensible connection).	
B.1.4	Towing vehicle with coupling mounted forward and below, and close-coupled drawbar trailer (extensible connection).	
<b>B.2</b>	<b>Centre-axle trailers</b>	
B.2.1	Towing vehicle with rear-mounted coupling and centre-axle trailer.	
B.2.2	Towing vehicle with coupling mounted forward and below, and centre-axle trailer.	
B.2.3	Towing vehicle with coupling mounted forward and below, and close-coupled centre-axle trailer (extensible connection).	